Mathematica 11.3 Integration Test Results

Test results for the 1373 problems in "4.5.4.2 (a+b sec)^m (d sec)^n (A+B sec+C sec^2).m"

Problem 1: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d x]^2 \, (b\,\text{Sec}[c+d x])^{1/3} \left(A+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 5, 95 leaves, 4 steps):

$$\left(3\,(10 A+7 C)\,\text{Hypergeometric2F1}\left[-\frac{2}{3},\frac{1}{2},\frac{1}{3},\text{Cos}[c+d x]^2\right] (b\,\text{Sec}[c+d x])^{4/3}\,\text{Sin}[c+d x]\right) \Big/ \left(40\,b\,d\,\sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d x])^{7/3}\,\text{Tan}[c+d x]}{10\,b^2\,d}$$

Result (type 5, 189 leaves):

$$\left(3\,(b\,\text{Sec}[c+d x])^{1/3}\left(A+C\,\text{Sec}[c+d x]^2\right)\left(-2\,i\,2^{1/3}\,(10 A+7 C)\left(\frac{e^{i\,(c+d x)}}{1+e^{2\,i\,(c+d x)}}\right)^{1/3}\left(1+e^{2\,i\,(c+d x)}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2\,i\,(c+d x)}\right]+\left(5\,(2 A+3 C)+(10 A+7 C)\,\text{Cos}[2\,(c+d x)]\right)\text{Sec}[c+d x]^{10/3}\,\text{Sin}[c+d x]\right)\right) \Big/ \left(40\,d\,\left(A+2 C+A\,\text{Cos}[2\,(c+d x)]\right)\text{Sec}[c+d x]^{7/3}\right)$$

Problem 2: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d x]\,(b\,\text{Sec}[c+d x])^{1/3}\left(A+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 5, 92 leaves, 4 steps):

$$\left(3\,(7 A+4 C)\,\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{1}{2},\frac{5}{6},\text{Cos}[c+d x]^2\right](b\,\text{Sec}[c+d x])^{1/3}\,\text{Sin}[c+d x]\right) \Big/ \left(7\,d\,\sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d x])^{4/3}\,\text{Tan}[c+d x]}{7\,b\,d}$$

Result (type 5, 183 leaves):

$$-\left(\left(6\,i\,e^{-i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^3\left(-7\,A\,\left(1+e^{2\,i\,(c+d\,x)}\right)^2-2\,C\,\left(2+5\,e^{2\,i\,(c+d\,x)}+e^{4\,i\,(c+d\,x)}\right)+(7\,A+4\,C)\left(1+e^{2\,i\,(c+d\,x)}\right)^{7/3}\mathrm{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,i\,(c+d\,x)}\right]\right)(b\,\mathrm{Sec}[c+d\,x])^{4/3}\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(7\,b\,d\,\left(1+e^{2\,i\,(c+d\,x)}\right)^2(A+2\,C+A\,\mathrm{Cos}[2\,(c+d\,x)])\right)\right)$$

Problem 3: Result unnecessarily involves imaginary or complex numbers.

$$\int (b\,\mathrm{Sec}[c+d\,x])^{1/3}\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 5, 88 leaves, 3 steps):

$$-\left(\left(3\,b\,(4\,A+C)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{4}{3},\mathrm{Cos}[c+d\,x]^2\right]\mathrm{Sin}[c+d\,x]\right)\Big/\left(8\,d\,(b\,\mathrm{Sec}[c+d\,x])^{2/3}\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)\right)+\frac{3\,C\,(b\,\mathrm{Sec}[c+d\,x])^{1/3}\,\mathrm{Tan}[c+d\,x]}{4\,d}$$

Result (type 5, 162 leaves):

$$\left(3\,(b\,\mathrm{Sec}[c+d\,x])^{1/3}\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(-i\,2^{1/3}\,(4\,A+C)\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{1/3}\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\mathrm{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2\,i\,(c+d\,x)}\right]+C\,\mathrm{Sec}[c+d\,x]^{4/3}\,\mathrm{Sin}[c+d\,x]\right)\right)\Big/\left(2\,d\,(A+2\,C+A\,\mathrm{Cos}[2\,(c+d\,x)])\,\mathrm{Sec}[c+d\,x]^{7/3}\right)$$

Problem 6: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^2\,(b\,\mathrm{Sec}[c+d\,x])^{4/3}\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 5, 95 leaves, 4 steps):

$$\left(3\,(13\,A+10\,C)\,\mathrm{Hypergeometric2F1}\left[-\frac{7}{6},\frac{1}{2},-\frac{1}{6},\mathrm{Cos}[c+d\,x]^2\right](b\,\mathrm{Sec}[c+d\,x])^{7/3}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(91\,b\,d\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+\frac{3\,C\,(b\,\mathrm{Sec}[c+d\,x])^{10/3}\,\mathrm{Tan}[c+d\,x]}{13\,b^2\,d}$$

Result (type 5, 235 leaves):

$$-\left(\left(12\,i\,e^{-i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^3\left(-13\,A\,\left(1+e^{2\,i\,(c+d\,x)}\right)^2\left(2+5\,e^{2\,i\,(c+d\,x)}+e^{4\,i\,(c+d\,x)}\right)-2\,C\,\left(10+45\,e^{2\,i\,(c+d\,x)}+79\,e^{4\,i\,(c+d\,x)}+21\,e^{6\,i\,(c+d\,x)}+5\,e^{8\,i\,(c+d\,x)}\right)+2\,(13\,A+10\,C)\left(1+e^{2\,i\,(c+d\,x)}\right)^{13/3}\mathrm{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,i\,(c+d\,x)}\right]\right)(b\,\mathrm{Sec}[c+d\,x])^{4/3}\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(91\,d\,\left(1+e^{2\,i\,(c+d\,x)}\right)^4(A+2\,C+A\,\mathrm{Cos}[2\,(c+d\,x)])\right)\right)$$

Problem 7: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]\,(b\,\text{Sec}[c+d x])^{4/3}\left(A+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 5, 92 leaves, 4 steps):

$$\left(3\,(10 A+7 C)\,\text{Hypergeometric2F1}\left[-\frac{2}{3},\frac{1}{2},\frac{1}{3},\text{Cos}[c+d x]^2\right](b\,\text{Sec}[c+d x])^{4/3}\,\text{Sin}[c+d x]\right)\Big/\left(40\,d\,\sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d x])^{7/3}\,\text{Tan}[c+d x]}{10\,b\,d}$$

Result (type 5, 192 leaves):

$$\left(3\,(b\,\text{Sec}[c+d x])^{7/3}\left(A+C\,\text{Sec}[c+d x]^2\right)\left(-2\,\mathrm{i}\,2^{1/3}\,(10 A+7 C)\left(\frac{e^{\mathrm{i}\,(c+d x)}}{1+e^{2\,\mathrm{i}\,(c+d x)}}\right)^{1/3}\left(1+e^{2\,\mathrm{i}\,(c+d x)}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2\,\mathrm{i}\,(c+d x)}\right]+(5\,(2 A+3 C)+(10 A+7 C)\,\text{Cos}[2\,(c+d x)])\,\text{Sec}[c+d x]^{10/3}\,\text{Sin}[c+d x]\right)\right)\Big/\left(40\,b\,d\,(A+2 C+A\,\text{Cos}[2\,(c+d x)])\,\text{Sec}[c+d x]^{13/3}\right)$$

Problem 8: Result unnecessarily involves imaginary or complex numbers.

$$\int (b\,\text{Sec}[c+d x])^{4/3}\left(A+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 5, 90 leaves, 3 steps):

$$\left(3\,b\,(7 A+4 C)\,\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{1}{2},\frac{5}{6},\text{Cos}[c+d x]^2\right](b\,\text{Sec}[c+d x])^{1/3}\,\text{Sin}[c+d x]\right)\Big/\left(7\,d\,\sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d x])^{4/3}\,\text{Tan}[c+d x]}{7\,d}$$

Result (type 5, 180 leaves):

$$-\left(\left(6\,\mathrm{i}\,e^{-\mathrm{i}\,(c+d x)}\,\text{Cos}[c+d x]^3\left(-7 A\left(1+e^{2\,\mathrm{i}\,(c+d x)}\right)^2-2 C\left(2+5\,e^{2\,\mathrm{i}\,(c+d x)}+e^{4\,\mathrm{i}\,(c+d x)}\right)+(7 A+4 C)\left(1+e^{2\,\mathrm{i}\,(c+d x)}\right)^{7/3}\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,\mathrm{i}\,(c+d x)}\right]\right)(b\,\text{Sec}[c+d x])^{4/3}\left(A+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(7\,d\left(1+e^{2\,\mathrm{i}\,(c+d x)}\right)^2(A+2 C+A\,\text{Cos}[2\,(c+d x)])\right)\right)$$

Problem 9: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Cos}[c+d x]\,(b\,\text{Sec}[c+d x])^{4/3}\left(A+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 5, 91 leaves, 4 steps):

$$-\left(\left(3 b^2 (4 A+C) \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{4}{3},\text{Cos}[c+d x]^2\right] \text{Sin}[c+d x]\right)\Big/\left(8 d (b \text{Sec}[c+d x])^{2/3} \sqrt{\text{Sin}[c+d x]^2}\right)\right)+\frac{3 b C (b \text{Sec}[c+d x])^{1/3} \text{Tan}[c+d x]}{4 d}$$

Result (type 5, 163 leaves):

$$\left(3 b (b \text{Sec}[c+d x])^{1/3} \left(A+C \text{Sec}[c+d x]^2\right) \left(-i 2^{1/3} (4 A+C) \left(\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}\right)^{1/3} \left(1+e^{2 i (c+d x)}\right)^{1/3} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2 i (c+d x)}\right]+C \text{Sec}[c+d x]^{4/3} \text{Sin}[c+d x]\right)\right)\Big/\left(2 d (A+2 C+A \text{Cos}[2 (c+d x)]) \text{Sec}[c+d x]^{7/3}\right)$$

Problem 11: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+C \text{Sec}[c+d x]^2\right)}{(b \text{Sec}[c+d x])^{1/3}} \, dx$$

Optimal (type 5, 95 leaves, 4 steps):

$$\left(3 (8 A+5 C) \text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{2},\frac{2}{3},\text{Cos}[c+d x]^2\right] (b \text{Sec}[c+d x])^{2/3} \text{Sin}[c+d x]\right)\Big/\left(16 b d \sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3 C (b \text{Sec}[c+d x])^{5/3} \text{Tan}[c+d x]}{8 b^2 d}$$

Result (type 5, 207 leaves):

$$-\left(\left(3 i \left(-8 A \left(1+e^{2 i (c+d x)}\right)^2-C \left(5+14 e^{2 i (c+d x)}+e^{4 i (c+d x)}\right)+(8 A+5 C) \left(1+e^{2 i (c+d x)}\right)^{8/3} \text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2 i (c+d x)}\right]\right) \left(A+C \text{Sec}[c+d x]^2\right)\right)\Big/\left(4 \times 2^{1/3} d \left(\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}\right)^{1/3} \left(1+e^{2 i (c+d x)}\right)^3 (A+2 C+A \text{Cos}[2 (c+d x)]) \text{Sec}[c+d x]^{5/3} (b \text{Sec}[c+d x])^{1/3}\right)\right)$$

Problem 12: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x] \left(A+C \text{Sec}[c+d x]^2\right)}{(b \text{Sec}[c+d x])^{1/3}} \, dx$$

Optimal (type 5, 92 leaves, 4 steps):

$$-\left(\left(3\ (5\,A+2\,C)\ \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\text{Cos}[c+d\,x]^2\right]\ \text{Sin}[c+d\,x]\right)\Big/\left(5\,d\ (b\,\text{Sec}[c+d\,x])^{1/3}\ \sqrt{\text{Sin}[c+d\,x]^2}\right)\right)+\frac{3\,C\ (b\,\text{Sec}[c+d\,x])^{2/3}\ \text{Tan}[c+d\,x]}{5\,b\,d}$$

Result (type 5, 168 leaves):

$$\left(3\ (b\,\text{Sec}[c+d\,x])^{2/3}\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)\ \left(-i\ 2^{2/3}\ (5\,A+2\,C)\ \left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{2/3}\ \left(1+e^{2\,i\,(c+d\,x)}\right)^{2/3}\ \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2\,i\,(c+d\,x)}\right]+2\,C\,\text{Sec}[c+d\,x]^{5/3}\ \text{Sin}[c+d\,x]\right)\right)\Big/\left(5\,b\,d\ (A+2\,C+A\,\text{Cos}[2\ (c+d\,x)])\ \text{Sec}[c+d\,x]^{8/3}\right)$$

Problem 13: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{(b\,\text{Sec}[c+d\,x])^{1/3}}\,dx$$

Optimal (type 5, 90 leaves, 3 steps):

$$-\left(\left(3\,b\ (2\,A-C)\ \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{5}{3},\text{Cos}[c+d\,x]^2\right]\ \text{Sin}[c+d\,x]\right)\Big/\left(8\,d\ (b\,\text{Sec}[c+d\,x])^{4/3}\ \sqrt{\text{Sin}[c+d\,x]^2}\right)\right)+\frac{3\,C\,\text{Tan}[c+d\,x]}{2\,d\ (b\,\text{Sec}[c+d\,x])^{1/3}}$$

Result (type 5, 98 leaves):

$$-\left(\left(3\,i\ \left(A-C+A\,e^{2\,i\,(c+d\,x)}+(-2\,A+C)\ \left(1+e^{2\,i\,(c+d\,x)}\right)^{2/3}\ \text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2\,i\,(c+d\,x)}\right]\right)\right)\Big/\left(d\ \left(1+e^{2\,i\,(c+d\,x)}\right)\ (b\,\text{Sec}[c+d\,x])^{1/3}\right)\right)$$

Problem 14: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Cos}[c+d\,x]\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)}{(b\,\text{Sec}[c+d\,x])^{1/3}}\,dx$$

Optimal (type 5, 88 leaves, 4 steps):

$$-\frac{3\ (A+4\,C)\ \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\text{Cos}[c+d\,x]^2\right]\ \text{Sin}[c+d\,x]}{4\,d\ (b\,\text{Sec}[c+d\,x])^{1/3}\ \sqrt{\text{Sin}[c+d\,x]^2}}+\frac{3\,A\,b\,\text{Tan}[c+d\,x]}{4\,d\ (b\,\text{Sec}[c+d\,x])^{4/3}}$$

Result (type 5, 121 leaves):

$$-\left(\left(3\,i\,e^{-i\,(c+d\,x)}\ \left(A\ \left(-1+e^{4\,i\,(c+d\,x)}\right)+2\ (A+4\,C)\ e^{2\,i\,(c+d\,x)}\ \left(1+e^{2\,i\,(c+d\,x)}\right)^{2/3}\ \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2\,i\,(c+d\,x)}\right]\right)\right)\Big/\left(8\,d\ \left(1+e^{2\,i\,(c+d\,x)}\right)\ (b\,\text{Sec}[c+d\,x])^{1/3}\right)\right)$$

Problem 16: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+C \,\text{Sec}[c+d x]^2\right)}{(b \,\text{Sec}[c+d x])^{4/3}} \, dx$$

Optimal (type 5, 95 leaves, 4 steps):

$$-\left(\left(3 (5 A+2 C) \,\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\text{Cos}[c+d x]^2\right] \text{Sin}[c+d x]\right) \Big/ \left(5 b d (b \,\text{Sec}[c+d x])^{1/3} \sqrt{\text{Sin}[c+d x]^2}\right)\right)+\frac{3 C (b \,\text{Sec}[c+d x])^{2/3} \,\text{Tan}[c+d x]}{5 b^2 d}$$

Result (type 5, 165 leaves):

$$\left(3 \left(A+C \,\text{Sec}[c+d x]^2\right) \left(-i\, 2^{2/3} (5 A+2 C) \left(\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}\right)^{2/3} \left(1+e^{2 i (c+d x)}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2 i (c+d x)}\right]+2 C \,\text{Sec}[c+d x]^{5/3} \,\text{Sin}[c+d x]\right)\right) \Big/ \left(5 d (A+2 C+A \,\text{Cos}[2 (c+d x)]) \,\text{Sec}[c+d x]^{2/3} (b \,\text{Sec}[c+d x])^{4/3}\right)$$

Problem 17: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x] \left(A+C \,\text{Sec}[c+d x]^2\right)}{(b \,\text{Sec}[c+d x])^{4/3}} \, dx$$

Optimal (type 5, 92 leaves, 4 steps):

$$-\frac{3 (2 A-C) \,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{5}{3},\text{Cos}[c+d x]^2\right] \text{Sin}[c+d x]}{8 d (b \,\text{Sec}[c+d x])^{4/3} \sqrt{\text{Sin}[c+d x]^2}}+\frac{3 C \,\text{Tan}[c+d x]}{2 b d (b \,\text{Sec}[c+d x])^{1/3}}$$

Result (type 5, 101 leaves):

$$-\left(\left(3 i \left(A-C+A e^{2 i (c+d x)}+(-2 A+C) \left(1+e^{2 i (c+d x)}\right)^{2/3} \text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2 i (c+d x)}\right]\right)\right) \Big/ \left(b d \left(1+e^{2 i (c+d x)}\right) (b \,\text{Sec}[c+d x])^{1/3}\right)\right)$$

Problem 18: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A+C \,\text{Sec}[c+d x]^2}{(b \,\text{Sec}[c+d x])^{4/3}} \, dx$$

Optimal (type 5, 90 leaves, 3 steps):

$$-\frac{3 (A+4 C) \,\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\text{Cos}[c+d x]^2\right] \text{Sin}[c+d x]}{4 b d (b \,\text{Sec}[c+d x])^{1/3} \sqrt{\text{Sin}[c+d x]^2}}+\frac{3 A \,\text{Tan}[c+d x]}{4 d (b \,\text{Sec}[c+d x])^{4/3}}$$

Result (type 5, 124 leaves):

$$-\left(\left(3\,i\,e^{-i\,(c+d\,x)}\left(A\left(-1+e^{4\,i\,(c+d\,x)}\right)+2\,(A+4\,C)\,e^{2\,i\,(c+d\,x)}\left(1+e^{2\,i\,(c+d\,x)}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2\,i\,(c+d\,x)}\right]\right)\right)\Big/\left(8\,b\,d\,\left(1+e^{2\,i\,(c+d\,x)}\right)\,(b\,\text{Sec}[c+d\,x])^{1/3}\right)\right)$$

Problem 21: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^m\,(b\,\text{Sec}[c+d\,x])^{4/3}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

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

$$\frac{3\,b\,C\,\text{Sec}[c+d\,x]^{2+m}\,(b\,\text{Sec}[c+d\,x])^{1/3}\,\text{Sin}[c+d\,x]}{d\,(7+3\,m)}+\left(3\,b\,(C\,(4+3\,m)+A\,(7+3\,m))\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}\,(-1-3\,m),\frac{1}{6}\,(5-3\,m),\text{Cos}[c+d\,x]^2\right]\,\text{Sec}[c+d\,x]^m\,(b\,\text{Sec}[c+d\,x])^{1/3}\,\text{Sin}[c+d\,x]\right)\Big/\left(d\,(1+3\,m)\,(7+3\,m)\,\sqrt{\text{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 333 leaves):

$$-\left(\left(3\,i\,2^{\frac{7}{3}+m}\,e^{-\frac{1}{3}\,i\,d\,(4+3\,m)\,x}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{\frac{4}{3}+m}\left(1+e^{2\,i\,(c+d\,x)}\right)^{\frac{4}{3}+m}\left(\frac{1}{10+3\,m}2\,(A+2\,C)\,e^{\frac{1}{3}\,i\,(6\,c+d\,(10+3\,m)\,x)}\,\text{Hypergeometric2F1}\left[\frac{5}{3}+\frac{m}{2},\frac{10}{3}+m,\frac{8}{3}+\frac{m}{2},-e^{2\,i\,(c+d\,x)}\right]+\frac{1}{16+3\,m}A\,e^{4\,i\,c+\frac{1}{3}\,i\,d\,(16+3\,m)\,x}\,\text{Hypergeometric2F1}\left[\frac{8}{3}+\frac{m}{2},\frac{10}{3}+m,\frac{1}{6}\,(22+3\,m),-e^{2\,i\,(c+d\,x)}\right]+\frac{1}{4+3\,m}A\,e^{\frac{1}{3}\,i\,d\,(4+3\,m)\,x}\,\text{Hypergeometric2F1}\left[\frac{10}{3}+m,\frac{1}{6}\,(4+3\,m),\frac{5}{3}+\frac{m}{2},-e^{2\,i\,(c+d\,x)}\right]\right)(b\,\text{Sec}[c+d\,x])^{4/3}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{10/3}\right)\right)$$

Problem 22: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^m\,(b\,\text{Sec}[c+d\,x])^{2/3}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

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

$$\frac{3\,C\,\text{Sec}[c+d\,x]^{1+m}\,(b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Sin}[c+d\,x]}{d\,(5+3\,m)}-\left(3\,(C\,(2+3\,m)+A\,(5+3\,m))\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}\,(1-3\,m),\frac{1}{6}\,(7-3\,m),\text{Cos}[c+d\,x]^2\right]\,\text{Sec}[c+d\,x]^{-1+m}\,(b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Sin}[c+d\,x]\right)\Big/\left(d\,(1-3\,m)\,(5+3\,m)\,\sqrt{\text{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 336 leaves):

$$-\frac{1}{d\,(A+2C+A\,\text{Cos}[2c+2dx])\,\text{Sec}[c+dx]^{8/3}}3\,i\,2^{\frac{5}{3}+m}\,e^{-\frac{1}{3}i\,d\,(2+3m)\,x}\left(\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}\right)^{\frac{2}{3}+m}\left(1+e^{2i\,(c+dx)}\right)^{\frac{2}{3}+m}\left(\frac{1}{14+3m}A\,e^{4ic+\frac{1}{3}i\,d\,(14+3m)\,x}\,\text{Hypergeometric2F1}\left[\frac{7}{3}+\frac{m}{2},\frac{8}{3}+m,\frac{1}{6}(20+3m),-e^{2i\,(c+dx)}\right]+\left(e^{\frac{1}{3}i\,d\,(2+3m)\,x}\left(A\,(8+3m)\,\text{Hypergeometric2F1}\left[\frac{8}{3}+m,\frac{1}{6}(2+3m),\frac{1}{6}(8+3m),-e^{2i\,(c+dx)}\right]+2\,(A+2C)\,e^{2i\,(c+dx)}\,(2+3m)\,\text{Hypergeometric2F1}\left[\frac{8}{3}+m,\frac{1}{6}(8+3m),\frac{7}{3}+\frac{m}{2},-e^{2i\,(c+dx)}\right]\right)\right)\Big/\left((2+3m)\,(8+3m)\right)\right)\,(b\,\text{Sec}[c+dx])^{2/3}\,\left(A+C\,\text{Sec}[c+dx]^2\right)$$

Problem 23: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+dx]^m\,(b\,\text{Sec}[c+dx])^{1/3}\,\left(A+C\,\text{Sec}[c+dx]^2\right)\,dx$$

Optimal (type 5, 144 leaves, 4 steps):

$$\frac{3\,C\,\text{Sec}[c+dx]^{1+m}\,(b\,\text{Sec}[c+dx])^{1/3}\,\text{Sin}[c+dx]}{d\,(4+3m)}-\left(3\,(C+3Cm+A\,(4+3m))\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}(2-3m),\frac{1}{6}(8-3m),\text{Cos}[c+dx]^2\right]\text{Sec}[c+dx]^{-1+m}\,(b\,\text{Sec}[c+dx])^{1/3}\,\text{Sin}[c+dx]\right)\Big/\left(d\,(2-3m)\,(4+3m)\,\sqrt{\text{Sin}[c+dx]^2}\right)$$

Result (type 5, 336 leaves):

$$-\frac{1}{(A+2C+A\,\text{Cos}[2c+2dx])\,\text{Sec}[c+dx]^{7/3}}3\,i\,2^{\frac{4}{3}+m}\,e^{-\frac{1}{3}i\,d\,(1+3m)\,x}\left(\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}\right)^{\frac{1}{3}+m}\left(1+e^{2i\,(c+dx)}\right)^{\frac{1}{3}+m}\left(\frac{1}{d+3dm}A\,e^{\frac{1}{3}i\,(d+3dm)\,x}\,\text{Hypergeometric2F1}\left[\frac{7}{3}+m,\frac{1}{6}(1+3m),\frac{1}{6}(7+3m),-e^{2i\,(c+dx)}\right]+\left(e^{\frac{1}{3}i\,(6c+d\,(7+3m)\,x)}\left(2\,(A+2C)\,(13+3m)\,\text{Hypergeometric2F1}\left[\frac{7}{3}+m,\frac{1}{6}(7+3m),\frac{1}{6}(13+3m),-e^{2i\,(c+dx)}\right]+A\,e^{2i\,(c+dx)}\,(7+3m)\,\text{Hypergeometric2F1}\left[\frac{7}{3}+m,\frac{1}{6}(13+3m),\frac{1}{6}(19+3m),-e^{2i\,(c+dx)}\right]\right)\right)\Big/\left(d\,(7+3m)\,(13+3m)\right)\right)\,(b\,\text{Sec}[c+dx])^{1/3}\,\left(A+C\,\text{Sec}[c+dx]^2\right)$$

Problem 24: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^m \left(A+C \text{Sec}[c+d x]^2\right)}{(b \text{Sec}[c+d x])^{1/3}} \, dx$$

Optimal (type 5, 147 leaves, 4 steps):

$$\frac{3 C \text{Sec}[c+d x]^{1+m} \text{Sin}[c+d x]}{d (2+3 m) (b \text{Sec}[c+d x])^{1/3}}+\left(3 (C (1-3 m)-A (2+3 m)) \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6} (4-3 m),\frac{1}{6} (10-3 m),\text{Cos}[c+d x]^2\right] \text{Sec}[c+d x]^{-1+m} \text{Sin}[c+d x]\right) \Big/ \left(d (4-3 m) (2+3 m) (b \text{Sec}[c+d x])^{1/3} \sqrt{\text{Sin}[c+d x]^2}\right)$$

Result (type 5, 311 leaves):

$$-\left(\left(\left(3 i 2^{\frac{2}{3}+m} \left(\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}\right)^{-\frac{1}{3}+m} \left(1+e^{2 i (c+d x)}\right)^{-\frac{1}{3}+m} \left(A \left(55+48 m+9 m^2\right) \text{Hypergeometric2F1}\left[\frac{5}{3}+m,\frac{1}{6} (-1+3 m),\frac{1}{6} (5+3 m),-e^{2 i (c+d x)}\right]+e^{2 i (c+d x)} (-1+3 m) \left(2 (A+2 C) (11+3 m) \text{Hypergeometric2F1}\left[\frac{5}{3}+m,\frac{1}{6} (5+3 m),\frac{1}{6} (11+3 m),-e^{2 i (c+d x)}\right]+A e^{2 i (c+d x)} (5+3 m) \text{Hypergeometric2F1}\left[\frac{5}{3}+m,\frac{1}{6} (11+3 m),\frac{1}{6} (17+3 m),-e^{2 i (c+d x)}\right]\right)\right) \left(A+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(d (-1+3 m) (5+3 m) (11+3 m) (A+2 C+A \text{Cos}[2 c+2 d x]) \text{Sec}[c+d x]^{5/3} (b \text{Sec}[c+d x])^{1/3}\right)\right)$$

Problem 25: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^m \left(A+C \text{Sec}[c+d x]^2\right)}{(b \text{Sec}[c+d x])^{2/3}} \, dx$$

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

$$\frac{3 C \text{Sec}[c+d x]^{1+m} \text{Sin}[c+d x]}{d (1+3 m) (b \text{Sec}[c+d x])^{2/3}}-\left(3 (A-C (2-3 m)+3 A m) \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6} (5-3 m),\frac{1}{6} (11-3 m),\text{Cos}[c+d x]^2\right] \text{Sec}[c+d x]^{-1+m} \text{Sin}[c+d x]\right) \Big/ \left(d (5-3 m) (1+3 m) (b \text{Sec}[c+d x])^{2/3} \sqrt{\text{Sin}[c+d x]^2}\right)$$

Result (type 5, 311 leaves):

$$-\left(\left(3\,i\,2^{\frac{1}{3}+m}\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{-\frac{2}{3}+m}\left(1+e^{2i(c+dx)}\right)^{-\frac{2}{3}+m}\left(A\,e^{4i(c+dx)}\left(-8+6m+9m^2\right)\text{Hypergeometric2F1}\left[\frac{5}{3}+\frac{m}{2},\frac{4}{3}+m,\frac{8}{3}+\frac{m}{2},-e^{2i(c+dx)}\right]+(10+3m)\left(A\,(4+3m)\,\text{Hypergeometric2F1}\left[\frac{4}{3}+m,\frac{1}{6}(-2+3m),\frac{1}{6}(4+3m),-e^{2i(c+dx)}\right]+2\,(A+2C)\,e^{2i(c+dx)}(-2+3m)\,\text{Hypergeometric2F1}\left[\frac{4}{3}+m,\frac{1}{6}(4+3m),\frac{5}{3}+\frac{m}{2},-e^{2i(c+dx)}\right]\right)\right)\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(-2+3m)\,(4+3m)\,(10+3m)\,(A+2C+A\,\text{Cos}[2c+2dx])\,\text{Sec}[c+dx]^{4/3}\,(b\,\text{Sec}[c+dx])^{2/3}\right)\right)$$

Problem 26: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]^m\left(A+C\,\text{Sec}[c+dx]^2\right)}{(b\,\text{Sec}[c+dx])^{4/3}}\,dx$$

Optimal (type 5, 148 leaves, 4 steps):

$$-\frac{3\,C\,\text{Sec}[c+dx]^m\,\text{Sin}[c+dx]}{b\,d\,(1-3m)\,(b\,\text{Sec}[c+dx])^{1/3}}-\left(3\,(A+C\,(4-3m)-3\,A\,m)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}(7-3m),\frac{1}{6}(13-3m),\text{Cos}[c+dx]^2\right]\text{Sec}[c+dx]^{-2+m}\,\text{Sin}[c+dx]\right)\Big/\left(b\,d\,(1-3m)\,(7-3m)\,(b\,\text{Sec}[c+dx])^{1/3}\sqrt{\text{Sin}[c+dx]^2}\right)$$

Result (type 5, 340 leaves):

$$-\left(\left(3\,i\,2^{-\frac{1}{3}+m}\,e^{-\frac{1}{3}i(6c+d(2+3m)x)}\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{\frac{2}{3}+m}\left(1+e^{2i(c+dx)}\right)^{\frac{2}{3}+m}\left(\frac{1}{-4+3m}A\,e^{\frac{1}{3}i\,d(-4+3m)x}\,\text{Hypergeometric2F1}\left[\frac{2}{3}+m,\frac{1}{6}(-4+3m),\frac{1}{6}(2+3m),-e^{2i(c+dx)}\right]+\left(e^{\frac{1}{3}i(6c+d(2+3m)x)}\left(2\,(A+2C)\,(8+3m)\,\text{Hypergeometric2F1}\left[\frac{2}{3}+m,\frac{1}{6}(2+3m),\frac{1}{6}(8+3m),-e^{2i(c+dx)}\right]+A\,e^{2i(c+dx)}(2+3m)\,\text{Hypergeometric2F1}\left[\frac{2}{3}+m,\frac{1}{6}(8+3m),\frac{7}{3}+\frac{m}{2},-e^{2i(c+dx)}\right]\right)\right)\Big/\left((2+3m)\,(8+3m)\right)\right)\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(A+2C+A\,\text{Cos}[2c+2dx])\,\text{Sec}[c+dx]^{2/3}\,(b\,\text{Sec}[c+dx])^{4/3}\right)\right)$$

Problem 27: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^m\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

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

$$\frac{C\,\mathrm{Sec}[c+d\,x]^{1+m}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]}{d\,(1+m+n)}-\left((C\,(m+n)+A\,(1+m+n))\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}\,(1-m-n),\frac{1}{2}\,(3-m-n),\mathrm{Cos}[c+d\,x]^2\right]\mathrm{Sec}[c+d\,x]^{-1+m}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\bigg/\left(d\,(1-m-n)\,(1+m+n)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 303 leaves):

$$-\frac{1}{d\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])}\,\mathrm{i}\,2^{1+m+n}\,e^{-\mathrm{i}\,d\,(m+n)\,x}\left(\frac{e^{\mathrm{i}\,(c+d\,x)}}{1+e^{2\,\mathrm{i}\,(c+d\,x)}}\right)^{m+n}\left(1+e^{2\,\mathrm{i}\,(c+d\,x)}\right)^{m+n}\left(\frac{1}{m+n}A\,e^{\mathrm{i}\,d\,(m+n)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{m+n}{2},2+m+n,\frac{1}{2}\,(2+m+n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+e^{2\,\mathrm{i}\,c}\left(\frac{1}{2+m+n}2\,(A+2\,C)\,e^{\mathrm{i}\,d\,(2+m+n)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}\,(2+m+n),2+m+n,\frac{1}{2}\,(4+m+n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\frac{1}{4+m+n}A\,e^{\mathrm{i}\,(2\,c+d\,(4+m+n)\,x)}\,\mathrm{Hypergeometric2F1}\left[2+m+n,\frac{1}{2}\,(4+m+n),\frac{1}{2}\,(6+m+n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]\right)\right)\mathrm{Sec}[c+d\,x]^{-2-n}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

Problem 28: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^2\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 120 leaves, 4 steps):

$$\left((C\,(2+n)+A\,(3+n))\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}\,(-1-n),\frac{1-n}{2},\mathrm{Cos}[c+d\,x]^2\right]\,(b\,\mathrm{Sec}[c+d\,x])^{1+n}\,\mathrm{Sin}[c+d\,x]\right)\bigg/\left(b\,d\,(1+n)\,(3+n)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+\frac{C\,(b\,\mathrm{Sec}[c+d\,x])^{2+n}\,\mathrm{Tan}[c+d\,x]}{b^2\,d\,(3+n)}$$

Result (type 5, 289 leaves):

$$-\left(\left(i\, 2^{3+n}\, e^{2 i c - i d n x} \left(\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}\right)^n \left(1+e^{2 i (c+d x)}\right)^n \left(\frac{A\, e^{i d (2+n) x}\, \text{Hypergeometric2F1}\left[\frac{2+n}{2}, 4+n, \frac{4+n}{2}, -e^{2 i (c+d x)}\right]}{2+n} + \frac{1}{(4+n)(6+n)} e^{i (2 c+d (4+n) x)} \left(2 (A+2 C)(6+n)\, \text{Hypergeometric2F1}\left[\frac{4+n}{2}, 4+n, \frac{6+n}{2}, -e^{2 i (c+d x)}\right] + A\, e^{2 i (c+d x)} (4+n)\, \text{Hypergeometric2F1}\left[4+n, \frac{6+n}{2}, \frac{8+n}{2}, -e^{2 i (c+d x)}\right]\right)\right) \text{Sec}[c+d x]^{-2-n} (b\, \text{Sec}[c+d x])^n \left(A+C\, \text{Sec}[c+d x]^2\right)\right) \Big/ \left(d \left(A+2 C+A\, \text{Cos}[2 c+2 d x]\right)\right)\right)$$

Problem 29: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]\, (b\, \text{Sec}[c+d x])^n \left(A+C\, \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 5, 109 leaves, 4 steps):

$$\left((C (1+n)+A (2+n))\, \text{Hypergeometric2F1}\left[\frac{1}{2}, -\frac{n}{2}, \frac{2-n}{2}, \text{Cos}[c+d x]^2\right] (b\, \text{Sec}[c+d x])^n\, \text{Sin}[c+d x]\right) \Big/ \left(d\, n\, (2+n) \sqrt{\text{Sin}[c+d x]^2}\right) + \frac{C\, (b\, \text{Sec}[c+d x])^{1+n}\, \text{Tan}[c+d x]}{b\, d\, (2+n)}$$

Result (type 5, 284 leaves):

$$-\left(\left(i\, 2^{2+n}\, e^{i (c-d n x)} \left(\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}\right)^n \left(1+e^{2 i (c+d x)}\right)^n \left(\frac{A\, e^{i d (1+n) x}\, \text{Hypergeometric2F1}\left[\frac{1+n}{2}, 3+n, \frac{3+n}{2}, -e^{2 i (c+d x)}\right]}{1+n} + \frac{1}{3+n} 2 (A+2 C)\, e^{i (2 c+d (3+n) x)}\, \text{Hypergeometric2F1}\left[\frac{3+n}{2}, 3+n, \frac{5+n}{2}, -e^{2 i (c+d x)}\right] + \frac{1}{5+n} A\, e^{i (4 c+d (5+n) x)}\, \text{Hypergeometric2F1}\left[3+n, \frac{5+n}{2}, \frac{7+n}{2}, -e^{2 i (c+d x)}\right]\right) \text{Sec}[c+d x]^{-2-n} (b\, \text{Sec}[c+d x])^n \left(A+C\, \text{Sec}[c+d x]^2\right)\right) \Big/ \left(d \left(A+2 C+A\, \text{Cos}[2 c+2 d x]\right)\right)\right)$$

Problem 30: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 113 leaves, 3 steps):

$$-\left(\left(b\,(A+A\,n+C\,n)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1-n}{2},\frac{3-n}{2},\mathrm{Cos}[c+d\,x]^2\right]\,(b\,\mathrm{Sec}[c+d\,x])^{-1+n}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(1-n)\,(1+n)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)\right)+\frac{C\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Tan}[c+d\,x]}{d\,(1+n)}$$

Result (type 5, 262 leaves):

$$-\frac{1}{d\,n\,(2+n)\,(4+n)\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])}\,i\,2^{1+n}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^n\left(1+e^{2\,i\,(c+d\,x)}\right)^n\left(A\,(8+6\,n+n^2)\,\mathrm{Hypergeometric2F1}\left[\frac{n}{2},2+n,\frac{2+n}{2},-e^{2\,i\,(c+d\,x)}\right]+2\,(A+2\,C)\,e^{2\,i\,(c+d\,x)}\,n\,(4+n)\,\mathrm{Hypergeometric2F1}\left[\frac{2+n}{2},2+n,\frac{4+n}{2},-e^{2\,i\,(c+d\,x)}\right]+A\,e^{4\,i\,(c+d\,x)}\,n\,(2+n)\,\mathrm{Hypergeometric2F1}\left[2+n,\frac{4+n}{2},\frac{6+n}{2},-e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}[c+d\,x]^{-2-n}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

Problem 31: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 117 leaves, 4 steps):

$$\left(b^2\,(C\,(1-n)-A\,n)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{2-n}{2},\frac{4-n}{2},\mathrm{Cos}[c+d\,x]^2\right]\,(b\,\mathrm{Sec}[c+d\,x])^{-2+n}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(2-n)\,n\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+\frac{b\,C\,(b\,\mathrm{Sec}[c+d\,x])^{-1+n}\,\mathrm{Tan}[c+d\,x]}{d\,n}$$

Result (type 6, 6049 leaves):

$$-\left(\left(6\,\mathrm{Sec}[c+d\,x]^{-n}\,(b\,\mathrm{Sec}[c+d\,x])^n\left(\frac{1}{2}\,A\,\mathrm{Cos}[2\,(c+d\,x)]\,\mathrm{Sec}[c+d\,x]^{1+n}+\mathrm{Sec}[c+d\,x]\,\left(\frac{1}{2}\,A\,\mathrm{Sec}[c+d\,x]^n+C\,\mathrm{Sec}[c+d\,x]^n\right)\right)\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\left(\frac{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^n\right.\right.$$

$$\left(\left(A\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\right.$$
$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\right.$$
$$\left.\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$
$$\left(2\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/$$
$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\right.$$
$$\left.\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$
$$\left(C\,\text{AppellF1}\left[\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/$$
$$\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+(1+n)\right.$$
$$\left.\text{AppellF1}\left[\frac{3}{2},2+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Big/\left(d\left(-3\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n\right.\right.$$
$$\left(\left(A\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\right.$$
$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\right.$$
$$\left.\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$
$$\left(2\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/$$

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

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

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

$$6\,n\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+n}\left(\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}\right)$$

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

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

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

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

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

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

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

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

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

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

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

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

$$\left(A\,\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left(2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\left(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left((-1+n)\left(-\frac{3}{5}(2-n)\,\text{AppellF1}\left[\frac{5}{2},n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+n\left(-\frac{3}{5}(1-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\Bigg)\Bigg/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)+\left(2\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\left(-\frac{1}{3}(2-n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big) + 2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\Bigg(\left(-2+n\right)\left(-\frac{3}{5}(3-n)\,\text{AppellF1}\left[\frac{5}{2}, n, 4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{3}{5} n\,\text{AppellF1}\left[\frac{5}{2}, 1+n, 3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right) + n\left(-\frac{3}{5}(2-n)\,\text{AppellF1}\left[\frac{5}{2}, 1+n, 3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2}, 2+n, 2-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg) \Bigg/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2 \Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + 2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)^2\Bigg) -$$

$$\Bigg(C\,\text{AppellF1}\left[\frac{1}{2}, 1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\Bigg(2\left(n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + (1+n)\,\text{AppellF1}\left[\frac{3}{2}, 2+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + 3\left(\frac{1}{3} n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{1}{3}(1+n)\,\text{AppellF1}\left[\frac{3}{2}, 2+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right) + 2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\Bigg(n\left(-\frac{3}{5}(1-n)\,\text{AppellF1}\left[\frac{5}{2}, 1+n, 2-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2}, 2+n, 1-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right) + (1+n)\left(\frac{3}{5} n\,\text{AppellF1}\left[\frac{5}{2}, 2+n,\right.\right.$$

$$1-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\ \text{Tan}\Big[$$
$$\frac{1}{2}(c+d\,x)\Big]+\frac{3}{5}(2+n)\ \text{AppellF1}\left[\frac{5}{2},\ 3+n,\ -n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(\Bigg(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\ \Bigg(3\ \text{AppellF1}\Big[\frac{1}{2},\ 1+n,\ -n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+2\ \Bigg(n\ \text{AppellF1}\Big[\frac{3}{2},\ 1+n,\ 1-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+(1+n)\ \text{AppellF1}\Big[\frac{3}{2},\ 2+n,\ -n,\ \frac{5}{2},$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\Bigg)\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 32: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^2\,(b\,\text{Sec}[c+d\,x])^n\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 132 leaves, 4 steps):

$$-\Bigg(\Bigg(b^3\,(A\,(1-n)+C\,(2-n))\ \text{Hypergeometric2F1}\left[\frac{1}{2},\ \frac{3-n}{2},\ \frac{5-n}{2},\ \text{Cos}[c+d\,x]^2\right]\,(b\,\text{Sec}[c+d\,x])^{-3+n}$$
$$\text{Sin}[c+d\,x]\Bigg)\Bigg/\left(d\,(1-n)\,(3-n)\,\sqrt{\text{Sin}[c+d\,x]^2}\right)\Bigg)-\frac{b^2\,C\,(b\,\text{Sec}[c+d\,x])^{-2+n}\,\text{Tan}[c+d\,x]}{d\,(1-n)}$$

Result (type 6, 8395 leaves):

$$\Bigg(6\,\text{Sec}[c+d\,x]^{-n}\,(b\,\text{Sec}[c+d\,x])^n$$
$$\left(\frac{1}{2}A\,\text{Sec}[c+d\,x]^n+C\,\text{Sec}[c+d\,x]^n+\frac{1}{2}A\,\text{Cos}[2\,(c+d\,x)]\,\text{Sec}[c+d\,x]^n\right)$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{-3+n}$$
$$\Bigg(\Bigg(A\,\text{AppellF1}\left[\frac{1}{2},\ n,\ 1-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\Bigg)\Bigg/$$
$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\ n,\ 1-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2$$
$$\Bigg((-1+n)\,\text{AppellF1}\left[\frac{3}{2},\ n,\ 2-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\Big[$$

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

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

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Big) \Big/$$

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

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

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

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

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big) \Big/$$

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

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

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

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

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

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

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

$$\Big(d \Big(6 (-3+n) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 \left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

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

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

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

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

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

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

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Bigg)\Bigg/$$

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

$$2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-\left(4\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg/$$

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

$$\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.$$

$$\left.\left.1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$

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

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

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

$$\left.\left.\left.1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$

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

$$\Bigg(\Bigg(A\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\Bigg/$$

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

$$2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+\left(C\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Bigg)\Bigg/$$

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

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

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

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$

$$\frac{1}{3}\,n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,1-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\Big)\Big/$$

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

$$2\,\Big(\left(-1+n\right)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,2-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+$$

$$n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,1-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\Big)$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)+\Big(C\,\Big(-\frac{1}{3}\left(1-n\right)\,\mathrm{AppellF1}\Big[\frac{3}{2},\,n,\,2-n,\,\frac{5}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$

$$\frac{1}{3}\,n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,1-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\Big)\Big/$$

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

$$2\,\Big(\left(-1+n\right)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,2-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+$$

$$n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,1-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\Big)$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)-\Big(4\,A\,\mathrm{AppellF1}\Big[\frac{1}{2},\,n,\,2-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big/$$

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

$$2\,\Big(\left(-2+n\right)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+$$

$$n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\Big)$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)-\Big(4\,A\,\Big(-\frac{1}{3}\left(2-n\right)\,\mathrm{AppellF1}\Big[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$

$$\frac{1}{3}\,n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Big)\Big/$$

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

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

$$\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+2\Big((-1+n)\,\text{AppellF1}\Big[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Bigg)^2-$$

$$\Bigg(C\,\text{AppellF1}\Big[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big(1+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)^2\Bigg(2\Big((-1+n)\,\text{AppellF1}\Big[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+3\Big(-\frac{1}{3}(1-n)\,\text{AppellF1}\Big[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\frac{1}{3}n\,\text{AppellF1}\Big[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)+2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big((-1+n)\Big(-\frac{3}{5}(2-n)\,\text{AppellF1}\Big[\frac{5}{2},n,3-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\frac{3}{5}n\,\text{AppellF1}\Big[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)+n\Big(-\frac{3}{5}(1-n)\,\text{AppellF1}\Big[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\frac{3}{5}(1+n)\,\text{AppellF1}\Big[\frac{5}{2},2+n,1-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)\Big)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+2\Big((-1+n)\,\text{AppellF1}\Big[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Bigg)^2+$$

$$\Bigg(4\,A\,\text{AppellF1}\Big[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left(2\left((-2+n)\,\mathrm{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.\right.$$

$$\left.n\,\mathrm{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\left(-\frac{1}{3}(2-n)\,\mathrm{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\right.\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{1}{3}n\,\mathrm{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\left.\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\left((-2+n)\left(-\frac{3}{5}(3-n)\,\mathrm{AppellF1}\left[\frac{5}{2},n,4-n,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$

$$-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{3}{5}n$$

$$\mathrm{AppellF1}\left[\frac{5}{2},1+n,3-n,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\left.\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+n\left(-\frac{3}{5}(2-n)\,\mathrm{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$

$$3-n,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\right.$$

$$\left.\frac{1}{2}(c+d\,x)\right]+\frac{3}{5}(1+n)\,\mathrm{AppellF1}\left[\frac{5}{2},2+n,2-n,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\right)\Big/$$

$$\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$2\left((-2+n)\,\mathrm{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$n\,\mathrm{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2-$$

$$\left(4\,A\,\mathrm{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

$$\left(2\left((-3+n)\,\mathrm{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.\right.$$

$$\left.n\,\mathrm{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\left(-\frac{1}{3}(3-n)\,\mathrm{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\right.\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{1}{3} n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg) + 2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 \Bigg(\Bigg((-3+n)\Bigg(-\frac{3}{5}(4-n)\,\text{AppellF1}\left[\frac{5}{2}, n, 5-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{3}{5} n\,\text{AppellF1}\left[\frac{5}{2}, 1+n, 4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg) + n\Bigg(-\frac{3}{5}(3-n)\,\text{AppellF1}\left[\frac{5}{2}, 1+n, 4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2}, 2+n, 3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

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

Problem 33: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3 \,(b\,\text{Sec}[c+d x])^n \left(A+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 5, 132 leaves, 4 steps):

$$-\left(\left(b^4 \left(A (2-n)+C (3-n)\right) \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{4-n}{2}, \frac{6-n}{2}, \text{Cos}[c+d x]^2\right] (b\,\text{Sec}[c+d x])^{-4+n} \text{Sin}[c+d x]\right)\Big/\left(d (2-n)(4-n)\sqrt{\text{Sin}[c+d x]^2}\right)\right) - \frac{b^3 C\,(b\,\text{Sec}[c+d x])^{-3+n}\,\text{Tan}[c+d x]}{d (2-n)}$$

Result (type 6, 12 608 leaves):

$$-\Bigg(\Bigg(6\,b\,\text{Sec}[c+d x]^{1-n} (b\,\text{Sec}[c+d x])^{-1+n} \left(\frac{1}{2} A\,\text{Cos}[2 (c+d x)]\,\text{Sec}[c+d x]^{-1+n} + \text{Cos}[c+d x]\left(\frac{1}{2} A\,\text{Sec}[c+d x]^n + C\,\text{Sec}[c+d x]^n\right)\right)$$

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

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

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

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

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

$$\bigg(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\Big((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\bigg)+\bigg(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\Big/$$

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

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

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

$$\Big(8\,A\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\Big/$$

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

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

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

$$\Big(d\Big(-6(-4+n)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

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

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

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

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

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

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

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^3\Big)\Big/$$

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

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

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

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

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Big)\Big/$$

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

$$2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(2\,C\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\left(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-3+n\right)\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-$$
$$\left(8\,A\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-4+n\right)\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)-$$
$$3\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^{-4+n}$$
$$\left(\left(\left(A\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right.\right.\right.$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^3\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\left(C\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

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

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

$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(6\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/$$

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

$$2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(2\,C\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/$$

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

$$2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\left(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/$$

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

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

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-$$

$$\left(8\,A\,\text{AppellF1}\left[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\Big/$$

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

$$6\,n\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^{1+n}$$

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

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

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

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\Big((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)+\Big(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\Big/$$

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

$$\Big(8\,A\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\Big/$$

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

$$6\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\left(\frac{1}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-4+n}$$

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

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

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)+$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Big)\Big/$$

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

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

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

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

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3}$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^3\Big)\Big/$$

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

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

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

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

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3}$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^3\Big)\Big/$$

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

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

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

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)-$$

$$\Big(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\Big/$$

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

$$
\begin{aligned}
&\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big) + \Big(12\,A\,\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\\
&\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\Big/\\
&\Big(3\,\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\\
&2\,\Big((-3+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\\
&n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Big)\\
&\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big) + \Big(12\,A\,\Big(-\frac{1}{3}(3-n)\,\text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2},\right.\\
&\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}\\
&n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\\
&\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\Big(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)\Big)\Big/\\
&\Big(3\,\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\\
&2\,\Big((-3+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\\
&n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\\
&\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big) -\\
&\Big(8\,A\,\Big(-\frac{1}{3}(4-n)\,\text{AppellF1}\left[\frac{3}{2}, n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\\
&\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 4-n, \frac{5}{2},\right.\\
&\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\Big)\Big/\\
&\Big(3\,\text{AppellF1}\left[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\\
&2\,\Big((-4+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\\
&n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Big)\\
&\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big) - \Big(A\,\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\\
&\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Big(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)^3\\
&\Big(2\,\Big((-1+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\\
&n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Big)
\end{aligned}
$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\left(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$
$$\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$
$$\left(\left(-1+n\right)\left(-\frac{3}{5}(2-n)\,\text{AppellF1}\left[\frac{5}{2},n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$
$$\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+n\left(-\frac{3}{5}(1-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$
$$\left.2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\right.$$
$$\left.\frac{1}{2}(c+d\,x)\right]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\right.$$
$$\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2-$$
$$\left(C\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^3$$
$$\left(2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\left(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$
$$\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\left(\left(-1+n\right)\left(-\frac{3}{5}\left(2-n\right)\text{AppellF1}\left[\frac{5}{2},n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+n\left(-\frac{3}{5}\left(1-n\right)\text{AppellF1}\left[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}\left(1+n\right)\text{AppellF1}\left[\frac{5}{2},2+n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\right)\right)\right)\Big/$$

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

$$\left(6\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right.$$

$$\left(2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+3\left(-\frac{1}{3}\left(2-n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\left(\left(-2+n\right)\left(-\frac{3}{5}\left(3-n\right)\text{AppellF1}\left[\frac{5}{2},n,4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+n\left(-\frac{3}{5}\left(2-n\right)\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.\right.$$

$$3-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}\left(1+n\right)\ \text{AppellF1}\left[\frac{5}{2},\ 2+n,\ 2-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\ \text{AppellF1}\left[\frac{1}{2},\ n,\ 2-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+2\ \Bigg(\left(-2+n\right)\ \text{AppellF1}\left[\frac{3}{2},\ n,\ 3-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+n\ \text{AppellF1}\left[\frac{3}{2},\ 1+n,\ 2-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\Bigg)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)^2+$$

$$\Bigg(2\ C\ \text{AppellF1}\left[\frac{1}{2},\ n,\ 2-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2$$

$$\Bigg(2\ \Bigg(\left(-2+n\right)\ \text{AppellF1}\left[\frac{3}{2},\ n,\ 3-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+n\ \text{AppellF1}\left[\frac{3}{2},\ 1+n,\ 2-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\Bigg)$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+3\ \Bigg(-\frac{1}{3}\left(2-n\right)\ \text{AppellF1}\left[\frac{3}{2},\ n,\ 3-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{3}\,n\ \text{AppellF1}\left[\frac{3}{2},\ 1+n,\ 2-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)+2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\Bigg(\left(-2+n\right)\ \Bigg(-\frac{3}{5}\left(3-n\right)\ \text{AppellF1}\left[\frac{5}{2},\ n,\ 4-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}\,n\ \text{AppellF1}\left[\frac{5}{2},\ 1+n,\ 3-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)+n\ \Bigg(-\frac{3}{5}\left(2-n\right)\ \text{AppellF1}\left[\frac{5}{2},\ 1+n,\ 3-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}\left(1+n\right)\ \text{AppellF1}\left[\frac{5}{2},\ 2+n,\ 2-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

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

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

$$\Bigg(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\left(-\frac{1}{3}(3-n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\right.$$

$$\left.\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\Bigg((-3+n)\left(-\frac{3}{5}(4-n)\,\text{AppellF1}\left[\frac{5}{2},n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\right.$$

$$\left.\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+n\left(-\frac{3}{5}(3-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$

$$4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

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

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

$$\Bigg(8\,A\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\left(2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\left(-\frac{1}{3}(4-n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left((-4+n)\left(-\frac{3}{5}(5-n)\,\text{AppellF1}\left[\frac{5}{2},n,6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+n\left(-\frac{3}{5}(4-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\Bigg)\Bigg)\Bigg)$$

Problem 34: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^{5/2}\,(b\,\text{Sec}[c+d\,x])^n\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 142 leaves, 4 steps):

$$\frac{2\,C\,\text{Sec}[c+d\,x]^{7/2}\,\left(b\,\text{Sec}[c+d\,x]\right)^n\,\text{Sin}[c+d\,x]}{d\,(7+2\,n)}+\left(2\,\left(C\,(5+2\,n)+A\,(7+2\,n)\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1}{4}\,(-3-2\,n),\,\frac{1}{4}\,(1-2\,n),\,\text{Cos}[c+d\,x]^2\right]\,\text{Sec}[c+d\,x]^{3/2}\,\left(b\,\text{Sec}[c+d\,x]\right)^n\,\text{Sin}[c+d\,x]\right)\Big/\left(d\,(3+2\,n)\,(7+2\,n)\,\sqrt{\text{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 341 leaves):

$$-\frac{1}{d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)}\,i\,2^{\frac{9}{2}+n}\,e^{2\,i\,c-\frac{1}{2}\,i\,d\,(1+2\,n)\,x}\,\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{\frac{1}{2}+n}\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{\frac{1}{2}+n}\left(\frac{1}{5+2\,n}A\,e^{\frac{1}{2}\,i\,d\,(5+2\,n)\,x}\,\text{Hypergeometric2F1}\left[\frac{9}{2}+n,\,\frac{1}{4}\,(5+2\,n),\,\frac{1}{4}\,(9+2\,n),\,-e^{2\,i\,(c+d\,x)}\right]+\left(e^{\frac{1}{2}\,i\,(4\,c+d\,(9+2\,n)\,x)}\,\left(2\,(A+2\,C)\,(13+2\,n)\,\text{Hypergeometric2F1}\left[\frac{9}{2}+n,\,\frac{1}{4}\,(9+2\,n),\,\frac{1}{4}\,(13+2\,n),\,-e^{2\,i\,(c+d\,x)}\right]+A\,e^{2\,i\,(c+d\,x)}\,(9+2\,n)\,\text{Hypergeometric2F1}\left[\frac{9}{2}+n,\,\frac{1}{4}\,(13+2\,n),\,\frac{1}{4}\,(17+2\,n),\,-e^{2\,i\,(c+d\,x)}\right]\right)\right)\Big/\left((9+2\,n)\,(13+2\,n)\right)\right)\,\text{Sec}[c+d\,x]^{-2-n}\,\left(b\,\text{Sec}[c+d\,x]\right)^n\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

Problem 35: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^{3/2}\,\left(b\,\text{Sec}[c+d\,x]\right)^n\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 142 leaves, 4 steps):

$$\frac{2\,C\,\text{Sec}[c+d\,x]^{5/2}\,\left(b\,\text{Sec}[c+d\,x]\right)^n\,\text{Sin}[c+d\,x]}{d\,(5+2\,n)}+\left(2\,\left(C\,(3+2\,n)+A\,(5+2\,n)\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1}{4}\,(-1-2\,n),\,\frac{1}{4}\,(3-2\,n),\,\text{Cos}[c+d\,x]^2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(b\,\text{Sec}[c+d\,x]\right)^n\,\text{Sin}[c+d\,x]\right)\Big/\left(d\,(1+2\,n)\,(5+2\,n)\,\sqrt{\text{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 335 leaves):

$$-\frac{1}{d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)}\,\mathrm{i}\,2^{\frac{7}{2}+n}\,e^{-\frac{1}{2}\mathrm{i}\,d\,(3+2n)\,x}\left(\frac{e^{\mathrm{i}\,(c+dx)}}{1+e^{2\mathrm{i}\,(c+dx)}}\right)^{\frac{3}{2}+n}\left(1+e^{2\mathrm{i}\,(c+dx)}\right)^{\frac{3}{2}+n}$$
$$\left(\frac{1}{3+2n}A\,e^{\frac{1}{2}\mathrm{i}\,d\,(3+2n)\,x}\,\text{Hypergeometric2F1}\left[\frac{7}{2}+n,\frac{1}{4}(3+2n),\frac{1}{4}(7+2n),-e^{2\mathrm{i}\,(c+dx)}\right]+\right.$$
$$\left(e^{\frac{1}{2}\mathrm{i}\,(4c+d\,(7+2n)\,x)}\left(2\,(A+2C)\,(11+2n)\right.\right.$$
$$\text{Hypergeometric2F1}\left[\frac{7}{2}+n,\frac{1}{4}(7+2n),\frac{1}{4}(11+2n),-e^{2\mathrm{i}\,(c+dx)}\right]+A\,e^{2\mathrm{i}\,(c+dx)}$$
$$\left.\left.\left.(7+2n)\,\text{Hypergeometric2F1}\left[\frac{7}{2}+n,\frac{1}{4}(11+2n),\frac{1}{4}(15+2n),-e^{2\mathrm{i}\,(c+dx)}\right]\right)\right)\Big/$$
$$\left.\left((7+2n)\,(11+2n)\right)\right)\operatorname{Sec}[c+dx]^{-2-n}\left(b\operatorname{Sec}[c+dx]\right)^{n}\left(A+C\operatorname{Sec}[c+dx]^{2}\right)$$

Problem 36: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\sqrt{\operatorname{Sec}[c+dx]}\,\left(b\operatorname{Sec}[c+dx]\right)^{n}\left(A+C\operatorname{Sec}[c+dx]^{2}\right)\,dx$$

Optimal (type 5, 140 leaves, 4 steps):

$$\frac{2C\operatorname{Sec}[c+dx]^{3/2}\left(b\operatorname{Sec}[c+dx]\right)^{n}\operatorname{Sin}[c+dx]}{d\,(3+2n)}-$$
$$\left(2\left(C+2Cn+A\,(3+2n)\right)\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}(1-2n),\frac{1}{4}(5-2n),\operatorname{Cos}[c+dx]^{2}\right]\right.$$
$$\left.\left(b\operatorname{Sec}[c+dx]\right)^{n}\operatorname{Sin}[c+dx]\right)\Big/\left(d\,(1-2n)\,(3+2n)\sqrt{\operatorname{Sec}[c+dx]}\,\sqrt{\operatorname{Sin}[c+dx]^{2}}\right)$$

Result (type 5, 336 leaves):

$$-\frac{1}{A+2C+A\operatorname{Cos}[2c+2dx]}\,\mathrm{i}\,2^{\frac{5}{2}+n}\,e^{-\frac{1}{2}\mathrm{i}\,d\,(1+2n)\,x}\left(\frac{e^{\mathrm{i}\,(c+dx)}}{1+e^{2\mathrm{i}\,(c+dx)}}\right)^{\frac{1}{2}+n}\left(1+e^{2\mathrm{i}\,(c+dx)}\right)^{\frac{1}{2}+n}$$
$$\left(\frac{1}{d+2dn}A\,e^{\frac{1}{2}\mathrm{i}\,(d+2dn)\,x}\,\text{Hypergeometric2F1}\left[\frac{5}{2}+n,\frac{1}{4}(1+2n),\frac{1}{4}(5+2n),-e^{2\mathrm{i}\,(c+dx)}\right]+\right.$$
$$\left(e^{\frac{1}{2}\mathrm{i}\,(4c+d\,(5+2n)\,x)}\left(2\,(A+2C)\,(9+2n)\right.\right.$$
$$\text{Hypergeometric2F1}\left[\frac{5}{2}+n,\frac{1}{4}(5+2n),\frac{1}{4}(9+2n),-e^{2\mathrm{i}\,(c+dx)}\right]+A\,e^{2\mathrm{i}\,(c+dx)}$$
$$\left.\left.\left.(5+2n)\,\text{Hypergeometric2F1}\left[\frac{5}{2}+n,\frac{1}{4}(9+2n),\frac{1}{4}(13+2n),-e^{2\mathrm{i}\,(c+dx)}\right]\right)\right)\Big/$$
$$\left.\left(d\,(5+2n)\,(9+2n)\right)\right)\operatorname{Sec}[c+dx]^{-2-n}\left(b\operatorname{Sec}[c+dx]\right)^{n}\left(A+C\operatorname{Sec}[c+dx]^{2}\right)$$

Problem 37: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 5, 141 leaves, 4 steps):

$$\frac{2\,C\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^n\,\mathrm{Sin}[c+d\,x]}{d\,(1+2\,n)}-\left(2\,\left(A-C\,(1-2\,n)+2\,A\,n\right)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}\,(3-2\,n),\frac{1}{4}\,(7-2\,n),\mathrm{Cos}[c+d\,x]^2\right]\left(b\,\mathrm{Sec}[c+d\,x]\right)^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(3-2\,n)\,(1+2\,n)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 311 leaves):

$$-\frac{1}{d\,(-1+2\,n)\,(3+2\,n)\,(7+2\,n)\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)}\,i\,2^{\frac{3}{2}+n}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{-\frac{1}{2}+n}\left(1+e^{2\,i\,(c+d\,x)}\right)^{-\frac{1}{2}+n}\left(A\,\left(21+20\,n+4\,n^2\right)\mathrm{Hypergeometric2F1}\left[\frac{3}{2}+n,\frac{1}{4}\,(-1+2\,n),\frac{1}{4}\,(3+2\,n),-e^{2\,i\,(c+d\,x)}\right]+e^{2\,i\,(c+d\,x)}\,(-1+2\,n)\left(2\,(A+2\,C)\,(7+2\,n)\,\mathrm{Hypergeometric2F1}\left[\frac{3}{2}+n,\frac{1}{4}\,(3+2\,n),\frac{1}{4}\,(7+2\,n),-e^{2\,i\,(c+d\,x)}\right]+A\,e^{2\,i\,(c+d\,x)}\,(3+2\,n)\,\mathrm{Hypergeometric2F1}\left[\frac{3}{2}+n,\frac{1}{4}\,(7+2\,n),\frac{1}{4}\,(11+2\,n),-e^{2\,i\,(c+d\,x)}\right]\right)\right)\mathrm{Sec}[c+d\,x]^{-2-n}\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

Problem 38: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\mathrm{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 5, 140 leaves, 4 steps):

$$-\frac{2\,C\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^n\,\mathrm{Sin}[c+d\,x]}{d\,(1-2\,n)\,\sqrt{\mathrm{Sec}[c+d\,x]}}-\left(2\,\left(A+C\,(3-2\,n)-2\,A\,n\right)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}\,(5-2\,n),\frac{1}{4}\,(9-2\,n),\mathrm{Cos}[c+d\,x]^2\right]\left(b\,\mathrm{Sec}[c+d\,x]\right)^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(1-2\,n)\,(5-2\,n)\,\mathrm{Sec}[c+d\,x]^{5/2}\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 343 leaves):

$$-\frac{1}{A+2C+A\,\mathrm{Cos}[2c+2dx]}\,\mathrm{i}\,2^{\frac{1}{2}+n}\,e^{-\frac{1}{2}\mathrm{i}(4c+d(1+2n)x)}\left(\frac{e^{\mathrm{i}(c+dx)}}{1+e^{2\mathrm{i}(c+dx)}}\right)^{\frac{1}{2}+n}\left(1+e^{2\mathrm{i}(c+dx)}\right)^{\frac{1}{2}+n}\left(\frac{1}{d(-3+2n)}A\,e^{\frac{1}{2}\mathrm{i}d(-3+2n)x}\right.$$
$$\mathrm{Hypergeometric2F1}\left[\frac{1}{2}+n,\frac{1}{4}(-3+2n),\frac{1}{4}(1+2n),-e^{2\mathrm{i}(c+dx)}\right]+\left(e^{\frac{1}{2}\mathrm{i}(4c+d(1+2n)x)}\right.$$
$$\left(2(A+2C)(5+2n)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}+n,\frac{1}{4}(1+2n),\frac{1}{4}(5+2n),-e^{2\mathrm{i}(c+dx)}\right]+\right.$$
$$\left.\left.\left.A\,e^{2\mathrm{i}(c+dx)}(1+2n)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}+n,\frac{1}{4}(5+2n),\frac{1}{4}(9+2n),-e^{2\mathrm{i}(c+dx)}\right]\right)\right)\Big/\right.$$
$$\left.(d(1+2n)(5+2n))\right)\mathrm{Sec}[c+dx]^{-2-n}(b\,\mathrm{Sec}[c+dx])^n\left(A+C\,\mathrm{Sec}[c+dx]^2\right)$$

Problem 39: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(b\,\mathrm{Sec}[c+dx])^n\left(A+C\,\mathrm{Sec}[c+dx]^2\right)}{\mathrm{Sec}[c+dx]^{5/2}}\,dx$$

Optimal (type 5, 142 leaves, 4 steps):

$$-\frac{2C(b\,\mathrm{Sec}[c+dx])^n\,\mathrm{Sin}[c+dx]}{d(3-2n)\,\mathrm{Sec}[c+dx]^{3/2}}-$$
$$\left(2(A(3-2n)+C(5-2n))\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}(7-2n),\frac{1}{4}(11-2n),\mathrm{Cos}[c+dx]^2\right]\right.$$
$$\left.(b\,\mathrm{Sec}[c+dx])^n\,\mathrm{Sin}[c+dx]\right)\Big/\left(d(3-2n)(7-2n)\,\mathrm{Sec}[c+dx]^{7/2}\sqrt{\mathrm{Sin}[c+dx]^2}\right)$$

Result (type 5, 338 leaves):

$$-\frac{1}{d(A+2C+A\,\mathrm{Cos}[2c+2dx])}\mathrm{i}\,2^{-\frac{1}{2}+n}\,e^{-\frac{1}{2}\mathrm{i}(4c+d(-1+2n)x)}\left(\frac{e^{\mathrm{i}(c+dx)}}{1+e^{2\mathrm{i}(c+dx)}}\right)^{-\frac{1}{2}+n}\left(1+e^{2\mathrm{i}(c+dx)}\right)^{-\frac{1}{2}+n}$$
$$\left(\frac{1}{-5+2n}A\,e^{\frac{1}{2}\mathrm{i}d(-5+2n)x}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2}+n,\frac{1}{4}(-5+2n),\frac{1}{4}(-1+2n),-e^{2\mathrm{i}(c+dx)}\right]+\right.$$
$$\frac{1}{-3+4n+4n^2}e^{\frac{1}{2}\mathrm{i}(4c+d(-1+2n)x)}$$
$$\left(2(A+2C)(3+2n)\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2}+n,\frac{1}{4}(-1+2n),\frac{1}{4}(3+2n),-e^{2\mathrm{i}(c+dx)}\right]+\right.$$
$$\left.\left.A\,e^{2\mathrm{i}(c+dx)}(-1+2n)\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2}+n,\frac{1}{4}(3+2n),\frac{1}{4}(7+2n),-e^{2\mathrm{i}(c+dx)}\right]\right)\right)$$
$$\mathrm{Sec}[c+dx]^{-2-n}(b\,\mathrm{Sec}[c+dx])^n\left(A+C\,\mathrm{Sec}[c+dx]^2\right)$$

Problem 41: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^2 \,(b\,\text{Sec}[c+d x])^{2/3} \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 5, 154 leaves, 7 steps):

$$\left(3\,(11 A+8 C)\,\text{Hypergeometric2F1}\left[-\frac{5}{6},\frac{1}{2},\frac{1}{6},\text{Cos}[c+d x]^2\right](b\,\text{Sec}[c+d x])^{5/3}\,\text{Sin}[c+d x]\right)\Big/\left(55\,b\,d\,\sqrt{\text{Sin}[c+d x]^2}\right)+\left(3\,B\,\text{Hypergeometric2F1}\left[-\frac{4}{3},\frac{1}{2},-\frac{1}{3},\text{Cos}[c+d x]^2\right](b\,\text{Sec}[c+d x])^{8/3}\,\text{Sin}[c+d x]\right)\Big/\left(8\,b^2\,d\,\sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d x])^{8/3}\,\text{Tan}[c+d x]}{11\,b^2\,d}$$

Result (type 5, 461 leaves):

$$-\left(\left(3\,i\,e^{-i(c+d x)}\left(\frac{e^{i(c+d x)}}{1+e^{2 i(c+d x)}}\right)^{2/3}\left(275\,B\left(1+e^{2 i(c+d x)}\right)+275\,B\left(-1+e^{2 i c}\right)\left(1+e^{2 i(c+d x)}\right)^{2/3}\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2 i(c+d x)}\right]+16\,(11 A+8 C)\,e^{i(c+d x)}\left(-1+e^{2 i c}\right)\left(1+e^{2 i(c+d x)}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2 i(c+d x)}\right]\right)(b\,\text{Sec}[c+d x])^{2/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(220\times 2^{1/3}\,d\left(-1+e^{2 i c}\right)(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,\text{Sec}[c+d x]^{8/3}\right)\right)+\left(\text{Cos}[c+d x]^2\,(b\,\text{Sec}[c+d x])^{2/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\left(\frac{15\,B\,\text{Cos}[d x]\,\text{Csc}[c]}{8 d}+\frac{6\,C\,\text{Sec}[c]\,\text{Sec}[c+d x]^3\,\text{Sin}[d x]}{11 d}+\frac{3\,\text{Sec}[c]\,\text{Sec}[c+d x]^2\,(8\,C\,\text{Sin}[c]+11\,B\,\text{Sin}[d x])}{44 d}+\frac{1}{220 d}3\,\text{Sec}[c]\,\text{Sec}[c+d x]\,(55\,B\,\text{Sin}[c]+88\,A\,\text{Sin}[d x]+64\,C\,\text{Sin}[d x])+\frac{6\,(11 A+8 C)\,\text{Tan}[c]}{55 d}\right)\right)\Big/(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])$$

Problem 42: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]\,(b\,\text{Sec}[c+d x])^{2/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 5, 151 leaves, 7 steps):

$$\left(3\,(8A+5C)\,\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{2},\frac{2}{3},\text{Cos}[c+d x]^2\right]\,(b\,\text{Sec}[c+d x])^{2/3}\,\text{Sin}[c+d x]\right)\Big/\left(16\,d\,\sqrt{\text{Sin}[c+d x]^2}\right)+\left(3\,B\,\text{Hypergeometric2F1}\left[-\frac{5}{6},\frac{1}{2},\frac{1}{6},\text{Cos}[c+d x]^2\right]\,(b\,\text{Sec}[c+d x])^{5/3}\,\text{Sin}[c+d x]\right)\Big/\left(5\,b\,d\,\sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d x])^{5/3}\,\text{Tan}[c+d x]}{8\,b\,d}$$

Result (type 5, 689 leaves) :

$$\frac{1}{b}\left(-\left(\left(3\,A\,e^{-i\,(2c+d x)}\left(\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}\right)^{2/3}\text{Csc}[c]\,\left(1+e^{2 i\,(c+d x)}+\left(-1+e^{2 i c}\right)\left(1+e^{2 i\,(c+d x)}\right)^{2/3}\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2 i\,(c+d x)}\right]\right)(b\,\text{Sec}[c+d x])^{5/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(2^{1/3}\,d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\text{Sec}[c+d x]^{11/3}\right)\right)-\left(15\,C\,e^{-i\,(2c+d x)}\left(\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}\right)^{2/3}\text{Csc}[c]\left(1+e^{2 i\,(c+d x)}+\left(-1+e^{2 i c}\right)\left(1+e^{2 i\,(c+d x)}\right)^{2/3}\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2 i\,(c+d x)}\right]\right)(b\,\text{Sec}[c+d x])^{5/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(8\times 2^{1/3}\,d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\text{Sec}[c+d x]^{11/3}\right)-\left(6\,i\,2^{2/3}\,B\left(\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}\right)^{2/3}\left(1+e^{2 i\,(c+d x)}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2 i\,(c+d x)}\right](b\,\text{Sec}[c+d x])^{5/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(5\,d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\text{Sec}[c+d x]^{11/3}\right)+\left(\text{Cos}[c+d x]^3\,(b\,\text{Sec}[c+d x])^{5/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\left(\frac{3\,(8A+5C)\,\text{Cos}[d x]\,\text{Csc}[c]}{8\,d}+\frac{3\,C\,\text{Sec}[c]\,\text{Sec}[c+d x]^2\,\text{Sin}[d x]}{4\,d}+\frac{3\,\text{Sec}[c]\,\text{Sec}[c+d x]\,(5\,C\,\text{Sin}[c]+8\,B\,\text{Sin}[d x])}{20\,d}+\frac{6\,B\,\text{Tan}[c]}{5\,d}\right)\right)\Big/\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\right)$$

Problem 43: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (b\,\text{Sec}[c+d\,x])^{2/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 5, 146 leaves, 6 steps):

$$-\left(\left(3\,b\,(5\,A+2\,C)\,\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\text{Cos}[c+d\,x]^2\right]\text{Sin}[c+d\,x]\right)\Big/\left(5\,d\,(b\,\text{Sec}[c+d\,x])^{1/3}\sqrt{\text{Sin}[c+d\,x]^2}\right)\right)+\left(3\,B\,\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{2},\frac{2}{3},\text{Cos}[c+d\,x]^2\right](b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Sin}[c+d\,x]\right)\Big/\left(2\,d\sqrt{\text{Sin}[c+d\,x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Tan}[c+d\,x]}{5\,d}$$

Result (type 5, 311 leaves):

$$\left((b\,\text{Sec}[c+d\,x])^{2/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(-\left(\left(3\,i\,2^{2/3}\,e^{-i\,(c+d\,x)}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{2/3}\left(5\,B\left(1+e^{2\,i\,(c+d\,x)}\right)+5\,B\left(-1+e^{2\,i\,c}\right)\left(1+e^{2\,i\,(c+d\,x)}\right)^{2/3}\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2\,i\,(c+d\,x)}\right]+(5\,A+2\,C)\,e^{i\,(c+d\,x)}\left(-1+e^{2\,i\,c}\right)\left(1+e^{2\,i\,(c+d\,x)}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2\,i\,(c+d\,x)}\right]\right)\right)\Big/\left(d\left(-1+e^{2\,i\,c}\right)\text{Sec}[c+d\,x]^{8/3}\right)\right)+\frac{1}{d}3\,\text{Cos}[c+d\,x]\,(5\,B\,\text{Cos}[d\,x]\,\text{Cos}[c+d\,x]\,\text{Csc}[c]+2\,C\,\text{Sin}[c+d\,x])\right)\right)\Big/\left(5\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)])\right)$$

Problem 47: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^2\,(b\,\text{Sec}[c+d\,x])^{4/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 5, 154 leaves, 7 steps):

$$\left(3\,(13 A+10 C)\,\text{Hypergeometric2F1}\left[-\frac{7}{6},\frac{1}{2},-\frac{1}{6},\text{Cos}[c+d x]^2\right](b\,\text{Sec}[c+d x])^{7/3}\,\text{Sin}[c+d x]\right)\Big/\left(91\, b\, d\sqrt{\text{Sin}[c+d x]^2}\right)+\left(3 B\,\text{Hypergeometric2F1}\left[-\frac{5}{3},\frac{1}{2},-\frac{2}{3},\text{Cos}[c+d x]^2\right](b\,\text{Sec}[c+d x])^{10/3}\,\text{Sin}[c+d x]\right)\Big/\left(10\, b^2\, d\sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3 C\,(b\,\text{Sec}[c+d x])^{10/3}\,\text{Tan}[c+d x]}{13\, b^2\, d}$$

Result (type 5, 759 leaves) :

$$-\left(\left(12\times 2^{1/3} A\, e^{-i(2c+dx)}\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{1/3}\text{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\left(1+e^{2i(c+dx)}\right)^{1/3}\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2i(c+dx)}\right]\right)(b\,\text{Sec}[c+d x])^{4/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(7 d\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,\text{Sec}[c+d x]^{10/3}\right)\right)-$$

$$\left(120\times 2^{1/3} C\, e^{-i(2c+dx)}\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{1/3}\text{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\left(1+e^{2i(c+dx)}\right)^{1/3}\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2i(c+dx)}\right]\right)(b\,\text{Sec}[c+d x])^{4/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(91 d\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,\text{Sec}[c+d x]^{10/3}\right)-$$

$$\left(21\, i\, B\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{1/3}\left(1+e^{2i(c+dx)}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2i(c+dx)}\right](b\,\text{Sec}[c+d x])^{4/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(10\times 2^{2/3} d\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,\text{Sec}[c+d x]^{10/3}\right)+$$

$$\left(\text{Cos}[c+d x]^3\,(b\,\text{Sec}[c+d x])^{4/3}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\left(\frac{24\,(13 A+10 C)\,\text{Cos}[d x]\,\text{Csc}[c]}{91 d}+\frac{6 C\,\text{Sec}[c]\,\text{Sec}[c+d x]^4\,\text{Sin}[d x]}{13 d}+\frac{3\,\text{Sec}[c]\,\text{Sec}[c+d x]^3\,(10 C\,\text{Sin}[c]+13 B\,\text{Sin}[d x])}{65 d}+\frac{1}{1820 d}3\,\text{Sec}[c]\,\text{Sec}[c+d x]\,(520 A\,\text{Sin}[c]+400 C\,\text{Sin}[c]+637 B\,\text{Sin}[d x])+\frac{1}{455 d}3\,\text{Sec}[c]\,\text{Sec}[c+d x]^2\,(91 B\,\text{Sin}[c]+130 A\,\text{Sin}[d x]+100 C\,\text{Sin}[d x])+\frac{21 B\,\text{Tan}[c]}{20 d}\right)\right)\Big/\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)$$

Problem 48: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x] \, (b \,\text{Sec}[c+d x])^{4/3} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 5, 151 leaves, 7 steps):

$$\left(3 \,(10 A+7 C) \,\text{Hypergeometric2F1}\left[-\frac{2}{3},\frac{1}{2},\frac{1}{3},\text{Cos}[c+d x]^2\right] (b \,\text{Sec}[c+d x])^{4/3} \,\text{Sin}[c+d x]\right) \Big/ \left(40 d \sqrt{\text{Sin}[c+d x]^2}\right)+\left(3 B \,\text{Hypergeometric2F1}\left[-\frac{7}{6},\frac{1}{2},-\frac{1}{6},\text{Cos}[c+d x]^2\right] (b \,\text{Sec}[c+d x])^{7/3} \,\text{Sin}[c+d x]\right) \Big/ \left(7 b d \sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3 C (b \,\text{Sec}[c+d x])^{7/3} \,\text{Tan}[c+d x]}{10 b d}$$

Result (type 5, 465 leaves):

$$\frac{1}{b}\left(-\left(\left(3 i e^{-i (c+d x)} \left(\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}\right)^{1/3} \left(160 B \left(1+e^{2 i (c+d x)}\right)+160 B \left(-1+e^{2 i c}\right) \left(1+e^{2 i (c+d x)}\right)^{1/3} \text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2 i (c+d x)}\right]+7 (10 A+7 C) e^{i (c+d x)} \left(-1+e^{2 i c}\right) \left(1+e^{2 i (c+d x)}\right)^{1/3} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2 i (c+d x)}\right]\right) (b \,\text{Sec}[c+d x])^{7/3} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)\right) \Big/ \left(70 \times 2^{2/3} d \left(-1+e^{2 i c}\right) (A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]) \,\text{Sec}[c+d x]^{13/3}\right)\right)+\left(\text{Cos}[c+d x]^4 (b \,\text{Sec}[c+d x])^{7/3} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \left(\frac{24 B \,\text{Cos}[d x] \,\text{Csc}[c]}{7 d}+\frac{3 C \,\text{Sec}[c] \,\text{Sec}[c+d x]^3 \,\text{Sin}[d x]}{5 d}+\frac{3 \,\text{Sec}[c] \,\text{Sec}[c+d x]^2 (7 C \,\text{Sin}[c]+10 B \,\text{Sin}[d x])}{35 d}+\frac{1}{140 d} 3 \,\text{Sec}[c] \,\text{Sec}[c+d x] (40 B \,\text{Sin}[c]+70 A \,\text{Sin}[d x]+49 C \,\text{Sin}[d x])+\frac{3 (10 A+7 C) \,\text{Tan}[c]}{20 d}\right)\right) \Big/ (A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x])\right)$$

Problem 49: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (b \,\text{Sec}[c+d x])^{4/3} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 5, 146 leaves, 6 steps):

$$\left(3\,b\,(7\,A+4\,C)\,\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{1}{2},\frac{5}{6},\text{Cos}[c+d\,x]^2\right]\,(b\,\text{Sec}[c+d\,x])^{1/3}\,\text{Sin}[c+d\,x]\right)\Big/\left(7\,d\,\sqrt{\text{Sin}[c+d\,x]^2}\right)+\left(3\,B\,\text{Hypergeometric2F1}\left[-\frac{2}{3},\frac{1}{2},\frac{1}{3},\text{Cos}[c+d\,x]^2\right]\,(b\,\text{Sec}[c+d\,x])^{4/3}\,\text{Sin}[c+d\,x]\right)\Big/\left(4\,d\,\sqrt{\text{Sin}[c+d\,x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d\,x])^{4/3}\,\text{Tan}[c+d\,x]}{7\,d}$$

Result (type 5, 683 leaves):

$$-\left(\left(3\times 2^{1/3}\,A\,e^{-i\,(2\,c+d\,x)}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{1/3}\text{Csc}[c]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,i\,(c+d\,x)}\right]\right)(b\,\text{Sec}[c+d\,x])^{4/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{10/3}\right)\right)-$$
$$\left(12\times 2^{1/3}\,C\,e^{-i\,(2\,c+d\,x)}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{1/3}\text{Csc}[c]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,i\,(c+d\,x)}\right]\right)(b\,\text{Sec}[c+d\,x])^{4/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(7\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{10/3}\right)-$$
$$\left(3\,i\,B\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{1/3}\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2\,i\,(c+d\,x)}\right](b\,\text{Sec}[c+d\,x])^{4/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(2^{2/3}\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{10/3}\right)+$$
$$\left(\text{Cos}[c+d\,x]^3\,(b\,\text{Sec}[c+d\,x])^{4/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{6\,(7\,A+4\,C)\,\text{Cos}[d\,x]\,\text{Csc}[c]}{7\,d}+\frac{6\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{7\,d}+\frac{3\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(4\,C\,\text{Sin}[c]+7\,B\,\text{Sin}[d\,x])}{14\,d}+\frac{3\,B\,\text{Tan}[c]}{2\,d}\right)\right)\Big/\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

Problem 50: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,(b\,\text{Sec}[c+d\,x])^{4/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 146 leaves, 7 steps):

$$-\left(\left(3\,b^2\,(4\,A+C)\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{4}{3},\text{Cos}[c+d\,x]^2\right]\text{Sin}[c+d\,x]\right)\Big/\left(8\,d\,(b\,\text{Sec}[c+d\,x])^{2/3}\sqrt{\text{Sin}[c+d\,x]^2}\right)\right)+\frac{1}{d\,\sqrt{\text{Sin}[c+d\,x]^2}}3\,b\,B\,\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{1}{2},\frac{5}{6},\text{Cos}[c+d\,x]^2\right](b\,\text{Sec}[c+d\,x])^{1/3}\,\text{Sin}[c+d\,x]+\frac{3\,b\,C\,(b\,\text{Sec}[c+d\,x])^{1/3}\,\text{Tan}[c+d\,x]}{4\,d}$$

Result (type 5, 303 leaves):

$$\frac{1}{2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)]\right)\text{Sec}[c+d\,x]^{7/3}}3\,b\,(b\,\text{Sec}[c+d\,x])^{1/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(-\frac{1}{-1+e^{2\,i\,c}}i\,2^{1/3}\,e^{-i\,(c+d\,x)}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{1/3}\left(4\,B\,\left(1+e^{2\,i\,(c+d\,x)}\right)+4\,B\,\left(-1+e^{2\,i\,c}\right)\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,i\,(c+d\,x)}\right]+(4\,A+C)\,e^{i\,(c+d\,x)}\left(-1+e^{2\,i\,c}\right)\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2\,i\,(c+d\,x)}\right]\right)+\text{Sec}[c+d\,x]^{1/3}\left(4\,B\,\text{Cos}[d\,x]\,\text{Csc}[c]+C\,\text{Tan}[c+d\,x]\right)\right)$$

Problem 53: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(b\,\text{Sec}[c+d\,x])^{2/3}}\,dx$$

Optimal (type 5, 154 leaves, 7 steps):

$$\left(3\,(7\,A+4\,C)\,\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{1}{2},\frac{5}{6},\text{Cos}[c+d\,x]^2\right](b\,\text{Sec}[c+d\,x])^{1/3}\,\text{Sin}[c+d\,x]\right)\Big/\left(7\,b\,d\,\sqrt{\text{Sin}[c+d\,x]^2}\right)+\left(3\,B\,\text{Hypergeometric2F1}\left[-\frac{2}{3},\frac{1}{2},\frac{1}{3},\text{Cos}[c+d\,x]^2\right](b\,\text{Sec}[c+d\,x])^{4/3}\,\text{Sin}[c+d\,x]\right)\Big/\left(4\,b^2\,d\,\sqrt{\text{Sin}[c+d\,x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d\,x])^{4/3}\,\text{Tan}[c+d\,x]}{7\,b^2\,d}$$

Result (type 5, 299 leaves):

$$-\left(\left(3\,b\,e^{-i\,(2\,c+d\,x)}\,\left(-1+e^{2\,i\,c}\right)\,\mathrm{Csc}[c]\,\left(-28\,A-16\,C-7\,B\,e^{i\,(c+d\,x)}-56\,A\,e^{2\,i\,(c+d\,x)}-40\,C\,e^{2\,i\,(c+d\,x)}-28\,A\,e^{4\,i\,(c+d\,x)}-8\,C\,e^{4\,i\,(c+d\,x)}+7\,B\,e^{5\,i\,(c+d\,x)}+4\,(7\,A+4\,C)\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{7/3}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,i\,(c+d\,x)}\right]+7\,B\,e^{i\,(c+d\,x)}\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{7/3}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2\,i\,(c+d\,x)}\right]\right)\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(28\,d\,\left(1+e^{2\,i\,(c+d\,x)}\right)^2\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,(c+d\,x)]\right)\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^{5/3}\right)\right)$$

Problem 54: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\left(b\,\mathrm{Sec}[c+d\,x]\right)^{2/3}}\,dx$$

Optimal (type 5, 147 leaves, 7 steps):

$$-\frac{3\,(4\,A+C)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{4}{3},\mathrm{Cos}[c+d\,x]^2\right]\,\mathrm{Sin}[c+d\,x]}{8\,d\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^{2/3}\,\sqrt{\mathrm{Sin}[c+d\,x]^2}}+\left(3\,B\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{6},\frac{1}{2},\frac{5}{6},\mathrm{Cos}[c+d\,x]^2\right]\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^{1/3}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(b\,d\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+\frac{3\,C\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^{1/3}\,\mathrm{Tan}[c+d\,x]}{4\,b\,d}$$

Result (type 5, 305 leaves):

$$\frac{1}{2\,b\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,(c+d\,x)]\right)\,\mathrm{Sec}[c+d\,x]^{7/3}}\,3\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^{1/3}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\left(-\frac{1}{-1+e^{2\,i\,c}}\,i\,2^{1/3}\,e^{-i\,(c+d\,x)}\,\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{1/3}\,\left(4\,B\,\left(1+e^{2\,i\,(c+d\,x)}\right)+4\,B\,\left(-1+e^{2\,i\,c}\right)\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,i\,(c+d\,x)}\right]+(4\,A+C)\,e^{i\,(c+d\,x)}\,\left(-1+e^{2\,i\,c}\right)\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2\,i\,(c+d\,x)}\right]\right)+\mathrm{Sec}[c+d\,x]^{1/3}\,\left(4\,B\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}[c]+C\,\mathrm{Tan}[c+d\,x]\right)\right)$$

Problem 55: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\left(b\,\mathrm{Sec}[c+d\,x]\right)^{2/3}}\,dx$$

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

$$-\left(\left(3\,b\,(A-2\,C)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{11}{6},\text{Cos}[c+d\,x]^2\right]\text{Sin}[c+d\,x]\right)\Big/\left(5\,d\,(b\,\text{Sec}[c+d\,x])^{5/3}\sqrt{\text{Sin}[c+d\,x]^2}\right)\right)-\frac{3\,B\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{4}{3},\text{Cos}[c+d\,x]^2\right]\text{Sin}[c+d\,x]}{2\,d\,(b\,\text{Sec}[c+d\,x])^{2/3}\sqrt{\text{Sin}[c+d\,x]^2}}+\frac{3\,C\,\text{Tan}[c+d\,x]}{d\,(b\,\text{Sec}[c+d\,x])^{2/3}}$$

Result (type 5, 154 leaves):

$$-\frac{1}{4\,b\,d}3\,i\,e^{-i\,(c+d\,x)}\left(A-4\,C+A\,e^{2\,i\,(c+d\,x)}-2\,(A-2\,C)\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,i\,(c+d\,x)}\right]+4\,B\,e^{i\,(c+d\,x)}\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2\,i\,(c+d\,x)}\right]\right)\,(b\,\text{Sec}[c+d\,x])^{1/3}$$

Problem 56: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(b\,\text{Sec}[c+d\,x])^{2/3}}\,dx$$

Optimal (type 5, 147 leaves, 7 steps):

$$-\frac{3\,(4\,A+C)\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{4}{3},\text{Cos}[c+d\,x]^2\right]\text{Sin}[c+d\,x]}{8\,d\,(b\,\text{Sec}[c+d\,x])^{2/3}\sqrt{\text{Sin}[c+d\,x]^2}}+\left(3\,B\,\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{1}{2},\frac{5}{6},\text{Cos}[c+d\,x]^2\right]\,(b\,\text{Sec}[c+d\,x])^{1/3}\,\text{Sin}[c+d\,x]\right)\Big/\left(b\,d\,\sqrt{\text{Sin}[c+d\,x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d\,x])^{1/3}\,\text{Tan}[c+d\,x]}{4\,b\,d}$$

Result (type 5, 305 leaves):

$$\frac{1}{2\,b\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)])\,\text{Sec}[c+d\,x]^{7/3}}3\,(b\,\text{Sec}[c+d\,x])^{1/3}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(-\frac{1}{-1+e^{2\,i\,c}}i\,2^{1/3}\,e^{-i\,(c+d\,x)}\,\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{1/3}\left(4\,B\,\left(1+e^{2\,i\,(c+d\,x)}\right)+4\,B\,\left(-1+e^{2\,i\,c}\right)\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,i\,(c+d\,x)}\right]+(4\,A+C)\,e^{i\,(c+d\,x)}\,\left(-1+e^{2\,i\,c}\right)\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2\,i\,(c+d\,x)}\right]\right)+\text{Sec}[c+d\,x]^{1/3}\,(4\,B\,\text{Cos}[d\,x]\,\text{Csc}[c]+C\,\text{Tan}[c+d\,x])\right)$$

Problem 57: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(b \text{Sec}[c+d x])^{2/3}} \, dx$$

Optimal (type 5, 154 leaves, 7 steps):

$$\left(3 (7 A+4 C) \text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{1}{2},\frac{5}{6},\text{Cos}[c+d x]^2\right] (b \text{Sec}[c+d x])^{1/3} \text{Sin}[c+d x]\right) \Big/ \left(7 b d \sqrt{\text{Sin}[c+d x]^2}\right)+\left(3 B \text{Hypergeometric2F1}\left[-\frac{2}{3},\frac{1}{2},\frac{1}{3},\text{Cos}[c+d x]^2\right] (b \text{Sec}[c+d x])^{4/3} \text{Sin}[c+d x]\right) \Big/ \left(4 b^2 d \sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3 C (b \text{Sec}[c+d x])^{4/3} \text{Tan}[c+d x]}{7 b^2 d}$$

Result (type 5, 299 leaves):

$$-\left(\left(3 b e^{-i (2 c+d x)} \left(-1+e^{2 i c}\right) \text{Csc}[c] \left(-28 A-16 C-7 B e^{i (c+d x)}-56 A e^{2 i (c+d x)}-40 C e^{2 i (c+d x)}-28 A e^{4 i (c+d x)}-8 C e^{4 i (c+d x)}+7 B e^{5 i (c+d x)}+4 (7 A+4 C) \left(1+e^{2 i (c+d x)}\right)^{7/3} \text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2 i (c+d x)}\right]+7 B e^{i (c+d x)} \left(1+e^{2 i (c+d x)}\right)^{7/3} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2 i (c+d x)}\right]\right) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(28 d \left(1+e^{2 i (c+d x)}\right)^2 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 (c+d x)]) (b \text{Sec}[c+d x])^{5/3}\right)\right)$$

Problem 58: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(b \text{Sec}[c+d x])^{2/3}} \, dx$$

Optimal (type 5, 154 leaves, 7 steps):

$$\left(3 (10 A+7 C) \text{Hypergeometric2F1}\left[-\frac{2}{3},\frac{1}{2},\frac{1}{3},\text{Cos}[c+d x]^2\right] (b \text{Sec}[c+d x])^{4/3} \text{Sin}[c+d x]\right) \Big/ \left(40 b^2 d \sqrt{\text{Sin}[c+d x]^2}\right)+\left(3 B \text{Hypergeometric2F1}\left[-\frac{7}{6},\frac{1}{2},-\frac{1}{6},\text{Cos}[c+d x]^2\right] (b \text{Sec}[c+d x])^{7/3} \text{Sin}[c+d x]\right) \Big/ \left(7 b^3 d \sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3 C (b \text{Sec}[c+d x])^{7/3} \text{Tan}[c+d x]}{10 b^3 d}$$

Result (type 5, 333 leaves):

$$\frac{1}{140\,(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2(c+dx)])\,(b\,\mathrm{Sec}[c+dx])^{2/3}}(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2)\left(-\left(\left(3\,i\,2^{1/3}\,e^{-i(c+dx)}\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{1/3}\left(160B\left(1+e^{2i(c+dx)}\right)+160B\left(-1+e^{2ic}\right)\left(1+e^{2i(c+dx)}\right)^{1/3}\mathrm{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2i(c+dx)}\right]+7(10A+7C)\,e^{i(c+dx)}\left(-1+e^{2ic}\right)\left(1+e^{2i(c+dx)}\right)^{1/3}\mathrm{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{3},\frac{7}{6},-e^{2i(c+dx)}\right]\right)\right)\Big/\left(d\left(-1+e^{2ic}\right)\mathrm{Sec}[c+dx]^{4/3}\right)\right)+\frac{1}{d}3\,(160B\,\mathrm{Cos}[dx]\,\mathrm{Cos}[c+dx]\,\mathrm{Csc}[c]+7(10A+7C)\,\mathrm{Sin}[c+dx]+4(10B+7C\,\mathrm{Sec}[c+dx])\,\mathrm{Tan}[c+dx])\right)$$

Problem 59: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\mathrm{Sec}[c+dx]^2\,(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2)}{(b\,\mathrm{Sec}[c+dx])^{4/3}}\,dx$$

Optimal (type 5, 154 leaves, 7 steps):

$$-\left(\left(3(5A+2C)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\mathrm{Cos}[c+dx]^2\right]\mathrm{Sin}[c+dx]\right)\Big/\left(5bd\,(b\,\mathrm{Sec}[c+dx])^{1/3}\sqrt{\mathrm{Sin}[c+dx]^2}\right)\right)+\left(3B\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{2},\frac{2}{3},\mathrm{Cos}[c+dx]^2\right](b\,\mathrm{Sec}[c+dx])^{2/3}\,\mathrm{Sin}[c+dx]\right)\Big/\left(2b^2d\sqrt{\mathrm{Sin}[c+dx]^2}\right)+\frac{3C\,(b\,\mathrm{Sec}[c+dx])^{2/3}\,\mathrm{Tan}[c+dx]}{5b^2d}$$

Result (type 5, 299 leaves):

$$\left((A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2)\left(-\left(\left(3\,i\,2^{2/3}\,e^{-i(c+dx)}\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{2/3}\left(5B\left(1+e^{2i(c+dx)}\right)+5B\left(-1+e^{2ic}\right)\left(1+e^{2i(c+dx)}\right)^{2/3}\mathrm{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2i(c+dx)}\right]+(5A+2C)\,e^{i(c+dx)}\left(-1+e^{2ic}\right)\left(1+e^{2i(c+dx)}\right)^{2/3}\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2i(c+dx)}\right]\right)\right)\Big/\left(d\left(-1+e^{2ic}\right)\mathrm{Sec}[c+dx]^{2/3}\right)\right)+\frac{3\,(5B\,\mathrm{Cos}[dx]\,\mathrm{Csc}[c]+2C\,\mathrm{Tan}[c+dx])}{d}\right)\right)\Big/\left(5\,(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2(c+dx)])\,(b\,\mathrm{Sec}[c+dx])^{4/3}\right)$$

Problem 60: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{(b\,\text{Sec}[c+d x])^{4/3}}\,dx$$

Optimal (type 5, 149 leaves, 7 steps):

$$-\frac{3\,(2A-C)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{5}{3},\text{Cos}[c+d x]^2\right]\text{Sin}[c+d x]}{8\,d\,(b\,\text{Sec}[c+d x])^{4/3}\sqrt{\text{Sin}[c+d x]^2}}-\frac{3\,B\,\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\text{Cos}[c+d x]^2\right]\text{Sin}[c+d x]}{b\,d\,(b\,\text{Sec}[c+d x])^{1/3}\sqrt{\text{Sin}[c+d x]^2}}+\frac{3\,C\,\text{Tan}[c+d x]}{2\,b\,d\,(b\,\text{Sec}[c+d x])^{1/3}}$$

Result (type 5, 174 leaves):

$$\frac{1}{2\,b^2\,d}3\,e^{-i\,(3c+2d x)}\left(A-C+A\,e^{2i(c+d x)}+(-2A+C)\left(1+e^{2i(c+d x)}\right)^{2/3}\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2i(c+d x)}\right]+B\,e^{i(c+d x)}\left(1+e^{2i(c+d x)}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2i(c+d x)}\right]\right)(b\,\text{Sec}[c+d x])^{2/3}\left(-i\,\text{Cos}[2c+d x]+\text{Sin}[2c+d x]\right)$$

Problem 61: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{(b\,\text{Sec}[c+d x])^{4/3}}\,dx$$

Optimal (type 5, 146 leaves, 6 steps):

$$-\frac{3\,B\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{5}{3},\text{Cos}[c+d x]^2\right]\text{Sin}[c+d x]}{4\,d\,(b\,\text{Sec}[c+d x])^{4/3}\sqrt{\text{Sin}[c+d x]^2}}-\frac{3\,(A+4C)\,\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\text{Cos}[c+d x]^2\right]\text{Sin}[c+d x]}{4\,b\,d\,(b\,\text{Sec}[c+d x])^{1/3}\sqrt{\text{Sin}[c+d x]^2}}+\frac{3\,A\,\text{Tan}[c+d x]}{4\,d\,(b\,\text{Sec}[c+d x])^{4/3}}$$

Result (type 5, 143 leaves):

$$\left(3\left(8\,i\,B\,\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2i(c+d x)}\right]-i\,(A+4C)\,e^{i(c+d x)}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2i(c+d x)}\right]+\left(1+e^{2i(c+d x)}\right)^{1/3}\left(-4\,i\,B+A\,\text{Sin}[c+d x]\right)\right)\right)\Big/\left(4\,b\,d\left(1+e^{2i(c+d x)}\right)^{1/3}(b\,\text{Sec}[c+d x])^{1/3}\right)$$

Problem 62: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(b \text{Sec}[c+d x])^{4/3}} \, dx$$

Optimal (type 5, 149 leaves, 7 steps):

$$-\frac{3 (2 A-C) \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{5}{3},\text{Cos}[c+d x]^2\right] \text{Sin}[c+d x]}{8 d (b \text{Sec}[c+d x])^{4/3} \sqrt{\text{Sin}[c+d x]^2}}-\frac{3 B \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\text{Cos}[c+d x]^2\right] \text{Sin}[c+d x]}{b d (b \text{Sec}[c+d x])^{1/3} \sqrt{\text{Sin}[c+d x]^2}}+\frac{3 C \text{Tan}[c+d x]}{2 b d (b \text{Sec}[c+d x])^{1/3}}$$

Result (type 5, 174 leaves):

$$\frac{1}{2 b^2 d} 3 e^{-i (3 c+2 d x)} \left(A-C+A e^{2 i (c+d x)}+(-2 A+C) \left(1+e^{2 i (c+d x)}\right)^{2/3} \text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2 i (c+d x)}\right]+B e^{i (c+d x)} \left(1+e^{2 i (c+d x)}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2 i (c+d x)}\right]\right) (b \text{Sec}[c+d x])^{2/3} (-i \text{Cos}[2 c+d x]+\text{Sin}[2 c+d x])$$

Problem 63: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(b \text{Sec}[c+d x])^{4/3}} \, dx$$

Optimal (type 5, 154 leaves, 7 steps):

$$-\left(\left(3 (5 A+2 C) \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\text{Cos}[c+d x]^2\right] \text{Sin}[c+d x]\right) \Big/ \left(5 b d (b \text{Sec}[c+d x])^{1/3} \sqrt{\text{Sin}[c+d x]^2}\right)\right)+\left(3 B \text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{2},\frac{2}{3},\text{Cos}[c+d x]^2\right] (b \text{Sec}[c+d x])^{2/3} \text{Sin}[c+d x]\right) \Big/ \left(2 b^2 d \sqrt{\text{Sin}[c+d x]^2}\right)+\frac{3 C (b \text{Sec}[c+d x])^{2/3} \text{Tan}[c+d x]}{5 b^2 d}$$

Result (type 5, 299 leaves):

$$\left((A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\left(-\left(\left(3\,i\,2^{2/3}\,e^{-i\,(c+d\,x)}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{2/3}\left(5\,B\,(1+e^{2\,i\,(c+d\,x)})+5\,B\,(-1+e^{2\,i\,c})\,(1+e^{2\,i\,(c+d\,x)})^{2/3}\,\text{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2\,i\,(c+d\,x)}\right]+(5\,A+2\,C)\,e^{i\,(c+d\,x)}\,(-1+e^{2\,i\,c})\,(1+e^{2\,i\,(c+d\,x)})^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2\,i\,(c+d\,x)}\right]\right)\right)\Big/\left(d\,(-1+e^{2\,i\,c})\,\text{Sec}[c+d\,x]^{2/3}\right)\right)+\frac{3\,(5\,B\,\text{Cos}[d\,x]\,\text{Csc}[c]+2\,C\,\text{Tan}[c+d\,x])}{d}\right)\right)\Big/\left(5\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)])\,(b\,\text{Sec}[c+d\,x])^{4/3}\right)$$

Problem 64: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)}{(b\,\text{Sec}[c+d\,x])^{4/3}}\,dx$$

Optimal (type 5, 154 leaves, 7 steps):

$$\left(3\,(8\,A+5\,C)\,\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{2},\frac{2}{3},\text{Cos}[c+d\,x]^2\right]\,(b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Sin}[c+d\,x]\right)\Big/\left(16\,b^2\,d\,\sqrt{\text{Sin}[c+d\,x]^2}\right)+\left(3\,B\,\text{Hypergeometric2F1}\left[-\frac{5}{6},\frac{1}{2},\frac{1}{6},\text{Cos}[c+d\,x]^2\right]\,(b\,\text{Sec}[c+d\,x])^{5/3}\,\text{Sin}[c+d\,x]\right)\Big/\left(5\,b^3\,d\,\sqrt{\text{Sin}[c+d\,x]^2}\right)+\frac{3\,C\,(b\,\text{Sec}[c+d\,x])^{5/3}\,\text{Tan}[c+d\,x]}{8\,b^3\,d}$$

Result (type 5, 677 leaves):

$$-\left(\left(3\,A\,e^{-i\,(2\,c+d\,x)}\,\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{2/3}\,\mathrm{Csc}[c]\,\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{2/3}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2\,i\,(c+d\,x)}\right]\right)\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(2^{1/3}\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{2/3}\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^{4/3}\right)\right)-$$

$$\left(15\,C\,e^{-i\,(2\,c+d\,x)}\,\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{2/3}\,\mathrm{Csc}[c]\,\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{2/3}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{6},\frac{2}{3},\frac{5}{6},-e^{2\,i\,(c+d\,x)}\right]\right)\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(8\times 2^{1/3}\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{2/3}\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^{4/3}\right)-$$

$$\left(6\,i\,2^{2/3}\,B\,\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{2/3}\,\left(1+e^{2\,i\,(c+d\,x)}\right)^{2/3}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{2\,i\,(c+d\,x)}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(5\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{2/3}\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^{4/3}\right)+$$

$$\left(\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\left(\frac{3\,(8\,A+5\,C)\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}[c]}{8\,d}+\frac{3\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Sin}[d\,x]}{4\,d}+\frac{3\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\left(5\,C\,\mathrm{Sin}[c]+8\,B\,\mathrm{Sin}[d\,x]\right)}{20\,d}+\frac{6\,B\,\mathrm{Tan}[c]}{5\,d}\right)\right)\Big/\left(\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^{4/3}\right)$$

Problem 65: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^m\,\left(b\,\mathrm{Sec}[c+d\,x]\right)^{4/3}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 230 leaves, 7 steps):

$$\frac{3\,b\,C\,\mathrm{Sec}[c+d\,x]^{2+m}\,(b\,\mathrm{Sec}[c+d\,x])^{1/3}\,\mathrm{Sin}[c+d\,x]}{d\,(7+3\,m)}+$$
$$\left(3\,b\,(C\,(4+3\,m)+A\,(7+3\,m))\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}(-1-3\,m),\frac{1}{6}(5-3\,m),\mathrm{Cos}[c+d\,x]^2\right]\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^m\,(b\,\mathrm{Sec}[c+d\,x])^{1/3}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(1+3\,m)\,(7+3\,m)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+$$
$$\left(3\,b\,B\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}(-4-3\,m),\frac{1}{6}(2-3\,m),\mathrm{Cos}[c+d\,x]^2\right]\mathrm{Sec}[c+d\,x]^{1+m}\right.$$
$$\left.(b\,\mathrm{Sec}[c+d\,x])^{1/3}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(4+3\,m)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 484 leaves):

$$-\frac{1}{d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{10/3}}$$
$$3\,i\,2^{\frac{7}{3}+m}\,e^{-\frac{1}{3}i\,d\,(4+3\,m)\,x}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{\frac{4}{3}+m}\left(1+e^{2\,i\,(c+d\,x)}\right)^{\frac{4}{3}+m}$$
$$\left(\frac{1}{10+3\,m}2\,(A+2\,C)\,e^{\frac{1}{3}i\,(6\,c+d\,(10+3\,m)\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{5}{3}+\frac{m}{2},\frac{10}{3}+m,\frac{8}{3}+\frac{m}{2},-e^{2\,i\,(c+d\,x)}\right]+\right.$$
$$\frac{1}{16+3\,m}A\,e^{4\,i\,c+\frac{1}{3}i\,d\,(16+3\,m)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{8}{3}+\frac{m}{2},\frac{10}{3}+m,\frac{1}{6}(22+3\,m),-e^{2\,i\,(c+d\,x)}\right]+$$
$$\frac{1}{4+3\,m}A\,e^{\frac{1}{3}i\,d\,(4+3\,m)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{10}{3}+m,\frac{1}{6}(4+3\,m),\frac{5}{3}+\frac{m}{2},-e^{2\,i\,(c+d\,x)}\right]+\frac{1}{7+3\,m}2\,B$$
$$e^{\frac{1}{3}i\,(3\,c+d\,(7+3\,m)\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{10}{3}+m,\frac{1}{6}(7+3\,m),\frac{1}{6}(13+3\,m),-e^{2\,i\,(c+d\,x)}\right]+\frac{1}{13+3\,m}$$
$$\left.2\,B\,e^{\frac{1}{3}i\,(9\,c+d\,(13+3\,m)\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{10}{3}+m,\frac{1}{6}(13+3\,m),\frac{1}{6}(19+3\,m),-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$(b\,\mathrm{Sec}[c+d\,x])^{4/3}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

Problem 66: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^m\,(b\,\mathrm{Sec}[c+d\,x])^{2/3}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 5, 227 leaves, 7 steps):

$$\frac{3\,C\,\mathrm{Sec}[c+d\,x]^{1+m}\,(b\,\mathrm{Sec}[c+d\,x])^{2/3}\,\mathrm{Sin}[c+d\,x]}{d\,(5+3\,m)}-$$
$$\left(3\,(C\,(2+3\,m)+A\,(5+3\,m))\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}(1-3\,m),\frac{1}{6}(7-3\,m),\mathrm{Cos}[c+d\,x]^2\right]\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{-1+m}\,(b\,\mathrm{Sec}[c+d\,x])^{2/3}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(1-3\,m)\,(5+3\,m)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+$$
$$\left(3\,B\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}(-2-3\,m),\frac{1}{6}(4-3\,m),\mathrm{Cos}[c+d\,x]^2\right]\mathrm{Sec}[c+d\,x]^m\right.$$
$$\left.(b\,\mathrm{Sec}[c+d\,x])^{2/3}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(2+3\,m)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 547 leaves):

$$-\frac{1}{d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{8/3}}$$

$$3\,\mathrm{i}\,2^{\frac{5}{3}+m}\,e^{-\frac{1}{3}\mathrm{i}\,d\,(2+3m)\,x}\left(\frac{e^{\mathrm{i}\,(c+dx)}}{1+e^{2\mathrm{i}\,(c+dx)}}\right)^{\frac{2}{3}+m}\left(1+e^{2\mathrm{i}\,(c+dx)}\right)^{\frac{2}{3}+m}$$

$$\left(\frac{1}{14+3m}A\,e^{4\mathrm{i}\,c+\frac{1}{3}\mathrm{i}\,d\,(14+3m)\,x}\,\text{Hypergeometric2F1}\left[\frac{7}{3}+\frac{m}{2},\,\frac{8}{3}+m,\,\frac{1}{6}\,(20+3m),\,-e^{2\mathrm{i}\,(c+dx)}\right]+\frac{1}{2+3m}\right.$$

$$A\,e^{\frac{1}{3}\mathrm{i}\,d\,(2+3m)\,x}\,\text{Hypergeometric2F1}\left[\frac{8}{3}+m,\,\frac{1}{6}\,(2+3m),\,\frac{1}{6}\,(8+3m),\,-e^{2\mathrm{i}\,(c+dx)}\right]+\frac{1}{5+3m}$$

$$2B\,e^{\frac{1}{3}\mathrm{i}\,(3c+d\,(5+3m)\,x)}\,\text{Hypergeometric2F1}\left[\frac{8}{3}+m,\,\frac{1}{6}\,(5+3m),\,\frac{1}{6}\,(11+3m),\,-e^{2\mathrm{i}\,(c+dx)}\right]+\frac{1}{8+3m}$$

$$2A\,e^{\frac{1}{3}\mathrm{i}\,(6c+d\,(8+3m)\,x)}\,\text{Hypergeometric2F1}\left[\frac{8}{3}+m,\,\frac{1}{6}\,(8+3m),\,\frac{7}{3}+\frac{m}{2},\,-e^{2\mathrm{i}\,(c+dx)}\right]+\frac{1}{8+3m}$$

$$4C\,e^{\frac{1}{3}\mathrm{i}\,(6c+d\,(8+3m)\,x)}\,\text{Hypergeometric2F1}\left[\frac{8}{3}+m,\,\frac{1}{6}\,(8+3m),\,\frac{7}{3}+\frac{m}{2},\,-e^{2\mathrm{i}\,(c+dx)}\right]+\frac{1}{11+3m}$$

$$\left.2B\,e^{\frac{1}{3}\mathrm{i}\,(9c+d\,(11+3m)\,x)}\,\text{Hypergeometric2F1}\left[\frac{8}{3}+m,\,\frac{1}{6}\,(11+3m),\,\frac{1}{6}\,(17+3m),\,-e^{2\mathrm{i}\,(c+dx)}\right]\right)$$

$$\left(b\,\text{Sec}[c+dx]\right)^{2/3}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$

Problem 67: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+dx]^m\left(b\,\text{Sec}[c+dx]\right)^{1/3}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\,dx$$

Optimal (type 5, 225 leaves, 7 steps):

$$\frac{3C\,\text{Sec}[c+dx]^{1+m}\left(b\,\text{Sec}[c+dx]\right)^{1/3}\text{Sin}[c+dx]}{d\,(4+3m)}-$$

$$\left(3\left(C+3Cm+A\,(4+3m)\right)\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1}{6}\,(2-3m),\,\frac{1}{6}\,(8-3m),\,\text{Cos}[c+dx]^2\right]\right.$$

$$\left.\text{Sec}[c+dx]^{-1+m}\left(b\,\text{Sec}[c+dx]\right)^{1/3}\text{Sin}[c+dx]\right)\Big/\left(d\,(2-3m)\,(4+3m)\,\sqrt{\text{Sin}[c+dx]^2}\right)+$$

$$\left(3B\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1}{6}\,(-1-3m),\,\frac{1}{6}\,(5-3m),\,\text{Cos}[c+dx]^2\right]\text{Sec}[c+dx]^m\right.$$

$$\left.\left(b\,\text{Sec}[c+dx]\right)^{1/3}\text{Sin}[c+dx]\right)\Big/\left(d\,(1+3m)\,\sqrt{\text{Sin}[c+dx]^2}\right)$$

Result (type 5, 494 leaves):

$$-\frac{1}{\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\operatorname{Sec}[c+dx]^{7/3}}3\,\mathrm{i}\,2^{\frac{4}{3}+m}\,e^{-\frac{1}{3}\mathrm{i}\,d\,(1+3m)\,x}\left(\frac{e^{\mathrm{i}\,(c+d\,x)}}{1+e^{2\,\mathrm{i}\,(c+d\,x)}}\right)^{\frac{1}{3}+m}\left(1+e^{2\,\mathrm{i}\,(c+d\,x)}\right)^{\frac{1}{3}+m}$$

$$\left(\frac{1}{d\,(10+3m)}2\,B\,e^{\frac{1}{3}\mathrm{i}\,(9c+d\,(10+3m)\,x)}\,\text{Hypergeometric2F1}\left[\frac{5}{3}+\frac{m}{2},\frac{7}{3}+m,\frac{8}{3}+\frac{m}{2},-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\right.$$

$$\frac{1}{d+3dm}A\,e^{\frac{1}{3}\mathrm{i}\,(d+3dm)\,x}\,\text{Hypergeometric2F1}\left[\frac{7}{3}+m,\frac{1}{6}(1+3m),\frac{1}{6}(7+3m),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+$$

$$\frac{1}{d}e^{\mathrm{i}\,c}\left(\frac{1}{4+3m}2\,B\,e^{\frac{1}{3}\mathrm{i}\,d\,(4+3m)\,x}\,\text{Hypergeometric2F1}\left[\frac{7}{3}+m,\frac{1}{6}(4+3m),\frac{5}{3}+\frac{m}{2},-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\right.$$

$$\left(e^{\frac{1}{3}\mathrm{i}\,(3c+d\,(7+3m)\,x)}\left(2\,(A+2C)\,(13+3m)\,\text{Hypergeometric2F1}\left[\frac{7}{3}+m,\frac{1}{6}(7+3m),\frac{1}{6}\right.\right.\right.$$

$$(13+3m),-e^{2\,\mathrm{i}\,(c+d\,x)}\Big]+A\,e^{2\,\mathrm{i}\,(c+d\,x)}\,(7+3m)\,\text{Hypergeometric2F1}\Big[\frac{7}{3}+$$

$$\left.\left.\left.\left.m,\frac{1}{6}(13+3m),\frac{1}{6}(19+3m),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]\right)\Big/\left((7+3m)\,(13+3m)\right)\right)\right)$$

$$\left(b\operatorname{Sec}[c+dx]\right)^{1/3}\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)$$

Problem 68: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{Sec}[c+dx]^m\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)}{\left(b\operatorname{Sec}[c+dx]\right)^{1/3}}\,dx$$

Optimal (type 5, 228 leaves, 7 steps):

$$\frac{3\,C\operatorname{Sec}[c+dx]^{1+m}\operatorname{Sin}[c+dx]}{d\,(2+3m)\,\left(b\operatorname{Sec}[c+dx]\right)^{1/3}}+$$

$$\left(3\,\left(C\,(1-3m)-A\,(2+3m)\right)\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}(4-3m),\frac{1}{6}(10-3m),\operatorname{Cos}[c+dx]^2\right]\right.$$

$$\left.\operatorname{Sec}[c+dx]^{-1+m}\operatorname{Sin}[c+dx]\right)\Big/\left(d\,(4-3m)\,(2+3m)\,\left(b\operatorname{Sec}[c+dx]\right)^{1/3}\sqrt{\operatorname{Sin}[c+dx]^2}\right)-$$

$$\left(3\,B\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}(1-3m),\frac{1}{6}(7-3m),\operatorname{Cos}[c+dx]^2\right]\operatorname{Sec}[c+dx]^m\operatorname{Sin}[c+dx]\right)\Big/$$

$$\left(d\,(1-3m)\,\left(b\operatorname{Sec}[c+dx]\right)^{1/3}\sqrt{\operatorname{Sin}[c+dx]^2}\right)$$

Result (type 5, 548 leaves):

$$-\left(\left(3\,\mathrm{i}\,2^{\frac{2}{3}+m}\,e^{-\frac{1}{3}\mathrm{i}\,(3c+d\,(2+3m)\,x)}\left(\frac{e^{\mathrm{i}\,(c+d\,x)}}{1+e^{2\,\mathrm{i}\,(c+d\,x)}}\right)^{\frac{2}{3}+m}\right.\right.$$

$$\left(1+e^{2\,\mathrm{i}\,(c+d\,x)}\right)^{\frac{2}{3}+m}\left(A\,e^{\frac{1}{3}\mathrm{i}\,d\,(-1+3m)\,x}\left(880+2418\,m+2079\,m^2+702\,m^3+81\,m^4\right)\right.$$

$$\text{Hypergeometric2F1}\left[\frac{5}{3}+m,\frac{1}{6}\left(-1+3m\right),\frac{1}{6}\left(5+3m\right),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+$$

$$e^{\mathrm{i}\,c}\left(-1+3m\right)\left(2\,B\,e^{\frac{1}{3}\mathrm{i}\,d\,(2+3m)\,x}\left(440+549\,m+216\,m^2+27\,m^3\right)\text{Hypergeometric2F1}\left[\right.\right.$$

$$\left.\frac{5}{3}+m,\frac{1}{6}\left(2+3m\right),\frac{1}{6}\left(8+3m\right),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+e^{\frac{1}{3}\mathrm{i}\,(3c+d\,(5+3m)\,x)}\left(2+3m\right)$$

$$\left(2\left(A+2C\right)\left(88+57\,m+9\,m^2\right)\text{Hypergeometric2F1}\left[\frac{5}{3}+m,\frac{1}{6}\left(5+3m\right),\frac{1}{6}\right.\right.$$

$$\left.\left(11+3m\right),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+e^{\mathrm{i}\,(c+d\,x)}\left(5+3m\right)\left(2\,B\left(11+3m\right)\right.$$

$$\text{Hypergeometric2F1}\left[\frac{5}{3}+m,\frac{1}{6}\left(8+3m\right),\frac{7}{3}+\frac{m}{2},-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+A\,e^{\mathrm{i}\,(c+d\,x)}\left(8+3m\right)$$

$$\left.\left.\left.\left.\left.\text{Hypergeometric2F1}\left[\frac{5}{3}+m,\frac{1}{6}\left(11+3m\right),\frac{1}{6}\left(17+3m\right),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]\right)\right)\right)\right)\right)$$

$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\left(-1+3m\right)\left(2+3m\right)\right.$$

$$\left(5+3m\right)$$
$$\left(8+3m\right)$$
$$\left(11+3m\right)$$
$$\left(A+2C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)$$
$$\text{Sec}[c+d\,x]^{5/3}$$
$$\left.\left(b\,\text{Sec}[c+d\,x]\right)^{1/3}\right)$$

Problem 69: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^m\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(b\,\text{Sec}[c+d\,x]\right)^{2/3}}\,dx$$

Optimal (type 5, 226 leaves, 7 steps):

$$\frac{3\,C\,\mathrm{Sec}[c+d\,x]^{1+m}\,\mathrm{Sin}[c+d\,x]}{d\,(1+3\,m)\,(b\,\mathrm{Sec}[c+d\,x])^{2/3}}-\left(3\,(A-C\,(2-3\,m)+3\,A\,m)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}\,(5-3\,m),\frac{1}{6}\,(11-3\,m),\mathrm{Cos}[c+d\,x]^2\right]\mathrm{Sec}[c+d\,x]^{-1+m}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(5-3\,m)\,(1+3\,m)\,(b\,\mathrm{Sec}[c+d\,x])^{2/3}\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)-\left(3\,B\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}\,(2-3\,m),\frac{1}{6}\,(8-3\,m),\mathrm{Cos}[c+d\,x]^2\right]\mathrm{Sec}[c+d\,x]^{m}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(2-3\,m)\,(b\,\mathrm{Sec}[c+d\,x])^{2/3}\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 545 leaves):

$$-\left(\left(3\,i\,2^{\frac{1}{3}+m}\,e^{-\frac{1}{3}\,i\,(3\,c+d\,(1+3\,m)\,x)}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{\frac{1}{3}+m}\left(1+e^{2\,i\,(c+d\,x)}\right)^{\frac{1}{3}+m}\left(A\,e^{4\,i\,c+\frac{1}{3}\,i\,d\,(10+3\,m)\,x}\left(-56-150\,m+135\,m^2+270\,m^3+81\,m^4\right)\mathrm{Hypergeometric2F1}\left[\frac{5}{3}+\frac{m}{2},\frac{4}{3}+m,\frac{8}{3}+\frac{m}{2},-e^{2\,i\,(c+d\,x)}\right]+(10+3\,m)\left(A\,e^{\frac{1}{3}\,i\,d\,(-2+3\,m)\,x}\left(28+117\,m+108\,m^2+27\,m^3\right)\mathrm{Hypergeometric2F1}\left[\frac{4}{3}+m,\frac{1}{6}\,(-2+3\,m),\frac{1}{6}\,(4+3\,m),-e^{2\,i\,(c+d\,x)}\right]+2\,e^{\frac{1}{3}\,i\,(3\,c+d\,(1+3\,m)\,x)}\,(-2+3\,m)\left(B\,\left(28+33\,m+9\,m^2\right)\mathrm{Hypergeometric2F1}\left[\frac{4}{3}+m,\frac{1}{6}\,(1+3\,m),\frac{1}{6}\,(7+3\,m),-e^{2\,i\,(c+d\,x)}\right]+e^{i\,(c+d\,x)}\,(1+3\,m)\left((A+2\,C)\,(7+3\,m)\,\mathrm{Hypergeometric2F1}\left[\frac{4}{3}+m,\frac{1}{6}\,(4+3\,m),\frac{5}{3}+\frac{m}{2},-e^{2\,i\,(c+d\,x)}\right]+B\,e^{i\,(c+d\,x)}\,(4+3\,m)\,\mathrm{Hypergeometric2F1}\left[\frac{4}{3}+m,\frac{1}{6}\,(7+3\,m),\frac{1}{6}\,(13+3\,m),-e^{2\,i\,(c+d\,x)}\right]\right)\right)\right)\right)\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\,(-2+3\,m)\,(1+3\,m)\,(4+3\,m)\,(7+3\,m)\,(10+3\,m)\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{4/3}\,(b\,\mathrm{Sec}[c+d\,x])^{2/3}\right)\right)$$

Problem 70: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^m\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(b\,\text{Sec}[c+d\,x]\right)^{4/3}}\,dx$$

Optimal (type 5, 234 leaves, 7 steps):

$$-\frac{3\,C\,\text{Sec}[c+d\,x]^m\,\text{Sin}[c+d\,x]}{b\,d\,(1-3\,m)\,\left(b\,\text{Sec}[c+d\,x]\right)^{1/3}}-\left(3\,(A+C\,(4-3\,m)-3\,A\,m)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}\,(7-3\,m),\frac{1}{6}\,(13-3\,m),\text{Cos}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^{-2+m}\,\text{Sin}[c+d\,x]\right)\Big/\left(b\,d\,(1-3\,m)\,(7-3\,m)\,\left(b\,\text{Sec}[c+d\,x]\right)^{1/3}\sqrt{\text{Sin}[c+d\,x]^2}\right)-\left(3\,B\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{6}\,(4-3\,m),\frac{1}{6}\,(10-3\,m),\text{Cos}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^{-1+m}\,\text{Sin}[c+d\,x]\right)\Big/\left(b\,d\,(4-3\,m)\,\left(b\,\text{Sec}[c+d\,x]\right)^{1/3}\sqrt{\text{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 492 leaves):

$$-\left(\left(3\,i\,2^{-\frac{1}{3}+m}\,e^{-\frac{1}{3}i\,(6\,c+d\,(2+3\,m)\,x)}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{\frac{2}{3}+m}\left(1+e^{2\,i\,(c+d\,x)}\right)^{\frac{2}{3}+m}\left(\frac{1}{-4+3\,m}A\,e^{\frac{1}{3}i\,d\,(-4+3\,m)\,x}\,\text{Hypergeometric2F1}\left[\frac{2}{3}+m,\frac{1}{6}\,(-4+3\,m),\frac{1}{6}\,(2+3\,m),-e^{2\,i\,(c+d\,x)}\right]+\frac{1}{-1+3\,m}2\,B\,e^{\frac{1}{3}i\,(3\,c+d\,(-1+3\,m)\,x)}\,\text{Hypergeometric2F1}\left[\frac{2}{3}+m,\frac{1}{6}\,(-1+3\,m),\frac{1}{6}\,(5+3\,m),-e^{2\,i\,(c+d\,x)}\right]+e^{2\,i\,c}\left(\frac{1}{2+3\,m}2\,(A+2\,C)\,e^{\frac{1}{3}i\,d\,(2+3\,m)\,x}\,\text{Hypergeometric2F1}\left[\frac{2}{3}+m,\frac{1}{6}\,(2+3\,m),\frac{1}{6}\,(8+3\,m),-e^{2\,i\,(c+d\,x)}\right]+\frac{1}{5+3\,m}2\,B\,e^{\frac{1}{3}i\,(3\,c+d\,(5+3\,m)\,x)}\,\text{Hypergeometric2F1}\left[\frac{2}{3}+m,\frac{1}{6}\,(5+3\,m),\frac{1}{6}\,(11+3\,m),-e^{2\,i\,(c+d\,x)}\right]+\frac{1}{8+3\,m}A\,e^{\frac{1}{3}i\,(6\,c+d\,(8+3\,m)\,x)}\,\text{Hypergeometric2F1}\left[\frac{2}{3}+m,\frac{1}{6}\,(8+3\,m),\frac{7}{3}+\frac{m}{2},-e^{2\,i\,(c+d\,x)}\right]\right)\right)\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{2/3}\left(b\,\text{Sec}[c+d\,x]\right)^{4/3}\right)\right)$$

Problem 71: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d\,x]^m\left(b\,\text{Sec}[c+d\,x]\right)^n\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 5, 226 leaves, 7 steps):

$$\frac{C\,\mathrm{Sec}[c+d\,x]^{1+m}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]}{d\,(1+m+n)}-\left(\left(C\,(m+n)+A\,(1+m+n)\right)\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}\,(1-m-n),\frac{1}{2}\,(3-m-n),\mathrm{Cos}[c+d\,x]^2\right]\mathrm{Sec}[c+d\,x]^{-1+m}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(1-m-n)\,(1+m+n)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+\left(B\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}\,(-m-n),\frac{1}{2}\,(2-m-n),\mathrm{Cos}[c+d\,x]^2\right]\mathrm{Sec}[c+d\,x]^m\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(m+n)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 436 leaves):

$$-\frac{1}{d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])}\,\mathrm{i}\,2^{1+m+n}\,e^{-\mathrm{i}\,d\,(m+n)\,x}\left(\frac{e^{\mathrm{i}\,(c+d\,x)}}{1+e^{2\,\mathrm{i}\,(c+d\,x)}}\right)^{m+n}\left(1+e^{2\,\mathrm{i}\,(c+d\,x)}\right)^{m+n}\left(\frac{1}{m+n}A\,e^{\mathrm{i}\,d\,(m+n)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{m+n}{2},2+m+n,\frac{1}{2}\,(2+m+n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\frac{1}{1+m+n}2\,B\,e^{\mathrm{i}\,(c+d\,(1+m+n)\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}\,(1+m+n),2+m+n,\frac{1}{2}\,(3+m+n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+e^{2\,\mathrm{i}\,c}\left(\frac{1}{2+m+n}2\,(A+2\,C)\,e^{\mathrm{i}\,d\,(2+m+n)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}\,(2+m+n),2+m+n,\frac{1}{2}\,(4+m+n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\frac{1}{3+m+n}2\,B\,e^{\mathrm{i}\,(c+d\,(3+m+n)\,x)}\,\mathrm{Hypergeometric2F1}\left[2+m+n,\frac{1}{2}\,(3+m+n),\frac{1}{2}\,(5+m+n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\frac{1}{4+m+n}A\,e^{\mathrm{i}\,(2\,c+d\,(4+m+n)\,x)}\,\mathrm{Hypergeometric2F1}\left[2+m+n,\frac{1}{2}\,(4+m+n),\frac{1}{2}\,(6+m+n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]\right)\right)\mathrm{Sec}[c+d\,x]^{-2-n}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

Problem 72: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^2\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 189 leaves, 7 steps):

$$\left(\left(C\,(2+n)+A\,(3+n)\right)\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}\,(-1-n),\frac{1-n}{2},\mathrm{Cos}[c+d\,x]^2\right](b\,\mathrm{Sec}[c+d\,x])^{1+n}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(b\,d\,(1+n)\,(3+n)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+\left(B\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}\,(-2-n),-\frac{n}{2},\mathrm{Cos}[c+d\,x]^2\right](b\,\mathrm{Sec}[c+d\,x])^{2+n}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(b^2\,d\,(2+n)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+\frac{C\,(b\,\mathrm{Sec}[c+d\,x])^{2+n}\,\mathrm{Tan}[c+d\,x]}{b^2\,d\,(3+n)}$$

Result (type 5, 462 leaves):

$$-\frac{1}{d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)}\,i\,2^{3+n}\,e^{2ic-idnx}\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^n\left(1+e^{2i(c+dx)}\right)^n\left(\frac{A\,e^{id(2+n)x}\,\text{Hypergeometric2F1}\left[\frac{2+n}{2},4+n,\frac{4+n}{2},-e^{2i(c+dx)}\right]}{2+n}+\frac{2B\,e^{i(c+d(3+n)x)}\,\text{Hypergeometric2F1}\left[\frac{3+n}{2},4+n,\frac{5+n}{2},-e^{2i(c+dx)}\right]}{3+n}+\frac{2A\,e^{i(2c+d(4+n)x)}\,\text{Hypergeometric2F1}\left[\frac{4+n}{2},4+n,\frac{6+n}{2},-e^{2i(c+dx)}\right]}{4+n}+\frac{4C\,e^{i(2c+d(4+n)x)}\,\text{Hypergeometric2F1}\left[\frac{4+n}{2},4+n,\frac{6+n}{2},-e^{2i(c+dx)}\right]}{4+n}+\frac{2B\,e^{i(3c+d(5+n)x)}\,\text{Hypergeometric2F1}\left[4+n,\frac{5+n}{2},\frac{7+n}{2},-e^{2i(c+dx)}\right]}{5+n}+\frac{A\,e^{i(4c+d(6+n)x)}\,\text{Hypergeometric2F1}\left[4+n,\frac{6+n}{2},\frac{8+n}{2},-e^{2i(c+dx)}\right]}{6+n}\right)\operatorname{Sec}[c+dx]^{-2-n}\left(b\operatorname{Sec}[c+dx]\right)^n\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)$$

Problem 73: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+dx]\left(b\operatorname{Sec}[c+dx]\right)^n\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)dx$$

Optimal (type 5, 182 leaves, 7 steps):

$$\left(\left(C(1+n)+A(2+n)\right)\text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{n}{2},\frac{2-n}{2},\operatorname{Cos}[c+dx]^2\right]\left(b\operatorname{Sec}[c+dx]\right)^n\operatorname{Sin}[c+dx]\right)\Big/\left(d\,n\,(2+n)\sqrt{\operatorname{Sin}[c+dx]^2}\right)+\left(B\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}(-1-n),\frac{1-n}{2},\operatorname{Cos}[c+dx]^2\right]\left(b\operatorname{Sec}[c+dx]\right)^{1+n}\operatorname{Sin}[c+dx]\right)\Big/\left(b\,d\,(1+n)\sqrt{\operatorname{Sin}[c+dx]^2}\right)+\frac{C\left(b\operatorname{Sec}[c+dx]\right)^{1+n}\operatorname{Tan}[c+dx]}{b\,d\,(2+n)}$$

Result (type 5, 460 leaves):

$$-\frac{1}{d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}\,i\,2^{2+n}\,e^{i\,(c-d\,n\,x)}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^n \left(1+e^{2\,i\,(c+d\,x)}\right)^n \left(\frac{A\,e^{i\,d\,(1+n)\,x}\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},\,3+n,\,\frac{3+n}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{1+n}+\frac{2\,B\,e^{i\,(c+d\,(2+n)\,x)}\,\text{Hypergeometric2F1}\left[\frac{2+n}{2},\,3+n,\,\frac{4+n}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{2+n}+\frac{2\,A\,e^{i\,(2\,c+d\,(3+n)\,x)}\,\text{Hypergeometric2F1}\left[\frac{3+n}{2},\,3+n,\,\frac{5+n}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{3+n}+\frac{4\,C\,e^{i\,(2\,c+d\,(3+n)\,x)}\,\text{Hypergeometric2F1}\left[\frac{3+n}{2},\,3+n,\,\frac{5+n}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{3+n}+\frac{2\,B\,e^{i\,(3\,c+d\,(4+n)\,x)}\,\text{Hypergeometric2F1}\left[3+n,\,\frac{4+n}{2},\,\frac{6+n}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{4+n}+\frac{A\,e^{i\,(4\,c+d\,(5+n)\,x)}\,\text{Hypergeometric2F1}\left[3+n,\,\frac{5+n}{2},\,\frac{7+n}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{5+n}\right)\text{Sec}[c+d\,x]^{-2-n}\,(b\,\text{Sec}[c+d\,x])^n\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

Problem 74: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (b\,\text{Sec}[c+d\,x])^n\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 175 leaves, 6 steps):

$$-\left(\left(b\,(A+A\,n+C\,n)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1-n}{2},\,\frac{3-n}{2},\,\text{Cos}[c+d\,x]^2\right](b\,\text{Sec}[c+d\,x])^{-1+n}\,\text{Sin}[c+d\,x]\right)\Big/\left(d\,(1-n)\,(1+n)\,\sqrt{\text{Sin}[c+d\,x]^2}\right)\right)+\left(B\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,-\frac{n}{2},\,\frac{2-n}{2},\,\text{Cos}[c+d\,x]^2\right](b\,\text{Sec}[c+d\,x])^n\,\text{Sin}[c+d\,x]\right)\Big/\left(d\,n\,\sqrt{\text{Sin}[c+d\,x]^2}\right)+\frac{C\,(b\,\text{Sec}[c+d\,x])^n\,\text{Tan}[c+d\,x]}{d\,(1+n)}$$

Result (type 5, 401 leaves):

$$-\frac{1}{d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])}\,\mathrm{i}\,2^{1+n}\,e^{-\mathrm{i}\,d\,n\,x}\left(\frac{e^{\mathrm{i}\,(c+d\,x)}}{1+e^{2\,\mathrm{i}\,(c+d\,x)}}\right)^{n}$$
$$\left(1+e^{2\,\mathrm{i}\,(c+d\,x)}\right)^{n}\left(\frac{A\,e^{\mathrm{i}\,d\,n\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{n}{2},\,2+n,\,\frac{2+n}{2},\,-e^{2\,\mathrm{i}\,(c+d\,x)}\right]}{n}+\right.$$
$$\frac{2\,B\,e^{\mathrm{i}\,(c+d\,(1+n)\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{1+n}{2},\,2+n,\,\frac{3+n}{2},\,-e^{2\,\mathrm{i}\,(c+d\,x)}\right]}{1+n}+$$
$$e^{2\,\mathrm{i}\,c}\left(\frac{1}{2+n}2\,(A+2\,C)\,e^{\mathrm{i}\,d\,(2+n)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{2+n}{2},\,2+n,\,\frac{4+n}{2},\,-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\right.$$
$$\frac{1}{3+n}2\,B\,e^{\mathrm{i}\,(c+d\,(3+n)\,x)}\,\mathrm{Hypergeometric2F1}\left[2+n,\,\frac{3+n}{2},\,\frac{5+n}{2},\,-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+$$
$$\left.\left.\frac{1}{4+n}A\,e^{\mathrm{i}\,(2\,c+d\,(4+n)\,x)}\,\mathrm{Hypergeometric2F1}\left[2+n,\,\frac{4+n}{2},\,\frac{6+n}{2},\,-e^{2\,\mathrm{i}\,(c+d\,x)}\right]\right)\right)$$
$$\mathrm{Sec}[c+d\,x]^{-2-n}\,(b\,\mathrm{Sec}[c+d\,x])^{n}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^{2}\right)$$

Problem 75: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]\,(b\,\mathrm{Sec}[c+d\,x])^{n}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^{2}\right)\,dx$$

Optimal (type 5, 191 leaves, 7 steps):

$$\left(b^{2}\,(C\,(1-n)-A\,n)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{2-n}{2},\,\frac{4-n}{2},\,\mathrm{Cos}[c+d\,x]^{2}\right]\right.$$
$$\left.(b\,\mathrm{Sec}[c+d\,x])^{-2+n}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(2-n)\,n\,\sqrt{\mathrm{Sin}[c+d\,x]^{2}}\right)-$$
$$\left(b\,B\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1-n}{2},\,\frac{3-n}{2},\,\mathrm{Cos}[c+d\,x]^{2}\right]\,(b\,\mathrm{Sec}[c+d\,x])^{-1+n}\,\mathrm{Sin}[c+d\,x]\right)\Big/$$
$$\left(d\,(1-n)\,\sqrt{\mathrm{Sin}[c+d\,x]^{2}}\right)+\frac{b\,C\,(b\,\mathrm{Sec}[c+d\,x])^{-1+n}\,\mathrm{Tan}[c+d\,x]}{d\,n}$$

Result (type 6, 6083 leaves):

$$-\left(\left(\left(6\,\mathrm{Sec}[c+d\,x]^{-n}\,(b\,\mathrm{Sec}[c+d\,x])^{n}\,\left(B\,\mathrm{Sec}[c+d\,x]^{n}+\frac{1}{2}A\,\mathrm{Cos}[2\,(c+d\,x)]\,\mathrm{Sec}[c+d\,x]^{1+n}+\right.\right.\right.\right.$$
$$\left.\mathrm{Sec}[c+d\,x]\,\left(\frac{1}{2}A\,\mathrm{Sec}[c+d\,x]^{n}+C\,\mathrm{Sec}[c+d\,x]^{n}\right)\right)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\frac{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^{2}}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^{2}}\right)^{n}$$
$$\left(\left((A-B)\,\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,1-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^{2}\right]\right)\Big/\right.$$
$$\left(\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^{2}\right)\,\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,1-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^{2},\right.\right.\right.$$
$$\left.-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^{2}\right]+2\,\left((-1+n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,2-n,\,\frac{5}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)-\left(2\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+\left(C\,\text{AppellF1}\left[\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(3\,\text{AppellF1}\left[\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\left(n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(1+n)\,\text{AppellF1}\left[\frac{3}{2},2+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big)\Big)\Big/\left(d\left(-3\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\left(\left((A-B)\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-\left(2\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\right.\right.\right.\right.\right.\right.$$

$$\frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big) +$$

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

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

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

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

$$\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)\Big) -$$

$$6 n \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right] \left(\frac{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+n} \left(\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} +\right.$$

$$\left.\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right] \left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{\left(1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}\right)$$

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

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

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

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

$$\frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big) -$$

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

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

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

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

$$\frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big) +$$

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

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

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

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

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)\Big)\Big)\ -$$

$$6\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(\frac{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^n\ \Big(-\Big(\Big(\Big(\left(A-B\right)\ \text{AppellF1}\Big[\frac{1}{2},\ n,\ 1-n,$$

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

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

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

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

$$\frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)\Big)\Big)+$$

$$\Big(\left(A-B\right)\ \Big(-\frac{1}{3}\left(1-n\right)\ \text{AppellF1}\Big[\frac{3}{2},\ n,\ 2-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]$$

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

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big)\Big/$$

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

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

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

$$\frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)\Big)+$$

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

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big/$$

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

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

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

$$\frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)\Big)-$$

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

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

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big)\Big/$$

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

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

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

$$\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)\Big)-$$

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

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big/$$

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

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

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

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)\Big)+$$

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

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

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big)\Big/$$

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

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

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

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)\Big)-$$

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

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

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

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

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$

$$\frac{1}{3} n \text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg) + 2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\Bigg((-1+n)\left(-\frac{3}{5}(2-n) \text{AppellF1}\left[\frac{5}{2}, n, 3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] +$$
$$\frac{3}{5} n \text{AppellF1}\left[\frac{5}{2}, 1+n, 2-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg) + n\left(-\frac{3}{5}(1-n) \text{AppellF1}\left[\frac{5}{2}, 1+n,\right.\right.$$
$$2-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\Big[$$
$$\frac{1}{2}(c+d x)\Big] + \frac{3}{5}(1+n) \text{AppellF1}\left[\frac{5}{2}, 2+n, 1-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right) \Big/$$
$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(3 \text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + 2\left((-1+n) \text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big] + n \text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n,\right.$$
$$\left.\left.\left.\frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Bigg) +$$
$$\Bigg(2 A \text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\Bigg(2\left((-2+n) \text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +\right.$$
$$\left.n \text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + 3\left(-\frac{1}{3}(2-n) \text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] +$$
$$\frac{1}{3} n \text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg) + 2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\Bigg((-2+n)\left(-\frac{3}{5}(3-n) \text{AppellF1}\left[\frac{5}{2}, n, 4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] +$$
$$\frac{3}{5} n \text{AppellF1}\left[\frac{5}{2}, 1+n, 3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)+n\,\left(-\frac{3}{5}\left(2-n\right)\,\text{AppellF1}\left[\frac{5}{2},\,1+n,\right.\right.$$

$$3-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\Big[$$

$$\frac{1}{2}\left(c+d\,x\right)\Big]+\frac{3}{5}\left(1+n\right)\,\text{AppellF1}\left[\frac{5}{2},\,2+n,\,2-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big)\Big)\Big)\Big/$$

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

$$\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+2\,\left(\left(-2+n\right)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\right.\right.$$

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

$$\left.\left.\left.\left.\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)-$$

$$\left(C\,\text{AppellF1}\left[\frac{1}{2},\,1+n,\,-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right.$$

$$\left(2\,\left(n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,1-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.\right.$$

$$\left.\left(1+n\right)\,\text{AppellF1}\left[\frac{3}{2},\,2+n,\,-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+3\,\left(\frac{1}{3}\,n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,1-n,\,\frac{5}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$

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

$$\left.\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\left(n\,\left(-\frac{3}{5}\left(1-n\right)\,\text{AppellF1}\left[\frac{5}{2},\,1+n,\,2-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}\left(1+n\right)$$

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

$$\left.\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+\left(1+n\right)\,\left(\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},\,2+n,\right.\right.$$

$$1-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\Big[$$

$$\frac{1}{2}\left(c+d\,x\right)\Big]+\frac{3}{5}\left(2+n\right)\,\text{AppellF1}\left[\frac{5}{2},\,3+n,\,-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big)\Big)\Big)\Big/$$

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

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

Problem 76: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2 \,(b\,\text{Sec}[c+d x])^n \left(A + B\,\text{Sec}[c+d x] + C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 5, 208 leaves, 7 steps):

$$-\left(\left(b^3 \left(A(1-n) + C(2-n)\right) \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3-n}{2}, \frac{5-n}{2}, \text{Cos}[c+d x]^2\right] (b\,\text{Sec}[c+d x])^{-3+n}\,\text{Sin}[c+d x]\right) \Big/ \left(d(1-n)(3-n)\sqrt{\text{Sin}[c+d x]^2}\right)\right) - \left(b^2 B\,\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{2-n}{2}, \frac{4-n}{2}, \text{Cos}[c+d x]^2\right] (b\,\text{Sec}[c+d x])^{-2+n}\,\text{Sin}[c+d x]\right) \Big/ \left(d(2-n)\sqrt{\text{Sin}[c+d x]^2}\right) - \frac{b^2 C\,(b\,\text{Sec}[c+d x])^{-2+n}\,\text{Tan}[c+d x]}{d(1-n)}$$

Result (type 6, 12 574 leaves):

$$\Bigg(6\,\text{Sec}[c+d x]^{-n}\,(b\,\text{Sec}[c+d x])^n$$
$$\left(B\,\text{Sec}[c+d x]^{-1+n} + \frac{1}{2} A\,\text{Sec}[c+d x]^n + C\,\text{Sec}[c+d x]^n + \frac{1}{2} A\,\text{Cos}[2(c+d x)]\,\text{Sec}[c+d x]^n\right)$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n \left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-3+n}$$
$$\left(\left(A\,\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.\right.$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right) \Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + 2\right.$$
$$\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + n\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) -$$
$$\left(B\,\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\Bigg)\Bigg/$$

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

$$\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},\,n,\,2-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\frac{3}{2},\,1+n,\,1-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)+$$

$$\left(C\,\text{AppellF1}\left[\frac{1}{2},\,n,\,1-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\Bigg)\Bigg/$$

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

$$\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},\,n,\,2-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\frac{3}{2},\,1+n,\,1-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)-$$

$$\left(4\,A\,\text{AppellF1}\left[\frac{1}{2},\,n,\,2-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Bigg)\Bigg/$$

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

$$\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)+$$

$$\left(2\,B\,\text{AppellF1}\left[\frac{1}{2},\,n,\,2-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Bigg)\Bigg/$$

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

$$\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)+$$

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

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

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

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

$$\Bigg(d \Bigg(6 (-3+n) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 \left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-4+n} \Bigg(\Bigg(\text{A AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Bigg) \Big/$$

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

$$2 \Bigg((-1+n) \text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +$$

$$n \text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg) - \Bigg(\text{B AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Bigg) \Big/$$

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

$$2 \Bigg((-1+n) \text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +$$

$$n \text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg) + \Bigg(\text{C AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Bigg) \Big/$$

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

$$2 \Bigg((-1+n) \text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +$$

$$n \text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg) - \Bigg(4 \text{A AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg) \Big/$$

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

$$2 \Bigg((-2+n) \text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +$$

$$n \text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)+\Big(2\,B\,\mathrm{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big)\Big/$$

$$\Big(3\,\mathrm{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\Big((-2+n)\,\mathrm{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+n\,\mathrm{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Big)\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)+$$

$$\Big(4\,A\,\mathrm{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Big)\Big/$$

$$\Big(3\,\mathrm{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\Big((-3+n)\,\mathrm{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+n\,\mathrm{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Big)\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)\Big)+$$

$$3\,\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\left(\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^n\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{-3+n}$$

$$\Big(\Big(A\,\mathrm{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\Big)\Big/$$

$$\Big(3\,\mathrm{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\Big((-1+n)\,\mathrm{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+n\,\mathrm{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Big)\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)-\Big(B\,\mathrm{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\Big)\Big/$$

$$\Big(3\,\mathrm{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\Big((-1+n)\,\mathrm{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+n\,\mathrm{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Big)\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)+\Big(C\,\mathrm{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\Big)\Big/$$

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

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

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

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

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

$$6\,n\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{1+n}$$

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

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

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

$$
\begin{aligned}
&2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.\\
&\quad\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\\
&\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(B\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.\\
&\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/\\
&\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.\\
&\quad 2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.\\
&\quad\quad\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\\
&\quad\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\left(C\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.\\
&\quad\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/\\
&\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.\\
&\quad 2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.\\
&\quad\quad\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\\
&\quad\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(4\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.\\
&\quad\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/\\
&\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.\\
&\quad 2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.\\
&\quad\quad\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\\
&\quad\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\left(2\,B\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.\\
&\quad\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/\\
&\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+2\left(\left(-2+n\right)\right.\right.\\
&\quad\quad\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.\\
&\quad\quad\left.\left.\left.1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\\
&\left(4\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\Big/
\end{aligned}
$$

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

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

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

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

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

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

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

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+\Bigg(A\Bigg(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Big)\Big/$$

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

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

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

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

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Big)\Big/$$

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

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

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

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

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Big)\Big/$$

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

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

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

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

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big/$$

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

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

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

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)+\Big(2\,B\,\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,2-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big)\Big/$$

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

$$2\,\Big((-2+n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

$$n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\Big)$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)-\Big(4\,A\,\Big(-\frac{1}{3}\,(2-n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$

$$\frac{1}{3}\,n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big)\,\Big(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)\Big/$$

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

$$2\,\Big((-2+n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

$$n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\Big)$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)+\Big(2\,B\,\Big(-\frac{1}{3}\,(2-n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$

$$\frac{1}{3}\,n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big)\,\Big(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)\Big/$$

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

$$\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+n\,\mathrm{AppellF1}\left[\frac{3}{2},\right.$$

$$\left.1+n,\,2-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\Big)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)+$$

$$\Big(4\,A\,\Big(-\frac{1}{3}\,(3-n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,4-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{3}\,n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,3-n,\,\frac{5}{2},\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big)\Big)\Big/$$

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

$$2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-\left(A\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2$$
$$\left(2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\left(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$
$$\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$
$$\left((-1+n)\left(-\frac{3}{5}(2-n)\,\text{AppellF1}\left[\frac{5}{2},n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$
$$\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+n\left(-\frac{3}{5}(1-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$
$$2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\Big[$$
$$\frac{1}{2}(c+d\,x)\Big]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2+$$
$$\left(B\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\left(2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$

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

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] +$$

$$3\left(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{1}{3} n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right) +$$

$$2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 \left((-1+n)\left(-\frac{3}{5}(2-n)\,\text{AppellF1}\left[\frac{5}{2}, n, 3-n, \frac{7}{2}, \text{Tan}\left[\right.\right.\right.\right.$$

$$\left.\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] +$$

$$\frac{3}{5} n\,\text{AppellF1}\left[\frac{5}{2}, 1+n, 2-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right) + n\left(-\frac{3}{5}(1-n)\,\text{AppellF1}\left[\frac{5}{2}, 1+n,\right.\right.$$

$$2-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\Big[$$

$$\frac{1}{2}(c+d x)\Big] + \frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2}, 2+n, 1-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\Big) \Big/$$

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

$$2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +\right.$$

$$n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2 -$$

$$\left(C\,\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2$$

$$\left(2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +\right.\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + 3\left(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] +$$

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

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)+2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$
$$\Bigg(\left(-1+n\right)\left(-\frac{3}{5}\left(2-n\right)\text{AppellF1}\left[\frac{5}{2},n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$
$$\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+n\left(-\frac{3}{5}\left(1-n\right)\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$
$$\left.2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\Big[$$
$$\frac{1}{2}\left(c+d\,x\right)\Big]+\frac{3}{5}\left(1+n\right)\text{AppellF1}\left[\frac{5}{2},2+n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\right)\right)\right)\Bigg/$$
$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+$$
$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)^2+$$
$$\Bigg(4\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$
$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)$$
$$\Bigg(2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+3\left(-\frac{1}{3}\left(2-n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$
$$\frac{1}{3}\,n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$
$$\Bigg(\left(-2+n\right)\left(-\frac{3}{5}\left(3-n\right)\text{AppellF1}\left[\frac{5}{2},n,4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$
$$\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},1+n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big) + n\Big(-\frac{3}{5}(2-n)\,\text{AppellF1}\left[\frac{5}{2}, 1+n, 3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2}, 2+n, 2-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big)\Big)\Big/$$

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

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

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

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

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

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,2-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$2\,\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2-$$
$$\left(4\,A\,\text{AppellF1}\left[\frac{1}{2},\,n,\,3-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right.$$
$$\left(2\,\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,4-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,3-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,\left(-\frac{1}{3}\,(3-n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,4-n,\,\frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\frac{1}{3}\,n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,3-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\left((-3+n)\,\left(-\frac{3}{5}\,(4-n)\,\text{AppellF1}\left[\frac{5}{2},\,n,\,5-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},\,1+n,\,4-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+n\,\left(-\frac{3}{5}\,(3-n)\,\text{AppellF1}\left[\frac{5}{2},\,1+n,\right.\right.$$
$$4-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\Big[$$
$$\frac{1}{2}\,(c+d\,x)\Big]+\frac{3}{5}\,(1+n)\,\text{AppellF1}\left[\frac{5}{2},\,2+n,\,3-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,3-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$2\,\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,4-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,3-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\Bigg)\Bigg)\Bigg)$$

Problem 77: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3 (b \,\text{Sec}[c+d x])^n \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 5, 208 leaves, 7 steps):

$$-\left(\left(b^4 (A (2-n)+C (3-n)) \,\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{4-n}{2}, \frac{6-n}{2}, \text{Cos}[c+d x]^2\right] (b \,\text{Sec}[c+d x])^{-4+n} \,\text{Sin}[c+d x]\right) \Big/ \left(d (2-n) (4-n) \sqrt{\text{Sin}[c+d x]^2}\right)\right) - \left(b^3 B \,\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3-n}{2}, \frac{5-n}{2}, \text{Cos}[c+d x]^2\right] (b \,\text{Sec}[c+d x])^{-3+n} \,\text{Sin}[c+d x]\right) \Big/ \left(d (3-n) \sqrt{\text{Sin}[c+d x]^2}\right) - \frac{b^3 C (b \,\text{Sec}[c+d x])^{-3+n} \,\text{Tan}[c+d x]}{d (2-n)}$$

Result (type 6, 18 886 leaves):

$$-\Bigg(\Bigg(\Bigg(6 b \,\text{Sec}[c+d x]^{1-n} (b \,\text{Sec}[c+d x])^{-1+n} \Bigg(B \,\text{Sec}[c+d x]^{-2+n} + \frac{1}{2} A \,\text{Cos}[2 (c+d x)] \,\text{Sec}[c+d x]^{-1+n} + \text{Cos}[c+d x] \left(\frac{1}{2} A \,\text{Sec}[c+d x]^n + C \,\text{Sec}[c+d x]^n\right)\Bigg)$$

$$\text{Tan}\left[\frac{1}{2} (c+d x)\right] \left(\frac{1}{1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}\right)^n \left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^{-4+n}$$

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

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

$$\Bigg(3 \,\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right] + 2 \Bigg((-1+n) \,\text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right] + n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]\Bigg)$$

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

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

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

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

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\Big((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)+\Big(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\Big/$$

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

$$2\left(\left(-3+n\right)\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(4\,B\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+2\left(\left(-3+n\right)\right.\right.$$
$$\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.$$
$$\left.\left.\left.1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-$$
$$\left(8\,A\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+2\left(\left(-4+n\right)\right.\right.$$
$$\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.$$
$$\left.\left.\left.\left.1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\right)\Big/$$
$$\left(d\left(-6\left(-4+n\right)\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^n\right.\right.$$
$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^{-5+n}\left(\left(A\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\right.\right.\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^3\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(B\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^3\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

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

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

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

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

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)+\Big(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Big)\Big/$$

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

$$2\left(\left(-3+n\right)\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(4\,B\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-3+n\right)\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-$$
$$\left(8\,A\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-4+n\right)\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)-$$
$$3\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^{-4+n}$$
$$\left(\left(A\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right.\right.$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^3\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(B\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^3\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\left(C\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

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

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

$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(6\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/$$

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

$$2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\left(4\,B\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/$$

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

$$2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(2\,C\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/$$

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

$$2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\left(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

$$
\begin{aligned}
&-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\Big]\left(1+\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right)\Big)\Big/ \\
&\Big(3\,\text{AppellF1}\left[\tfrac{1}{2},n,3-n,\tfrac{3}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]+ \\
&\quad 2\Big((-3+n)\,\text{AppellF1}\left[\tfrac{3}{2},n,4-n,\tfrac{5}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]+ \\
&\qquad n\,\text{AppellF1}\left[\tfrac{3}{2},1+n,3-n,\tfrac{5}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]\Big) \\
&\quad \text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\Big)-\Big(4\,B\,\text{AppellF1}\left[\tfrac{1}{2},n,3-n,\tfrac{3}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,\right. \\
&\quad \left.-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]\left(1+\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right)\Big)\Big/ \\
&\Big(3\,\text{AppellF1}\left[\tfrac{1}{2},n,3-n,\tfrac{3}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]+ \\
&\quad 2\Big((-3+n)\,\text{AppellF1}\left[\tfrac{3}{2},n,4-n,\tfrac{5}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]+ \\
&\qquad n\,\text{AppellF1}\left[\tfrac{3}{2},1+n,3-n,\tfrac{5}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,\right. \\
&\qquad\quad \left.-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\Big)- \\
&\Big(8\,A\,\text{AppellF1}\left[\tfrac{1}{2},n,4-n,\tfrac{3}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]\Big)\Big/ \\
&\Big(3\,\text{AppellF1}\left[\tfrac{1}{2},n,4-n,\tfrac{3}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]+ \\
&\quad 2\Big((-4+n)\,\text{AppellF1}\left[\tfrac{3}{2},n,5-n,\tfrac{5}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]+ \\
&\qquad n\,\text{AppellF1}\left[\tfrac{3}{2},1+n,4-n,\tfrac{5}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,\right. \\
&\qquad\quad \left.-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\Big)\Big)- \\
&6\,n\,\text{Sec}\left[\tfrac{1}{2}(c+d x)\right]^2\,\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{1+n} \\
&\left(1+\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right)^{-4+n} \\
&\Big(\Big(A\,\text{AppellF1}\left[\tfrac{1}{2},n,1-n,\tfrac{3}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right] \\
&\qquad \left(1+\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right)^3\Big)\Big/ \\
&\quad \Big(3\,\text{AppellF1}\left[\tfrac{1}{2},n,1-n,\tfrac{3}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]+ \\
&\qquad 2\Big((-1+n)\,\text{AppellF1}\left[\tfrac{3}{2},n,2-n,\tfrac{5}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]+ \\
&\qquad\quad n\,\text{AppellF1}\left[\tfrac{3}{2},1+n,1-n,\tfrac{5}{2},\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\tfrac{1}{2}(c+d x)\right]^2\right]\Big)
\end{aligned}
$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big) - \Big(\text{B AppellF1}\Big[\frac{1}{2},\, n,\, 1-n,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^3\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\, n,\, 1-n,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big] +$$

$$2\,\Big((-1+n)\,\text{AppellF1}\Big[\frac{3}{2},\, n,\, 2-n,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big] +$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\, 1+n,\, 1-n,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big) + \Big(\text{C AppellF1}\Big[\frac{1}{2},\, n,\, 1-n,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^3\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\, n,\, 1-n,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big] +$$

$$2\,\Big((-1+n)\,\text{AppellF1}\Big[\frac{3}{2},\, n,\, 2-n,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big] +$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\, 1+n,\, 1-n,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big) - \Big(6\,\text{A AppellF1}\Big[\frac{1}{2},\, n,\, 2-n,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^2\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\, n,\, 2-n,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big] +$$

$$2\,\Big((-2+n)\,\text{AppellF1}\Big[\frac{3}{2},\, n,\, 3-n,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big] +$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\, 1+n,\, 2-n,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big) + \Big(4\,\text{B AppellF1}\Big[\frac{1}{2},\, n,\, 2-n,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^2\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\, n,\, 2-n,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big] +$$

$$2\,\Big((-2+n)\,\text{AppellF1}\Big[\frac{3}{2},\, n,\, 3-n,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big] +$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\, 1+n,\, 2-n,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big) - \Big(2\,\text{C AppellF1}\Big[\frac{1}{2},\, n,\, 2-n,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^2\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\, n,\, 2-n,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big] +$$

$$2\left(\left(-2+n\right)\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\left(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-3+n\right)\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(4\,B\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-3+n\right)\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-$$
$$\left(8\,A\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$2\left(\left(-4+n\right)\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Bigg)-$$
$$6\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^{-4+n}$$
$$\left(\left(3\,A\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right.\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\Big)-$$
$$\Big(3\,B\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]$$
$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right)^{2}\Big)\Big/$$
$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]+$$
$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\Big)+$$
$$\Big(3\,C\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]$$
$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right)^{2}\Big)\Big/$$
$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]+$$
$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]\right)$$
$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\Big)+\Big(A\left(-\frac{1}{3}\left(1-n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{3}$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right)^{3}\Big)\Big/$$
$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]+$$
$$2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]\right)$$
$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\Big)-\Big(B\left(-\frac{1}{3}\left(1-n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\Big]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{3}$$

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

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^3\right)\Big/$$

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

$$2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+\left(C\left(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3}$$

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

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^3\right)\Big/$$

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

$$2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-$$

$$\left(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/$$

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

$$2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$

$$\left(8\,B\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/$$

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

$$2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-$$
$$\left(4\,C\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-\left(6\,A\left(-\frac{1}{3}(2-n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\right.\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+\left(4\,B\left(-\frac{1}{3}(2-n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\right.\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-\left(2\,C\left(-\frac{1}{3}(2-n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\right.\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}$$

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

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\Big/$$

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

$$2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$

$$\left(12\,A\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\Big/$$

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

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

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-$$

$$\left(4\,B\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\Big/$$

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

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

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+\left(12\,A\left(-\frac{1}{3}(3-n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3}$$

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

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/$$

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

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

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Big)$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)-\Bigg(4\,B\left(-\frac{1}{3}(3-n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Big/$$
$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$
$$2\left(\left(-3+n\right)\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)-$$
$$\Bigg(8\,A\left(-\frac{1}{3}(4-n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg)\Big/$$
$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$
$$2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)-\Bigg(A\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^3$$
$$\Bigg(2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\left(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$
$$\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\left(\left(-1+n\right)\left(-\frac{3}{5}\left(2-n\right)\text{AppellF1}\left[\frac{5}{2},n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+n\left(-\frac{3}{5}\left(1-n\right)\text{AppellF1}\left[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}\left(1+n\right)\text{AppellF1}\left[\frac{5}{2},2+n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\right)\right)\right)\Big/$$

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

$$\left(B\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^3\right.$$

$$\left(2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+3\left(-\frac{1}{3}\left(1-n\right)\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right.$$

$$\left(\left(-1+n\right)\left(-\frac{3}{5}\left(2-n\right)\text{AppellF1}\left[\frac{5}{2},n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+n\left(-\frac{3}{5}\left(1-n\right)\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$

$$2-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}\left(1+n\right)\ \text{AppellF1}\left[\frac{5}{2},\ 2+n,\ 1-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\ \text{AppellF1}\left[\frac{1}{2},\ n,\ 1-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+2\Bigg(\left(-1+n\right)\ \text{AppellF1}\left[\frac{3}{2},\ n,\ 2-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+n\ \text{AppellF1}\left[\frac{3}{2},\ 1+n,\ 1-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\Bigg)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)^2-$$

$$\Bigg(C\ \text{AppellF1}\left[\frac{1}{2},\ n,\ 1-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^3$$

$$\Bigg(2\Bigg(\left(-1+n\right)\ \text{AppellF1}\left[\frac{3}{2},\ n,\ 2-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+n\ \text{AppellF1}\left[\frac{3}{2},\ 1+n,\ 1-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\Bigg)$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+3\Bigg(-\frac{1}{3}\left(1-n\right)\ \text{AppellF1}\left[\frac{3}{2},\ n,\ 2-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{3}n\ \text{AppellF1}\left[\frac{3}{2},\ 1+n,\ 1-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)+2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\Bigg(\left(-1+n\right)\Bigg(-\frac{3}{5}\left(2-n\right)\ \text{AppellF1}\left[\frac{5}{2},\ n,\ 3-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}n\ \text{AppellF1}\left[\frac{5}{2},\ 1+n,\ 2-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)+n\Bigg(-\frac{3}{5}\left(1-n\right)\ \text{AppellF1}\left[\frac{5}{2},\ 1+n,\ 2-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}\left(1+n\right)\ \text{AppellF1}\left[\frac{5}{2},\ 2+n,\ 1-n,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

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

$$\left(\left(-1+n\right) \text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]+\right.$$

$$n \text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big)^2+$$

$$\left(6 A \text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)^2$$

$$\left(2\left(\left(-2+n\right) \text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]+\right.\right.$$

$$\left.n \text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+3\left(-\frac{1}{3}\left(2-n\right) \text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+$$

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

$$\left.\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right)+2 \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2$$

$$\left(\left(-2+n\right)\left(-\frac{3}{5}\left(3-n\right) \text{AppellF1}\left[\frac{5}{2}, n, 4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+$$

$$\frac{3}{5} n \text{AppellF1}\left[\frac{5}{2}, 1+n, 3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right)+n\left(-\frac{3}{5}\left(2-n\right) \text{AppellF1}\left[\frac{5}{2}, 1+n,\right.\right.$$

$$\left.3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \text{Tan}\Big[$$

$$\frac{1}{2}\left(c+d x\right)\Big]+\frac{3}{5}\left(1+n\right) \text{AppellF1}\left[\frac{5}{2}, 2+n, 2-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,\right.$$

$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right)\right)\right)\right)\Big/$$

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

$$\left(\left(-2+n\right) \text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]+\right.$$

$$n \text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big)^2-$$

$$\left(4 B \text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2$$
$$\left(2\,\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,\left(-\frac{1}{3}\,(2-n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\frac{1}{3}\,n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\left((-2+n)\,\left(-\frac{3}{5}\,(3-n)\,\text{AppellF1}\left[\frac{5}{2},\,n,\,4-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},\,1+n,\,3-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+n\,\left(-\frac{3}{5}\,(2-n)\,\text{AppellF1}\left[\frac{5}{2},\,1+n,\right.\right.$$
$$3-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\right.$$
$$\left.\frac{1}{2}\,(c+d\,x)\right]+\frac{3}{5}\,(1+n)\,\text{AppellF1}\left[\frac{5}{2},\,2+n,\,2-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,2-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+2\right.$$
$$\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2+$$
$$\left(2\,C\,\text{AppellF1}\left[\frac{1}{2},\,n,\,2-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right.$$
$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2$$
$$\left(2\,\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,\left(-\frac{1}{3}\,(2-n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] +$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg) + 2 \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\Bigg(\left(-2+n\right)\Bigg(-\frac{3}{5}(3-n) \,\text{AppellF1}\left[\frac{5}{2}, n, 4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] +$$

$$\frac{3}{5} n \,\text{AppellF1}\left[\frac{5}{2}, 1+n, 3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg) + n \Bigg(-\frac{3}{5}(2-n) \,\text{AppellF1}\left[\frac{5}{2}, 1+n,\right.$$

$$3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\Big[$$

$$\frac{1}{2}(c+d x)\Big] + \frac{3}{5}(1+n) \,\text{AppellF1}\left[\frac{5}{2}, 2+n, 2-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg) \Bigg/$$

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

$$\Bigg(\left(-2+n\right) \,\text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +$$

$$n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)^2 -$$

$$\Bigg(12 \,A \,\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

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

$$n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + 3 \Bigg(-\frac{1}{3}(3-n) \,\text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] +$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg) + 2 \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\Bigg(\left(-3+n\right)\Bigg(-\frac{3}{5}(4-n) \,\text{AppellF1}\left[\frac{5}{2}, n, 5-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},1+n,4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)+n\left(-\frac{3}{5}(3-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$

$$4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\Big[$$

$$\frac{1}{2}(c+d x)\Big]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,3-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\Bigg/$$

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

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

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)^2+$$

$$\Bigg(4\,B\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

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

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+3\left(-\frac{1}{3}(3-n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

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

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\Bigg((-3+n)\left(-\frac{3}{5}(4-n)\,\text{AppellF1}\left[\frac{5}{2},n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},1+n,4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)+n\left(-\frac{3}{5}(3-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$

$$4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\Big[$$

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

$$-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)^2\Big)\Big)\Big)\Big)$$

Problem 78: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^{5/2}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 5, 223 leaves, 7 steps):

$$\frac{2\,C\,\mathrm{Sec}[c+d\,x]^{7/2}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]}{d\,(7+2\,n)}+$$
$$\left(2\,(C\,(5+2\,n)+A\,(7+2\,n))\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}(-3-2\,n),\frac{1}{4}(1-2\,n),\mathrm{Cos}[c+d\,x]^2\right]\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{3/2}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(3+2\,n)\,(7+2\,n)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+$$
$$\left(2\,B\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}(-5-2\,n),\frac{1}{4}(-1-2\,n),\mathrm{Cos}[c+d\,x]^2\right]\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{5/2}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(5+2\,n)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 493 leaves):

$$-\frac{1}{d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])}$$
$$i\,2^{\frac{9}{2}+n}\,e^{2\,i\,c-\frac{1}{2}\,i\,d\,(1+2\,n)\,x}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{\frac{1}{2}+n}\left(1+e^{2\,i\,(c+d\,x)}\right)^{\frac{1}{2}+n}$$
$$\left(\frac{1}{5+2\,n}A\,e^{\frac{1}{2}\,i\,d\,(5+2\,n)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{9}{2}+n,\frac{1}{4}(5+2\,n),\frac{1}{4}(9+2\,n),-e^{2\,i\,(c+d\,x)}\right]+\frac{1}{7+2\,n}\right.$$
$$2\,B\,e^{\frac{1}{2}\,i\,(2\,c+d\,(7+2\,n)\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{9}{2}+n,\frac{1}{4}(7+2\,n),\frac{1}{4}(11+2\,n),-e^{2\,i\,(c+d\,x)}\right]+$$
$$e^{2\,i\,c}\left(\frac{1}{9+2\,n}2\,(A+2\,C)\,e^{\frac{1}{2}\,i\,d\,(9+2\,n)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{9}{2}+n,\right.\right.$$
$$\left.\frac{1}{4}(9+2\,n),\frac{1}{4}(13+2\,n),-e^{2\,i\,(c+d\,x)}\right]+\frac{1}{11+2\,n}2\,B\,e^{\frac{1}{2}\,i\,(2\,c+d\,(11+2\,n)\,x)}$$
$$\mathrm{Hypergeometric2F1}\left[\frac{9}{2}+n,\frac{1}{4}(11+2\,n),\frac{1}{4}(15+2\,n),-e^{2\,i\,(c+d\,x)}\right]+\frac{1}{13+2\,n}$$
$$\left.\left.A\,e^{\frac{1}{2}\,i\,(4\,c+d\,(13+2\,n)\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{9}{2}+n,\frac{1}{4}(13+2\,n),\frac{1}{4}(17+2\,n),-e^{2\,i\,(c+d\,x)}\right]\right)\right)$$
$$\mathrm{Sec}[c+d\,x]^{-2-n}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

Problem 79: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x]^{3/2}\,(b \operatorname{Sec}[c+d x])^n\,\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\,dx$$

Optimal (type 5, 223 leaves, 7 steps):

$$\frac{2\,C\,\operatorname{Sec}[c+d x]^{5/2}\,(b\operatorname{Sec}[c+d x])^n\,\operatorname{Sin}[c+d x]}{d\,(5+2 n)}+\left(2\,(C\,(3+2 n)+A\,(5+2 n))\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}\,(-1-2 n),\frac{1}{4}\,(3-2 n),\operatorname{Cos}[c+d x]^2\right]\sqrt{\operatorname{Sec}[c+d x]}\,(b\operatorname{Sec}[c+d x])^n\,\operatorname{Sin}[c+d x]\right)\Big/\left(d\,(1+2 n)\,(5+2 n)\,\sqrt{\operatorname{Sin}[c+d x]^2}\right)+\left(2\,B\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}\,(-3-2 n),\frac{1}{4}\,(1-2 n),\operatorname{Cos}[c+d x]^2\right]\operatorname{Sec}[c+d x]^{3/2}\,(b\operatorname{Sec}[c+d x])^n\,\operatorname{Sin}[c+d x]\right)\Big/\left(d\,(3+2 n)\,\sqrt{\operatorname{Sin}[c+d x]^2}\right)$$

Result (type 5, 487 leaves):

$$-\frac{1}{d\,(A+2 C+2 B\operatorname{Cos}[c+d x]+A\operatorname{Cos}[2 c+2 d x])}\,i\,2^{\frac{7}{2}+n}\,e^{-\frac{1}{2} i d (3+2 n) x}\left(\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}\right)^{\frac{3}{2}+n}\left(1+e^{2 i (c+d x)}\right)^{\frac{3}{2}+n}\left(\frac{1}{3+2 n}A\,e^{\frac{1}{2} i d (3+2 n) x}\,\text{Hypergeometric2F1}\left[\frac{7}{2}+n,\frac{1}{4}\,(3+2 n),\frac{1}{4}\,(7+2 n),-e^{2 i (c+d x)}\right]+\frac{1}{5+2 n}2\,B\,e^{\frac{1}{2} i (2 c+d (5+2 n) x)}\,\text{Hypergeometric2F1}\left[\frac{7}{2}+n,\frac{1}{4}\,(5+2 n),\frac{1}{4}\,(9+2 n),-e^{2 i (c+d x)}\right]+e^{2 i c}\left(\frac{1}{7+2 n}2\,(A+2 C)\,e^{\frac{1}{2} i d (7+2 n) x}\,\text{Hypergeometric2F1}\left[\frac{7}{2}+n,\frac{1}{4}\,(7+2 n),\frac{1}{4}\,(11+2 n),-e^{2 i (c+d x)}\right]+\frac{1}{9+2 n}2\,B\,e^{\frac{1}{2} i (2 c+d (9+2 n) x)}\,\text{Hypergeometric2F1}\left[\frac{7}{2}+n,\frac{1}{4}\,(9+2 n),\frac{1}{4}\,(13+2 n),-e^{2 i (c+d x)}\right]+\frac{1}{11+2 n}A\,e^{\frac{1}{2} i (4 c+d (11+2 n) x)}\,\text{Hypergeometric2F1}\left[\frac{7}{2}+n,\frac{1}{4}\,(11+2 n),\frac{1}{4}\,(15+2 n),-e^{2 i (c+d x)}\right]\right)\right)\operatorname{Sec}[c+d x]^{-2-n}\,(b\operatorname{Sec}[c+d x])^n\,\left(A+B\operatorname{Sec}[c+d x]+C\operatorname{Sec}[c+d x]^2\right)$$

Problem 80: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \sqrt{\operatorname{Sec}[c+d x]}\,(b \operatorname{Sec}[c+d x])^n\,\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\,dx$$

Optimal (type 5, 221 leaves, 7 steps):

$$\frac{2\,C\,\mathrm{Sec}[c+d\,x]^{3/2}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]}{d\,(3+2\,n)}-$$
$$\left(2\,(C+2\,C\,n+A\,(3+2\,n))\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}\,(1-2\,n),\frac{1}{4}\,(5-2\,n),\mathrm{Cos}[c+d\,x]^2\right]\right.$$
$$\left.(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(1-2\,n)\,(3+2\,n)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)+$$
$$\left(2\,B\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}\,(-1-2\,n),\frac{1}{4}\,(3-2\,n),\mathrm{Cos}[c+d\,x]^2\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$
$$\left.(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(1+2\,n)\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 492 leaves):

$$-\frac{1}{A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]}\,\mathrm{i}\,2^{\frac{5}{2}+n}\,e^{-\frac{1}{2}\,\mathrm{i}\,d\,(1+2\,n)\,x}\left(\frac{e^{\mathrm{i}\,(c+d\,x)}}{1+e^{2\,\mathrm{i}\,(c+d\,x)}}\right)^{\frac{1}{2}+n}\left(1+e^{2\,\mathrm{i}\,(c+d\,x)}\right)^{\frac{1}{2}+n}$$
$$\left(\frac{1}{d+2\,d\,n}A\,e^{\frac{1}{2}\,\mathrm{i}\,(d+2\,d\,n)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{5}{2}+n,\frac{1}{4}\,(1+2\,n),\frac{1}{4}\,(5+2\,n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\frac{1}{d}\right.$$
$$e^{\mathrm{i}\,c}\left(\frac{1}{3+2\,n}2\,B\,e^{\frac{1}{2}\,\mathrm{i}\,d\,(3+2\,n)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{5}{2}+n,\frac{1}{4}\,(3+2\,n),\frac{1}{4}\,(7+2\,n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\right.$$
$$e^{\mathrm{i}\,c}\left(\frac{1}{5+2\,n}2\,(A+2\,C)\,e^{\frac{1}{2}\,\mathrm{i}\,d\,(5+2\,n)\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{5}{2}+n,\right.\right.$$
$$\left.\frac{1}{4}\,(5+2\,n),\frac{1}{4}\,(9+2\,n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\frac{1}{7+2\,n}2\,B\,e^{\frac{1}{2}\,\mathrm{i}\,(2\,c+d\,(7+2\,n)\,x)}$$
$$\mathrm{Hypergeometric2F1}\left[\frac{5}{2}+n,\frac{1}{4}\,(7+2\,n),\frac{1}{4}\,(11+2\,n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\frac{1}{9+2\,n}$$
$$\left.\left.\left.A\,e^{\frac{1}{2}\,\mathrm{i}\,(4\,c+d\,(9+2\,n)\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{5}{2}+n,\frac{1}{4}\,(9+2\,n),\frac{1}{4}\,(13+2\,n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]\right)\right)\right)$$
$$\mathrm{Sec}[c+d\,x]^{-2-n}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

Problem 81: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 5, 222 leaves, 7 steps):

$$\frac{2\,C\,\sqrt{\mathrm{Sec}[c+d\,x]}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]}{d\,(1+2\,n)}-$$
$$\left(2\,(A-C\,(1-2\,n)+2\,A\,n)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}\,(3-2\,n),\frac{1}{4}\,(7-2\,n),\mathrm{Cos}[c+d\,x]^2\right]\right.$$
$$\left.(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(3-2\,n)\,(1+2\,n)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)-$$
$$\left(2\,B\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}\,(1-2\,n),\frac{1}{4}\,(5-2\,n),\mathrm{Cos}[c+d\,x]^2\right]\,(b\,\mathrm{Sec}[c+d\,x])^n\right.$$
$$\left.\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(1-2\,n)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 548 leaves):

$$-\Bigg(\bigg(i\, 2^{\frac{3}{2}+n}\, e^{-\frac{1}{2} i (2 c+d (1+2 n) x)} \left(\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}\right)^{\frac{1}{2}+n} \left(1+e^{2 i (c+d x)}\right)^{\frac{1}{2}+n} \Big(A\, e^{\frac{1}{2} i d (-1+2 n) x} \left(105+352 n+344 n^2+128 n^3+16 n^4\right) \text{Hypergeometric2F1}\left[\frac{3}{2}+n,\frac{1}{4} (-1+2 n),\frac{1}{4} (3+2 n),-e^{2 i (c+d x)}\right]+e^{i c} (-1+2 n) \Big(2 B\, e^{\frac{1}{2} i d (1+2 n) x} \left(105+142 n+60 n^2+8 n^3\right) \text{Hypergeometric2F1}\left[\frac{3}{2}+n,\frac{1}{4} (1+2 n),\frac{1}{4} (5+2 n),-e^{2 i (c+d x)}\right]+e^{\frac{1}{2} i (2 c+d (3+2 n) x)} (1+2 n) \Big(2 (A+2 C) \left(35+24 n+4 n^2\right) \text{Hypergeometric2F1}\left[\frac{3}{2}+n,\frac{1}{4} (3+2 n),\frac{1}{4} (7+2 n),-e^{2 i (c+d x)}\right]+e^{i (c+d x)} (3+2 n) \Big(2 B (7+2 n) \text{Hypergeometric2F1}\left[\frac{3}{2}+n,\frac{1}{4} (5+2 n),\frac{1}{4} (9+2 n),-e^{2 i (c+d x)}\right]+A\, e^{i (c+d x)} (5+2 n) \text{Hypergeometric2F1}\left[\frac{3}{2}+n,\frac{1}{4} (7+2 n),\frac{1}{4} (11+2 n),-e^{2 i (c+d x)}\right]\Big)\Big)\Big)\Big) \text{Sec}[c+d x]^{-2-n} (b\, \text{Sec}[c+d x])^n \left(A+B\, \text{Sec}[c+d x]+C\, \text{Sec}[c+d x]^2\right)\bigg) \Big/ \Big(d (-1+2 n) (1+2 n) (3+2 n) (5+2 n) (7+2 n) (A+2 C+2 B\, \text{Cos}[c+d x]+A\, \text{Cos}[2 c+2 d x])\Big)\Bigg)$$

Problem 82: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(b\, \text{Sec}[c+d x])^n \left(A+B\, \text{Sec}[c+d x]+C\, \text{Sec}[c+d x]^2\right)}{\text{Sec}[c+d x]^{3/2}} \, dx$$

Optimal (type 5, 221 leaves, 7 steps):

$$-\frac{2\,C\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]}{d\,(1-2\,n)\,\sqrt{\mathrm{Sec}[c+d\,x]}}-\Big(2\,(A+C\,(3-2\,n)-2\,A\,n)\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{2},\frac{1}{4}\,(5-2\,n),\frac{1}{4}\,(9-2\,n),\mathrm{Cos}[c+d\,x]^2\Big]\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\Big)\Big/\Big(d\,(1-2\,n)\,(5-2\,n)\,\mathrm{Sec}[c+d\,x]^{5/2}\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\Big)-\Big(2\,B\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{2},\frac{1}{4}\,(3-2\,n),\frac{1}{4}\,(7-2\,n),\mathrm{Cos}[c+d\,x]^2\Big]\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\Big)\Big/\Big(d\,(3-2\,n)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\Big)$$

Result (type 5, 502 leaves):

$$-\frac{1}{A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]}\,i\,2^{\frac{1}{2}+n}\,e^{-\frac{1}{2}\,i\,(4\,c+d\,(1+2\,n)\,x)}\left(\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}\right)^{\frac{1}{2}+n}\left(1+e^{2\,i\,(c+d\,x)}\right)^{\frac{1}{2}+n}\Bigg(\frac{1}{d\,(-3+2\,n)}A\,e^{\frac{1}{2}\,i\,d\,(-3+2\,n)\,x}\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{2}+n,\frac{1}{4}\,(-3+2\,n),\frac{1}{4}\,(1+2\,n),-e^{2\,i\,(c+d\,x)}\Big]+\frac{1}{d\,(-1+2\,n)}2\,B\,e^{\frac{1}{2}\,i\,(2\,c+d\,(-1+2\,n)\,x)}\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{2}+n,\frac{1}{4}\,(-1+2\,n),\frac{1}{4}\,(3+2\,n),-e^{2\,i\,(c+d\,x)}\Big]+e^{2\,i\,c}\Bigg(\frac{1}{d+2\,d\,n}2\,(A+2\,C)\,e^{\frac{1}{2}\,i\,d\,(1+2\,n)\,x}\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{2}+n,\frac{1}{4}\,(1+2\,n),\frac{1}{4}\,(5+2\,n),-e^{2\,i\,(c+d\,x)}\Big]+\Big(e^{\frac{1}{2}\,i\,(2\,c+d\,(3+2\,n)\,x)}\Big(2\,B\,(5+2\,n)\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{2}+n,\frac{1}{4}\,(3+2\,n),\frac{1}{4}\,(7+2\,n),-e^{2\,i\,(c+d\,x)}\Big]+A\,e^{i\,(c+d\,x)}\,(3+2\,n)\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{2}+n,\frac{1}{4}\,(5+2\,n),\frac{1}{4}\,(9+2\,n),-e^{2\,i\,(c+d\,x)}\Big]\Big)\Big)\Big/\Big(d\,(3+2\,n)\,(5+2\,n)\Big)\Bigg)\Bigg)\,\mathrm{Sec}[c+d\,x]^{-2-n}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

Problem 83: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\mathrm{Sec}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 5, 223 leaves, 7 steps):

$$-\frac{2\,C\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]}{d\,(3-2\,n)\,\mathrm{Sec}[c+d\,x]^{3/2}}-\left(2\,(A\,(3-2\,n)+C\,(5-2\,n))\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}\,(7-2\,n),\frac{1}{4}\,(11-2\,n),\mathrm{Cos}[c+d\,x]^2\right]\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(3-2\,n)\,(7-2\,n)\,\mathrm{Sec}[c+d\,x]^{7/2}\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)-\left(2\,B\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}\,(5-2\,n),\frac{1}{4}\,(9-2\,n),\mathrm{Cos}[c+d\,x]^2\right]\,(b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,(5-2\,n)\,\mathrm{Sec}[c+d\,x]^{5/2}\,\sqrt{\mathrm{Sin}[c+d\,x]^2}\right)$$

Result (type 5, 502 leaves):

$$-\frac{1}{A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]}\,\mathrm{i}\,2^{-\frac{1}{2}+n}\,e^{-\frac{1}{2}\,\mathrm{i}\,(4\,c+d\,(-1+2\,n)\,x)}\left(\frac{e^{\mathrm{i}\,(c+d\,x)}}{1+e^{2\,\mathrm{i}\,(c+d\,x)}}\right)^{-\frac{1}{2}+n}\left(1+e^{2\,\mathrm{i}\,(c+d\,x)}\right)^{-\frac{1}{2}+n}\left(\frac{1}{d\,(-5+2\,n)}A\,e^{\frac{1}{2}\,\mathrm{i}\,d\,(-5+2\,n)\,x}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2}+n,\frac{1}{4}\,(-5+2\,n),\frac{1}{4}\,(-1+2\,n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\frac{1}{d\,(-3+2\,n)}2\,B\,e^{\frac{1}{2}\,\mathrm{i}\,(2\,c+d\,(-3+2\,n)\,x)}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2}+n,\frac{1}{4}\,(-3+2\,n),\frac{1}{4}\,(1+2\,n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+e^{2\,\mathrm{i}\,c}\left(\frac{1}{d\,(-1+2\,n)}2\,(A+2\,C)\,e^{\frac{1}{2}\,\mathrm{i}\,d\,(-1+2\,n)\,x}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2}+n,\frac{1}{4}\,(-1+2\,n),\frac{1}{4}\,(3+2\,n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\frac{1}{d+2\,d\,n}2\,B\,e^{\frac{1}{2}\,\mathrm{i}\,(2\,c+d\,x+2\,d\,n\,x)}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2}+n,\frac{1}{4}\,(1+2\,n),\frac{1}{4}\,(5+2\,n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+\frac{1}{d\,(3+2\,n)}A\,e^{\frac{1}{2}\,\mathrm{i}\,(4\,c+d\,(3+2\,n)\,x)}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2}+n,\frac{1}{4}\,(3+2\,n),\frac{1}{4}\,(7+2\,n),-e^{2\,\mathrm{i}\,(c+d\,x)}\right]\right)\right)\mathrm{Sec}[c+d\,x]^{-2-n}\,(b\,\mathrm{Sec}[c+d\,x])^n\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

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

$$\int \mathrm{Sec}[c+d\,x]^3\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 140 leaves, 7 steps):

$$\frac{a\,(4\,A+3\,C)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{8\,d}+\frac{a\,(5\,A+4\,C)\,\mathrm{Tan}[c+d\,x]}{5\,d}+\frac{a\,(4\,A+3\,C)\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{8\,d}+\frac{a\,C\,\mathrm{Sec}[c+d\,x]^3\,\mathrm{Tan}[c+d\,x]}{4\,d}+\frac{a\,C\,\mathrm{Sec}[c+d\,x]^4\,\mathrm{Tan}[c+d\,x]}{5\,d}+\frac{a\,(5\,A+4\,C)\,\mathrm{Tan}[c+d\,x]^3}{15\,d}$$

Result (type 3, 426 leaves):

$$-\frac{a\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}-\frac{3\,a\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{a\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{3\,a\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{a\,A}{4\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{3\,a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}-\frac{a\,A}{4\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{3\,a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{2\,a\,A\,\text{Tan}[c+d\,x]}{3\,d}+\frac{8\,a\,C\,\text{Tan}[c+d\,x]}{15\,d}+\frac{a\,A\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}+\frac{4\,a\,C\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{15\,d}+\frac{a\,C\,\text{Sec}[c+d\,x]^4\,\text{Tan}[c+d\,x]}{5\,d}$$

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

$$\int \text{Sec}[c+d\,x]^2\,(a+a\,\text{Sec}[c+d\,x])\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

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

$$\frac{a\,(4\,A+3\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{a\,(3\,A+2\,C)\,\text{Tan}[c+d\,x]}{3\,d}+\frac{a\,(4\,A+3\,C)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{8\,d}+\frac{a\,C\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}+\frac{a\,C\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{4\,d}$$

Result (type 3, 377 leaves):

$$-\frac{a\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}-\frac{3\,a\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{a\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{3\,a\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{a\,A}{4\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{3\,a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}-\frac{a\,A}{4\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{3\,a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{a\,A\,\text{Tan}[c+d\,x]}{d}+\frac{2\,a\,C\,\text{Tan}[c+d\,x]}{3\,d}+\frac{a\,C\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}$$

Problem 87: Result more than twice size of optimal antiderivative.

$$\int (a + a \operatorname{Sec}[c + d x]) \left(A + C \operatorname{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 58 leaves, 5 steps):

$$a A x + \frac{a (2 A + C) \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{2 d} + \frac{a C \operatorname{Tan}[c + d x]}{d} + \frac{a C \operatorname{Sec}[c + d x] \operatorname{Tan}[c + d x]}{2 d}$$

Result (type 3, 218 leaves):

$$a A x - \frac{a A \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{a A \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} - \frac{a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{2 d} + \frac{a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{2 d} + \frac{a C}{4 d \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} - \frac{a C}{4 d \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} + \frac{a C \operatorname{Tan}[c + d x]}{d}$$

Problem 88: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c + d x] (a + a \operatorname{Sec}[c + d x]) \left(A + C \operatorname{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 42 leaves, 5 steps):

$$a A x + \frac{a C \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{d} + \frac{a A \operatorname{Sin}[c + d x]}{d} + \frac{a C \operatorname{Tan}[c + d x]}{d}$$

Result (type 3, 112 leaves):

$$a A x - \frac{a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{a A \operatorname{Cos}[d x] \operatorname{Sin}[c]}{d} + \frac{a A \operatorname{Cos}[c] \operatorname{Sin}[d x]}{d} + \frac{a C \operatorname{Tan}[c + d x]}{d}$$

Problem 94: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c + d x] (a + a \operatorname{Sec}[c + d x])^2 \left(A + C \operatorname{Sec}[c + d x]^2\right) dx$$

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

$$\frac{a^2 (12 A + 7 C) \text{ArcTanh}[\text{Sin}[c + d x]]}{8 d} + \frac{a^2 (12 A + 7 C) \text{Tan}[c + d x]}{6 d} + \frac{a^2 (12 A + 7 C) \text{Sec}[c + d x] \text{Tan}[c + d x]}{24 d} - \frac{C (a + a \text{Sec}[c + d x])^2 \text{Tan}[c + d x]}{12 d} + \frac{C (a + a \text{Sec}[c + d x])^3 \text{Tan}[c + d x]}{4 a d}$$

Result (type 3, 291 leaves):

$$-\frac{1}{384 d (A + 2 C + A \text{Cos}[2 (c + d x)])} a^2 (1 + \text{Cos}[c + d x])^2 (C + A \text{Cos}[c + d x]^2) \text{Sec}\left[\frac{1}{2} (c + d x)\right]^4 \text{Sec}[c + d x]^4 \Bigg(24 (12 A + 7 C) \text{Cos}[c + d x]^4 \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] - \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right]\right) - \text{Sec}[c] (-48 (3 A + 2 C) \text{Sin}[c] + 3 (4 A + 15 C) \text{Sin}[d x] + 12 A \text{Sin}[2 c + d x] + 45 C \text{Sin}[2 c + d x] + 144 A \text{Sin}[c + 2 d x] + 128 C \text{Sin}[c + 2 d x] - 48 A \text{Sin}[3 c + 2 d x] + 12 A \text{Sin}[2 c + 3 d x] + 21 C \text{Sin}[2 c + 3 d x] + 12 A \text{Sin}[4 c + 3 d x] + 21 C \text{Sin}[4 c + 3 d x] + 48 A \text{Sin}[3 c + 4 d x] + 32 C \text{Sin}[3 c + 4 d x])\Bigg)$$

Problem 95: Result more than twice size of optimal antiderivative.

$$\int (a + a \text{Sec}[c + d x])^2 (A + C \text{Sec}[c + d x]^2) \, dx$$

Optimal (type 3, 96 leaves, 6 steps):

$$a^2 A x + \frac{a^2 (2 A + C) \text{ArcTanh}[\text{Sin}[c + d x]]}{d} + \frac{a^2 (A + C) \text{Tan}[c + d x]}{d} + \frac{C (a + a \text{Sec}[c + d x])^2 \text{Tan}[c + d x]}{3 d} + \frac{C (a^2 + a^2 \text{Sec}[c + d x]) \text{Tan}[c + d x]}{3 d}$$

Result (type 3, 1090 leaves):

$$\left(A\,x\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(2\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left((-2\,A-C)\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$
$$\left.(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(2\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left((2\,A+C)\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$
$$\left.(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(2\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(12\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\left(7\,C\,\mathrm{Cos}\left[\frac{c}{2}\right]-5\,C\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(24\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right.$$
$$\left.\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\left(3\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+5\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(6\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)+$$
$$\left(C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(12\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right.$$
$$\left.\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\left(-7\,C\,\mathrm{Cos}\left[\frac{c}{2}\right]-5\,C\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(24\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right.$$
$$\left.\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\left(3\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+5\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(6\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)$$

Problem 96: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 112 leaves, 6 steps):

$$2 a^2 A x + \frac{a^2 (2 A + 3 C) \text{ArcTanh}[\text{Sin}[c + d x]]}{2 d} + \frac{A (a + a \text{Sec}[c + d x])^2 \text{Sin}[c + d x]}{d} - \frac{a^2 (2 A - 3 C) \text{Tan}[c + d x]}{2 d} - \frac{(2 A - C) (a^2 + a^2 \text{Sec}[c + d x]) \text{Tan}[c + d x]}{2 d}$$

Result (type 3, 330 leaves):

$$\frac{1}{8 (A + 2 C + A \text{Cos}[2 (c + d x)])} a^2 \text{Cos}[c + d x]^4 \text{Sec}\left[\frac{1}{2} (c + d x)\right]^4 (1 + \text{Sec}[c + d x])^2 (A + C \text{Sec}[c + d x]^2) \left(8 A x - \frac{2 (2 A + 3 C) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{d} + \frac{2 (2 A + 3 C) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{d} + \frac{4 A \text{Cos}[d x] \text{Sin}[c]}{d} + \frac{4 A \text{Cos}[c] \text{Sin}[d x]}{d} + \frac{C}{d \left(\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} + \frac{8 C \text{Sin}\left[\frac{d x}{2}\right]}{d \left(\text{Cos}\left[\frac{c}{2}\right] - \text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)} - \frac{C}{d \left(\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} + \frac{8 C \text{Sin}\left[\frac{d x}{2}\right]}{d \left(\text{Cos}\left[\frac{c}{2}\right] + \text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)}\right)$$

Problem 97: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c + d x]^2 (a + a \text{Sec}[c + d x])^2 (A + C \text{Sec}[c + d x]^2) \, dx$$

Optimal (type 3, 119 leaves, 5 steps):

$$\frac{1}{2} a^2 (3 A + 2 C) x + \frac{2 a^2 C \text{ArcTanh}[\text{Sin}[c + d x]]}{d} + \frac{a^2 (3 A - 2 C) \text{Sin}[c + d x]}{2 d} + \frac{A \text{Cos}[c + d x] (a + a \text{Sec}[c + d x])^2 \text{Sin}[c + d x]}{2 d} - \frac{(A - 2 C) (a^2 + a^2 \text{Sec}[c + d x]) \text{Sin}[c + d x]}{2 d}$$

Result (type 3, 292 leaves):

$$-\left(\left(a^2 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \left(4 \operatorname{Cos}[d x] \left(3 A d x+2 C d x-4 C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+4 C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+4 \operatorname{Cos}[2 c+d x] \left(3 A d x+2 C d x-4 C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+4 C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+A \operatorname{Sin}[d x]+16 C \operatorname{Sin}[d x]+A \operatorname{Sin}[2 c+d x]+8 A \operatorname{Sin}[c+2 d x]+8 A \operatorname{Sin}[3 c+2 d x]+A \operatorname{Sin}[2 c+3 d x]+A \operatorname{Sin}[4 c+3 d x]\right)\right) \Big/ \left(16 d \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)$$

Problem 103: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x]\,(a+a \operatorname{Sec}[c+d x])^3 \left(A+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 157 leaves, 11 steps):

$$\frac{a^3 (20 A+13 C) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}+\frac{a^3 (20 A+13 C) \operatorname{Tan}[c+d x]}{5 d}+\frac{3 a^3 (20 A+13 C) \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{40 d}-\frac{C (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Tan}[c+d x]}{20 d}+\frac{C (a+a \operatorname{Sec}[c+d x])^4 \operatorname{Tan}[c+d x]}{5 a d}+\frac{a^3 (20 A+13 C) \operatorname{Tan}[c+d x]^3}{60 d}$$

Result (type 3, 323 leaves):

$$-\frac{1}{7680 d (A+2 C+A \operatorname{Cos}[2 (c+d x)])} a^3 (1+\operatorname{Cos}[c+d x])^3 \left(C+A \operatorname{Cos}[c+d x]^2\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^6 \operatorname{Sec}[c+d x]^5 \left(240 (20 A+13 C) \operatorname{Cos}[c+d x]^5 \left(\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)-\operatorname{Sec}[c] (80 (34 A+29 C) \operatorname{Sin}[d x]-240 (7 A+3 C) \operatorname{Sin}[2 c+d x]+360 A \operatorname{Sin}[c+2 d x]+750 C \operatorname{Sin}[c+2 d x]+360 A \operatorname{Sin}[3 c+2 d x]+750 C \operatorname{Sin}[3 c+2 d x]+1840 A \operatorname{Sin}[2 c+3 d x]+1520 C \operatorname{Sin}[2 c+3 d x]-360 A \operatorname{Sin}[4 c+3 d x]+180 A \operatorname{Sin}[3 c+4 d x]+195 C \operatorname{Sin}[3 c+4 d x]+180 A \operatorname{Sin}[5 c+4 d x]+195 C \operatorname{Sin}[5 c+4 d x]+440 A \operatorname{Sin}[4 c+5 d x]+304 C \operatorname{Sin}[4 c+5 d x])\right)$$

Problem 104: Result more than twice size of optimal antiderivative.

$$\int (a+a \operatorname{Sec}[c+d x])^3 \left(A+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 147 leaves, 7 steps):

$$a^3 A x+\frac{a^3 (28 A+15 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{5 a^3 (4 A+3 C) \text{Tan}[c+d x]}{8 d}+\frac{C (a+a \text{Sec}[c+d x])^3 \text{Tan}[c+d x]}{4 d}+\frac{C \left(a^2+a^2 \text{Sec}[c+d x]\right)^2 \text{Tan}[c+d x]}{4 a d}+\frac{(4 A+5 C) \left(a^3+a^3 \text{Sec}[c+d x]\right) \text{Tan}[c+d x]}{8 d}$$

Result (type 3, 363 leaves):

$$\frac{1}{256 d (A+2 C+A \text{Cos}[2 (c+d x)])} a^3 (1+\text{Cos}[c+d x])^3 \left(C+A \text{Cos}[c+d x]^2\right) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^6 \text{Sec}[c+d x]^4 \Bigg(-8 (28 A+15 C) \text{Cos}[c+d x]^4 \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+ \text{Sec}[c] (24 A d x \text{Cos}[c]+16 A d x \text{Cos}[c+2 d x]+16 A d x \text{Cos}[3 c+2 d x]+ 4 A d x \text{Cos}[3 c+4 d x]+4 A d x \text{Cos}[5 c+4 d x]-72 A \text{Sin}[c]-72 C \text{Sin}[c]+4 A \text{Sin}[d x]+23 C \text{Sin}[d x]+4 A \text{Sin}[2 c+d x]+23 C \text{Sin}[2 c+d x]+72 A \text{Sin}[c+2 d x]+88 C \text{Sin}[c+2 d x]- 24 A \text{Sin}[3 c+2 d x]-8 C \text{Sin}[3 c+2 d x]+4 A \text{Sin}[2 c+3 d x]+15 C \text{Sin}[2 c+3 d x]+ 4 A \text{Sin}[4 c+3 d x]+15 C \text{Sin}[4 c+3 d x]+24 A \text{Sin}[3 c+4 d x]+24 C \text{Sin}[3 c+4 d x])\Bigg)$$

Problem 105: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x] (a+a \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 3, 145 leaves, 7 steps):

$$3 a^3 A x+\frac{a^3 (6 A+5 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 d}+\frac{A (a+a \text{Sec}[c+d x])^3 \text{Sin}[c+d x]}{d}+\frac{5 a^3 C \text{Tan}[c+d x]}{2 d}-\frac{(3 A-C) \left(a^2+a^2 \text{Sec}[c+d x]\right)^2 \text{Tan}[c+d x]}{3 a d}-\frac{(6 A-5 C) \left(a^3+a^3 \text{Sec}[c+d x]\right) \text{Tan}[c+d x]}{6 d}$$

Result (type 3, 1250 leaves):

$$\left(3 A x \text{Cos}[c+d x]^5 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right)\right)\Big/ (4 (A+2 C+A \text{Cos}[2 c+2 d x]))+ \left((-6 A-5 C) \text{Cos}[c+d x]^5 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right)\right)\Big/ (8 d (A+2 C+A \text{Cos}[2 c+2 d x]))+ \Bigg((6 A+5 C) \text{Cos}[c+d x]^5 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6$$

$$\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/\left(8\,d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(A\,\mathrm{Cos}[d\,x]\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sin}[c]\right)\Big/\left(4\,d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(A\,\mathrm{Cos}[c]\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sin}[d\,x]\right)\Big/\left(4\,d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(C\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/\left(24\,d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$

$$\left(\mathrm{Cos}[c+d\,x]^5\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(5\,C\,\mathrm{Cos}\left[\frac{c}{2}\right]-4\,C\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/\left(24\,d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$

$$\left(\mathrm{Cos}[c+d\,x]^5\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(3\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+11\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/\left(12\,d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)+$$

$$\left(C\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/\left(24\,d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$

$$\left(\mathrm{Cos}[c+d\,x]^5\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(-5\,C\,\mathrm{Cos}\left[\frac{c}{2}\right]-4\,C\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/\left(24\,d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$

$$\left(\mathrm{Cos}[c+d\,x]^5\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(3\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+11\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/\left(12\,d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)$$

Problem 106: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^2\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)dx$$

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

$$\frac{1}{2} a^3 (7 A + 2 C) x + \frac{a^3 (2 A + 7 C) \text{ArcTanh}[\text{Sin}[c + d x]]}{2 d} +$$
$$\frac{5 a^3 (A - C) \text{Sin}[c + d x]}{2 d} + \frac{A \text{Cos}[c + d x] (a + a \text{Sec}[c + d x])^3 \text{Sin}[c + d x]}{2 d} -$$
$$\frac{(A - C) (a^2 + a^2 \text{Sec}[c + d x])^2 \text{Sin}[c + d x]}{2 a d} - \frac{(A - 4 C) (a^3 + a^3 \text{Sec}[c + d x]) \text{Sin}[c + d x]}{2 d}$$

Result (type 3, 1074 leaves) :

$$\left(\left(7A+2C\right) x \operatorname{Cos}[c+dx]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right)\right) \Big/ \left(8\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\right) +$$
$$\left(\left(-2A-7C\right) \operatorname{Cos}[c+dx]^5 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right)\right) \Big/ \left(8d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\right) +$$
$$\left(\left(2A+7C\right) \operatorname{Cos}[c+dx]^5 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right)\right) \Big/ \left(8d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\right) +$$
$$\left(3A\operatorname{Cos}[dx] \operatorname{Cos}[c+dx]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right) \operatorname{Sin}[c]\right) \Big/ \left(4d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\right) +$$
$$\left(A\operatorname{Cos}[2dx] \operatorname{Cos}[c+dx]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right) \operatorname{Sin}[2c]\right) \Big/ \left(16d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\right) +$$
$$\left(3A\operatorname{Cos}[c] \operatorname{Cos}[c+dx]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right) \operatorname{Sin}[dx]\right) \Big/ \left(4d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\right) +$$
$$\left(A\operatorname{Cos}[2c] \operatorname{Cos}[c+dx]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right) \operatorname{Sin}[2dx]\right) \Big/ \left(16d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\right) +$$
$$\left(C\operatorname{Cos}[c+dx]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right)\right) \Big/ \left(16d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)^2\right) +$$
$$\left(3C\operatorname{Cos}[c+dx]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right) \operatorname{Sin}\left[\frac{dx}{2}\right]\right) \Big/ \left(4d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)\right) -$$
$$\left(C\operatorname{Cos}[c+dx]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right)\right) \Big/ \left(16d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)^2\right) +$$
$$\left(3C\operatorname{Cos}[c+dx]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right) \operatorname{Sin}\left[\frac{dx}{2}\right]\right) \Big/ \left(4d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)\right)$$

Problem 107: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c+dx]^3 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+C\operatorname{Sec}[c+dx]^2\right) dx$$

Optimal (type 3, 156 leaves, 6 steps):

$$\frac{1}{2} a^3 (5 A + 6 C) x + \frac{3 a^3 C \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{d} + \frac{5 a^3 A \operatorname{Sin}[c + d x]}{2 d} + \frac{A \operatorname{Cos}[c + d x]^2 (a + a \operatorname{Sec}[c + d x])^3 \operatorname{Sin}[c + d x]}{3 d} + \frac{A \operatorname{Cos}[c + d x] (a^2 + a^2 \operatorname{Sec}[c + d x])^2 \operatorname{Sin}[c + d x]}{2 a d} - \frac{(5 A - 6 C) (a^3 + a^3 \operatorname{Sec}[c + d x]) \operatorname{Sin}[c + d x]}{6 d}$$

Result (type 3, 1014 leaves) :

$$a^3 \left(\left(\left((5 A+6 C)\, x \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/ \left(8\, (A+2 C+A \operatorname{Cos}[2 c+2 d x])\right) - \left(3 C \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/ \left(4 d\, (A+2 C+A \operatorname{Cos}[2 c+2 d x])\right) + \left(3 C \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/ \left(4 d\, (A+2 C+A \operatorname{Cos}[2 c+2 d x])\right) + \left((15 A+4 C) \operatorname{Cos}[d x] \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[c]\right) \Big/ \left(16 d\, (A+2 C+A \operatorname{Cos}[2 c+2 d x])\right) + \left(3 A \operatorname{Cos}[2 d x] \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[2 c]\right) \Big/ \left(16 d\, (A+2 C+A \operatorname{Cos}[2 c+2 d x])\right) + \left(A \operatorname{Cos}[3 d x] \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[3 c]\right) \Big/ \left(48 d\, (A+2 C+A \operatorname{Cos}[2 c+2 d x])\right) + \left((15 A+4 C) \operatorname{Cos}[c] \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[d x]\right) \Big/ \left(16 d\, (A+2 C+A \operatorname{Cos}[2 c+2 d x])\right) + \left(3 A \operatorname{Cos}[2 c] \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[2 d x]\right) \Big/ \left(16 d\, (A+2 C+A \operatorname{Cos}[2 c+2 d x])\right) + \left(A \operatorname{Cos}[3 c] \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[3 d x]\right) \Big/ \left(48 d\, (A+2 C+A \operatorname{Cos}[2 c+2 d x])\right) + \left(C \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}\left[\frac{d x}{2}\right]\right) \Big/ \left(4 d\, (A+2 C+A \operatorname{Cos}[2 c+2 d x]) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right) + \left(C \operatorname{Cos}[c+d x]^2\, (1+\operatorname{Cos}[c+d x])^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}\left[\frac{d x}{2}\right]\right) \Big/ \left(4 d\, (A+2 C+A \operatorname{Cos}[2 c+2 d x]) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)\right)$$

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

$$\int \operatorname{Sec}[c+d x]^2\, (a+a \operatorname{Sec}[c+d x])^4 \left(A+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 228 leaves, 15 steps):

$$\frac{a^4 (14 A + 11 C) \text{ArcTanh}[\text{Sin}[c + d x]]}{4 d} + \frac{16 a^4 (14 A + 11 C) \text{Tan}[c + d x]}{35 d} + \frac{27 a^4 (14 A + 11 C) \text{Sec}[c + d x] \text{Tan}[c + d x]}{140 d} + \frac{a^4 (14 A + 11 C) \text{Sec}[c + d x]^3 \text{Tan}[c + d x]}{70 d} + \frac{(21 A + 4 C) (a + a \text{Sec}[c + d x])^4 \text{Tan}[c + d x]}{105 d} + \frac{C \text{Sec}[c + d x]^2 (a + a \text{Sec}[c + d x])^4 \text{Tan}[c + d x]}{7 d} + \frac{2 C (a + a \text{Sec}[c + d x])^5 \text{Tan}[c + d x]}{21 a d} + \frac{8 a^4 (14 A + 11 C) \text{Tan}[c + d x]^3}{105 d}$$

Result (type 3, 574 leaves):

$$\left(\left(-14 A - 11 C\right) \text{Cos}[c + d x]^6 \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 (a + a \text{Sec}[c + d x])^4 \left(A + C \text{Sec}[c + d x]^2\right)\right) \Big/ \left(32 d \left(A + 2 C + A \text{Cos}[2 c + 2 d x]\right)\right) + \left(\left(14 A + 11 C\right) \text{Cos}[c + d x]^6 \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 (a + a \text{Sec}[c + d x])^4 \left(A + C \text{Sec}[c + d x]^2\right)\right) \Big/ \left(32 d \left(A + 2 C + A \text{Cos}[2 c + 2 d x]\right)\right) + \frac{1}{215040 d \left(A + 2 C + A \text{Cos}[2 c + 2 d x]\right)} \text{Sec}[c] \text{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 \text{Sec}[c + d x] (a + a \text{Sec}[c + d x])^4 \left(A + C \text{Sec}[c + d x]^2\right) (50960 A \text{Sin}[d x] + 46480 C \text{Sin}[d x] - 30380 A \text{Sin}[2 c + d x] - 17080 C \text{Sin}[2 c + d x] + 10710 A \text{Sin}[c + 2 d x] + 16415 C \text{Sin}[c + 2 d x] + 10710 A \text{Sin}[3 c + 2 d x] + 16415 C \text{Sin}[3 c + 2 d x] + 41244 A \text{Sin}[2 c + 3 d x] + 37296 C \text{Sin}[2 c + 3 d x] - 7560 A \text{Sin}[4 c + 3 d x] - 840 C \text{Sin}[4 c + 3 d x] + 7560 A \text{Sin}[3 c + 4 d x] + 7700 C \text{Sin}[3 c + 4 d x] + 7560 A \text{Sin}[5 c + 4 d x] + 7700 C \text{Sin}[5 c + 4 d x] + 15848 A \text{Sin}[4 c + 5 d x] + 12712 C \text{Sin}[4 c + 5 d x] - 420 A \text{Sin}[6 c + 5 d x] + 1470 A \text{Sin}[5 c + 6 d x] + 1155 C \text{Sin}[5 c + 6 d x] + 1470 A \text{Sin}[7 c + 6 d x] + 1155 C \text{Sin}[7 c + 6 d x] + 2324 A \text{Sin}[6 c + 7 d x] + 1816 C \text{Sin}[6 c + 7 d x])$$

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

$$\int \text{Sec}[c + d x] (a + a \text{Sec}[c + d x])^4 \left(A + C \text{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 188 leaves, 14 steps):

$$\frac{7 a^4 (10 A + 7 C) \text{ArcTanh}[\text{Sin}[c + d x]]}{16 d} + \frac{4 a^4 (10 A + 7 C) \text{Tan}[c + d x]}{5 d} + \frac{27 a^4 (10 A + 7 C) \text{Sec}[c + d x] \text{Tan}[c + d x]}{80 d} + \frac{a^4 (10 A + 7 C) \text{Sec}[c + d x]^3 \text{Tan}[c + d x]}{40 d} - \frac{C (a + a \text{Sec}[c + d x])^4 \text{Tan}[c + d x]}{30 d} + \frac{C (a + a \text{Sec}[c + d x])^5 \text{Tan}[c + d x]}{6 a d} + \frac{2 a^4 (10 A + 7 C) \text{Tan}[c + d x]^3}{15 d}$$

Result (type 3, 530 leaves):

$$-\left(\left(7\,(10A+7C)\,\mathrm{Cos}[c+dx]^6\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8 (a+a\,\mathrm{Sec}[c+dx])^4\,(A+C\,\mathrm{Sec}[c+dx]^2)\right)\Big/\left(128\,d\,(A+2C+A\,\mathrm{Cos}[2c+2dx])\right)\right)+$$

$$\left(7\,(10A+7C)\,\mathrm{Cos}[c+dx]^6\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8 (a+a\,\mathrm{Sec}[c+dx])^4\,(A+C\,\mathrm{Sec}[c+dx]^2)\right)\Big/\left(128\,d\,(A+2C+A\,\mathrm{Cos}[2c+2dx])\right)+$$

$$\frac{1}{61440\,d\,(A+2C+A\,\mathrm{Cos}[2c+2dx])}\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8 (a+a\,\mathrm{Sec}[c+dx])^4 (A+C\,\mathrm{Sec}[c+dx]^2)\,(-16000\,A\,\mathrm{Sin}[c]-11520\,C\,\mathrm{Sin}[c]+1860\,A\,\mathrm{Sin}[dx]+3750\,C\,\mathrm{Sin}[dx]+1860\,A\,\mathrm{Sin}[2c+dx]+3750\,C\,\mathrm{Sin}[2c+dx]+17280\,A\,\mathrm{Sin}[c+2dx]+15360\,C\,\mathrm{Sin}[c+2dx]-6720\,A\,\mathrm{Sin}[3c+2dx]-1920\,C\,\mathrm{Sin}[3c+2dx]+2670\,A\,\mathrm{Sin}[2c+3dx]+3845\,C\,\mathrm{Sin}[2c+3dx]+2670\,A\,\mathrm{Sin}[4c+3dx]+3845\,C\,\mathrm{Sin}[4c+3dx]+8640\,A\,\mathrm{Sin}[3c+4dx]+6912\,C\,\mathrm{Sin}[3c+4dx]-960\,A\,\mathrm{Sin}[5c+4dx]+810\,A\,\mathrm{Sin}[4c+5dx]+735\,C\,\mathrm{Sin}[4c+5dx]+810\,A\,\mathrm{Sin}[6c+5dx]+735\,C\,\mathrm{Sin}[6c+5dx]+1600\,A\,\mathrm{Sin}[5c+6dx]+1152\,C\,\mathrm{Sin}[5c+6dx])$$

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

$$\int (a+a\,\mathrm{Sec}[c+dx])^4\,(A+C\,\mathrm{Sec}[c+dx]^2)\,dx$$

Optimal (type 3, 177 leaves, 8 steps):

$$a^4 A x+\frac{a^4\,(12A+7C)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+dx]]}{2d}+\frac{a^4\,(10A+7C)\,\mathrm{Tan}[c+dx]}{2d}+\frac{a\,C\,(a+a\,\mathrm{Sec}[c+dx])^3\,\mathrm{Tan}[c+dx]}{5d}+\frac{C\,(a+a\,\mathrm{Sec}[c+dx])^4\,\mathrm{Tan}[c+dx]}{5d}+\frac{(5A+7C)\,(a^2+a^2\,\mathrm{Sec}[c+dx])^2\,\mathrm{Tan}[c+dx]}{15d}+\frac{(8A+7C)\,(a^4+a^4\,\mathrm{Sec}[c+dx])\,\mathrm{Tan}[c+dx]}{6d}$$

Result (type 3, 418 leaves):

$$\frac{1}{3840\,d\,(A+2C+A\,\mathrm{Cos}[2\,(c+dx)])}a^4\,(1+\mathrm{Cos}[c+dx])^4 (C+A\,\mathrm{Cos}[c+dx]^2)\,\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^8\mathrm{Sec}[c+dx]^5\left(-240\,(12A+7C)\,\mathrm{Cos}[c+dx]^5\left(\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)+\mathrm{Sec}[c]\,(150\,A\,d\,x\,\mathrm{Cos}[dx]+150\,A\,d\,x\,\mathrm{Cos}[2c+dx]+75\,A\,d\,x\,\mathrm{Cos}[2c+3dx]+75\,A\,d\,x\,\mathrm{Cos}[4c+3dx]+15\,A\,d\,x\,\mathrm{Cos}[4c+5dx]+15\,A\,d\,x\,\mathrm{Cos}[6c+5dx]+1220\,A\,\mathrm{Sin}[dx]+1180\,C\,\mathrm{Sin}[dx]-780\,A\,\mathrm{Sin}[2c+dx]-480\,C\,\mathrm{Sin}[2c+dx]+120\,A\,\mathrm{Sin}[c+2dx]+330\,C\,\mathrm{Sin}[c+2dx]+120\,A\,\mathrm{Sin}[3c+2dx]+330\,C\,\mathrm{Sin}[3c+2dx]+820\,A\,\mathrm{Sin}[2c+3dx]+800\,C\,\mathrm{Sin}[2c+3dx]-180\,A\,\mathrm{Sin}[4c+3dx]-30\,C\,\mathrm{Sin}[4c+3dx]+60\,A\,\mathrm{Sin}[3c+4dx]+105\,C\,\mathrm{Sin}[3c+4dx]+60\,A\,\mathrm{Sin}[5c+4dx]+105\,C\,\mathrm{Sin}[5c+4dx]+200\,A\,\mathrm{Sin}[4c+5dx]+166\,C\,\mathrm{Sin}[4c+5dx])\right)$$

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

$$\int \text{Cos}[c+d x]\,(a+a\,\text{Sec}[c+d x])^4\,\left(A+C\,\text{Sec}[c+d x]^2\right)\,dx$$

Optimal (type 3, 181 leaves, 8 steps):

$$4 a^4 A x+\frac{a^4 (52 A+35 C)\,\text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{A\,(a+a\,\text{Sec}[c+d x])^4\,\text{Sin}[c+d x]}{d}+\frac{5 a^4 (4 A+7 C)\,\text{Tan}[c+d x]}{8 d}-\frac{a (4 A-C)\,(a+a\,\text{Sec}[c+d x])^3\,\text{Tan}[c+d x]}{4 d}-\frac{(12 A-7 C)\,\left(a^2+a^2\,\text{Sec}[c+d x]\right)^2\,\text{Tan}[c+d x]}{12 d}-\frac{(12 A-35 C)\,\left(a^4+a^4\,\text{Sec}[c+d x]\right)\,\text{Tan}[c+d x]}{24 d}$$

Result (type 3, 379 leaves):

$$\frac{1}{1536\,d\,(A+2 C+A\,\text{Cos}[2 (c+d x)])}a^4\left(C+A\,\text{Cos}[c+d x]^2\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^8(1+\text{Sec}[c+d x])^4\Big(-24\,(52 A+35 C)\,\text{Cos}[c+d x]^4$$
$$\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+$$
$$\text{Sec}[c]\,(288 A d x\,\text{Cos}[c]+192 A d x\,\text{Cos}[c+2 d x]+192 A d x\,\text{Cos}[3 c+2 d x]+$$
$$48 A d x\,\text{Cos}[3 c+4 d x]+48 A d x\,\text{Cos}[5 c+4 d x]-288 A\,\text{Sin}[c]-480 C\,\text{Sin}[c]+$$
$$24 A\,\text{Sin}[d x]+105 C\,\text{Sin}[d x]+24 A\,\text{Sin}[2 c+d x]+105 C\,\text{Sin}[2 c+d x]+$$
$$288 A\,\text{Sin}[c+2 d x]+544 C\,\text{Sin}[c+2 d x]-96 A\,\text{Sin}[3 c+2 d x]-96 C\,\text{Sin}[3 c+2 d x]+$$
$$30 A\,\text{Sin}[2 c+3 d x]+81 C\,\text{Sin}[2 c+3 d x]+30 A\,\text{Sin}[4 c+3 d x]+81 C\,\text{Sin}[4 c+3 d x]+$$
$$96 A\,\text{Sin}[3 c+4 d x]+160 C\,\text{Sin}[3 c+4 d x]+6 A\,\text{Sin}[4 c+5 d x]+6 A\,\text{Sin}[6 c+5 d x])\Big)$$

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

$$\int \text{Cos}[c+d x]^2\,(a+a\,\text{Sec}[c+d x])^4\,\left(A+C\,\text{Sec}[c+d x]^2\right)\,dx$$

Optimal (type 3, 192 leaves, 7 steps):

$$\frac{1}{2}a^4 (13 A+2 C)\,x+\frac{2 a^4 (2 A+3 C)\,\text{ArcTanh}[\text{Sin}[c+d x]]}{d}+\frac{5 a^4 (A-2 C)\,\text{Sin}[c+d x]}{2 d}-\frac{a (3 A-2 C)\,(a+a\,\text{Sec}[c+d x])^3\,\text{Sin}[c+d x]}{6 d}+\frac{A\,\text{Cos}[c+d x]\,(a+a\,\text{Sec}[c+d x])^4\,\text{Sin}[c+d x]}{2 d}-\frac{(A-2 C)\,\left(a^2+a^2\,\text{Sec}[c+d x]\right)^2\,\text{Sin}[c+d x]}{2 d}+\frac{(3 A+22 C)\,\left(a^4+a^4\,\text{Sec}[c+d x]\right)\,\text{Sin}[c+d x]}{6 d}$$

Result (type 3, 1420 leaves):

$$\left((13 A+2 C)\,x\,\text{Cos}[c+d x]^6\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8(a+a\,\text{Sec}[c+d x])^4\left(A+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$
$$(16\,(A+2 C+A\,\text{Cos}[2 c+2 d x]))+$$

$$\left(\left(-2 A-3 C\right) \operatorname{Cos}[c+d x]^6 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/ \left(4 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(\left(2 A+3 C\right) \operatorname{Cos}[c+d x]^6 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/ \left(4 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(A \operatorname{Cos}[d x] \operatorname{Cos}[c+d x]^6 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[c]\right) \Big/ \left(2 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(A \operatorname{Cos}[2 d x] \operatorname{Cos}[c+d x]^6 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[2 c]\right) \Big/ \left(32 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(A \operatorname{Cos}[c] \operatorname{Cos}[c+d x]^6 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[d x]\right) \Big/ \left(2 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(A \operatorname{Cos}[2 c] \operatorname{Cos}[c+d x]^6 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[2 d x]\right) \Big/ \left(32 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(C \operatorname{Cos}[c+d x]^6 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}\left[\frac{d x}{2}\right]\right) \Big/ \left(48 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3\right)+$$

$$\left(\operatorname{Cos}[c+d x]^6 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right) \left(13 C \operatorname{Cos}\left[\frac{c}{2}\right]-11 C \operatorname{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(96 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$

$$\left(\operatorname{Cos}[c+d x]^6 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right) \left(3 A \operatorname{Sin}\left[\frac{d x}{2}\right]+20 C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)\right) \Big/ \left(24 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)+$$

$$\left(C \operatorname{Cos}[c+d x]^6 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}\left[\frac{d x}{2}\right]\right) \Big/ \left(48 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3\right)+$$

$$\left(\operatorname{Cos}[c+d x]^6 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \operatorname{Sec}[c+d x]\right)^4 \left(A+C \operatorname{Sec}[c+d x]^2\right) \left(-13 C \operatorname{Cos}\left[\frac{c}{2}\right]-11 C \operatorname{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(96 d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$

$$\left(\mathrm{Cos}[c+d x]^6 \,\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \,\mathrm{Sec}[c+d x])^4 \left(A+C \,\mathrm{Sec}[c+d x]^2\right) \left(3 A \,\mathrm{Sin}\left[\frac{d x}{2}\right]+20 C \,\mathrm{Sin}\left[\frac{d x}{2}\right]\right)\right) \Big/ \left(24 d \,(A+2 C+A \,\mathrm{Cos}[2 c+2 d x]) \left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right) \left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)$$

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

$$\int \mathrm{Cos}[c+d x]^3 (a+a \,\mathrm{Sec}[c+d x])^4 \left(A+C \,\mathrm{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 198 leaves, 7 steps):

$$2 a^4 (3 A+2 C) x+\frac{a^4 (2 A+13 C) \,\mathrm{ArcTanh}[\mathrm{Sin}[c+d x]]}{2 d}+\frac{5 a^4 (2 A-C) \,\mathrm{Sin}[c+d x]}{2 d}+\frac{2 a A \,\mathrm{Cos}[c+d x] (a+a \,\mathrm{Sec}[c+d x])^3 \,\mathrm{Sin}[c+d x]}{3 d}+\frac{A \,\mathrm{Cos}[c+d x]^2 (a+a \,\mathrm{Sec}[c+d x])^4 \,\mathrm{Sin}[c+d x]}{3 d}-\frac{(2 A-C) \left(a^2+a^2 \,\mathrm{Sec}[c+d x]\right)^2 \mathrm{Sin}[c+d x]}{2 d}-\frac{(4 A-9 C) \left(a^4+a^4 \,\mathrm{Sec}[c+d x]\right) \mathrm{Sin}[c+d x]}{3 d}$$

Result (type 3, 1250 leaves):

$$\left((3A+2C)\,x\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$(4\,(A+2C+A\,\text{Cos}[2c+2dx]))+$$
$$\left((-2A-13C)\,\text{Cos}[c+dx]^6\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\right.$$
$$\left.(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\,(16\,d\,(A+2C+A\,\text{Cos}[2c+2dx]))+$$
$$\left((2A+13C)\,\text{Cos}[c+dx]^6\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\right.$$
$$\left.(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\,(16\,d\,(A+2C+A\,\text{Cos}[2c+2dx]))+$$
$$\left((27A+4C)\,\text{Cos}[dx]\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\right.$$
$$\left.\left(A+C\,\text{Sec}[c+dx]^2\right)\,\text{Sin}[c]\right)\Big/\,(32\,d\,(A+2C+A\,\text{Cos}[2c+2dx]))+$$
$$\left(A\,\text{Cos}[2dx]\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\,\text{Sin}[2c]\right)\Big/$$
$$(8\,d\,(A+2C+A\,\text{Cos}[2c+2dx]))+$$
$$\left(A\,\text{Cos}[3dx]\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\,\text{Sin}[3c]\right)\Big/$$
$$(96\,d\,(A+2C+A\,\text{Cos}[2c+2dx]))+$$
$$\left((27A+4C)\,\text{Cos}[c]\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\right.$$
$$\left.\left(A+C\,\text{Sec}[c+dx]^2\right)\,\text{Sin}[dx]\right)\Big/\,(32\,d\,(A+2C+A\,\text{Cos}[2c+2dx]))+$$
$$\left(A\,\text{Cos}[2c]\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\,\text{Sin}[2dx]\right)\Big/$$
$$(8\,d\,(A+2C+A\,\text{Cos}[2c+2dx]))+$$
$$\left(A\,\text{Cos}[3c]\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\,\text{Sin}[3dx]\right)\Big/$$
$$(96\,d\,(A+2C+A\,\text{Cos}[2c+2dx]))+$$
$$\left(C\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(32\,d\,(A+2C+A\,\text{Cos}[2c+2dx])\,\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)^2\right)+$$
$$\left(C\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\,\text{Sin}\left[\frac{dx}{2}\right]\right)\Big/$$
$$\left(2\,d\,(A+2C+A\,\text{Cos}[2c+2dx])\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)\right)-$$
$$\left(C\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(32\,d\,(A+2C+A\,\text{Cos}[2c+2dx])\,\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)^2\right)+$$
$$\left(C\,\text{Cos}[c+dx]^6\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\,(a+a\,\text{Sec}[c+dx])^4\,\left(A+C\,\text{Sec}[c+dx]^2\right)\,\text{Sin}\left[\frac{dx}{2}\right]\right)\Big/$$
$$\left(2\,d\,(A+2C+A\,\text{Cos}[2c+2dx])\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)\right)$$

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

$$\int \frac{\text{Sec}[c+d x]^4 \left(A+C \text{Sec}[c+d x]^2\right)}{a+a \text{Sec}[c+d x]} \, dx$$

Optimal (type 3, 165 leaves, 7 steps):

$$\frac{3 (4 A+5 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 a d}-\frac{(3 A+4 C) \text{Tan}[c+d x]}{a d}+\frac{3 (4 A+5 C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{8 a d}+\frac{(4 A+5 C) \text{Sec}[c+d x]^3 \text{Tan}[c+d x]}{4 a d}-\frac{(A+C) \text{Sec}[c+d x]^4 \text{Tan}[c+d x]}{d (a+a \text{Sec}[c+d x])}-\frac{(3 A+4 C) \text{Tan}[c+d x]^3}{3 a d}$$

Result (type 3, 792 leaves):

$$-\left(\left(3 (4 A+5 C) \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Cos}[c+d x] \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \left(A+C \text{Sec}[c+d x]^2\right)\right)\Big/ \left(2 d (A+2 C+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])\right)\right)+$$
$$\left(3 (4 A+5 C) \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Cos}[c+d x] \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \left(A+C \text{Sec}[c+d x]^2\right)\right)\Big/ \left(2 d (A+2 C+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])\right)+$$
$$\frac{1}{192 d (A+2 C+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])}$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c] \text{Sec}[c+d x]^3 \left(A+C \text{Sec}[c+d x]^2\right)$$
$$\left(-60 A \text{Sin}\left[\frac{d x}{2}\right]-75 C \text{Sin}\left[\frac{d x}{2}\right]-60 A \text{Sin}\left[\frac{3 d x}{2}\right]-91 C \text{Sin}\left[\frac{3 d x}{2}\right]+204 A \text{Sin}\left[c-\frac{d x}{2}\right]+\right.$$
$$219 C \text{Sin}\left[c-\frac{d x}{2}\right]-60 A \text{Sin}\left[c+\frac{d x}{2}\right]+21 C \text{Sin}\left[c+\frac{d x}{2}\right]+84 A \text{Sin}\left[2 c+\frac{d x}{2}\right]+$$
$$165 C \text{Sin}\left[2 c+\frac{d x}{2}\right]+36 A \text{Sin}\left[c+\frac{3 d x}{2}\right]+5 C \text{Sin}\left[c+\frac{3 d x}{2}\right]+36 A \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+$$
$$69 C \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+132 A \text{Sin}\left[3 c+\frac{3 d x}{2}\right]+165 C \text{Sin}\left[3 c+\frac{3 d x}{2}\right]-$$
$$156 A \text{Sin}\left[c+\frac{5 d x}{2}\right]-211 C \text{Sin}\left[c+\frac{5 d x}{2}\right]-60 A \text{Sin}\left[2 c+\frac{5 d x}{2}\right]-$$
$$115 C \text{Sin}\left[2 c+\frac{5 d x}{2}\right]-60 A \text{Sin}\left[3 c+\frac{5 d x}{2}\right]-51 C \text{Sin}\left[3 c+\frac{5 d x}{2}\right]+$$
$$36 A \text{Sin}\left[4 c+\frac{5 d x}{2}\right]+45 C \text{Sin}\left[4 c+\frac{5 d x}{2}\right]-12 A \text{Sin}\left[2 c+\frac{7 d x}{2}\right]-19 C \text{Sin}\left[2 c+\frac{7 d x}{2}\right]+$$
$$12 A \text{Sin}\left[3 c+\frac{7 d x}{2}\right]+5 C \text{Sin}\left[3 c+\frac{7 d x}{2}\right]+12 A \text{Sin}\left[4 c+\frac{7 d x}{2}\right]+21 C \text{Sin}\left[4 c+\frac{7 d x}{2}\right]+$$
$$36 A \text{Sin}\left[5 c+\frac{7 d x}{2}\right]+45 C \text{Sin}\left[5 c+\frac{7 d x}{2}\right]-48 A \text{Sin}\left[3 c+\frac{9 d x}{2}\right]-64 C \text{Sin}\left[3 c+\frac{9 d x}{2}\right]-$$
$$\left.24 A \text{Sin}\left[4 c+\frac{9 d x}{2}\right]-40 C \text{Sin}\left[4 c+\frac{9 d x}{2}\right]-24 A \text{Sin}\left[5 c+\frac{9 d x}{2}\right]-24 C \text{Sin}\left[5 c+\frac{9 d x}{2}\right]\right)$$

Problem 122: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^3 \left(A+C \,\text{Sec}[c+d x]^2\right)}{a+a \,\text{Sec}[c+d x]} \, dx$$

Optimal (type 3, 133 leaves, 6 steps):

$$-\frac{(2 A+3 C) \,\text{ArcTanh}[\text{Sin}[c+d x]]}{2 a d}+\frac{(3 A+4 C) \,\text{Tan}[c+d x]}{a d}-\frac{(2 A+3 C) \,\text{Sec}[c+d x] \,\text{Tan}[c+d x]}{2 a d}-\frac{(A+C) \,\text{Sec}[c+d x]^3 \,\text{Tan}[c+d x]}{d \,(a+a \,\text{Sec}[c+d x])}+\frac{(3 A+4 C) \,\text{Tan}[c+d x]^3}{3 a d}$$

Result (type 3, 1090 leaves):

$$\left(2\,(2A+3C)\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\right)-$$
$$\left(2\,(2A+3C)\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\right)+$$
$$\left(4\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]\text{Cos}[c+dx]\,\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)\right)\Big/\left(d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\right)+$$
$$\left(2C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}\left[\frac{dx}{2}\right]\right)\Big/\left(3d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)^3\right)-$$
$$\left(2\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\left(C\,\text{Cos}\left[\frac{c}{2}\right]-2C\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/\left(3d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)^2\right)+$$
$$\left(4\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\left(3A\,\text{Sin}\left[\frac{dx}{2}\right]+5C\,\text{Sin}\left[\frac{dx}{2}\right]\right)\right)\Big/\left(3d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)\right)+$$
$$\left(2C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}\left[\frac{dx}{2}\right]\right)\Big/\left(3d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)^3\right)+$$
$$\left(2\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\left(C\,\text{Cos}\left[\frac{c}{2}\right]+2C\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/\left(3d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)^2\right)+$$
$$\left(4\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\left(3A\,\text{Sin}\left[\frac{dx}{2}\right]+5C\,\text{Sin}\left[\frac{dx}{2}\right]\right)\right)\Big/\left(3d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)\right)$$

Problem 123: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]^2\left(A+C\,\text{Sec}[c+dx]^2\right)}{a+a\,\text{Sec}[c+dx]}\,dx$$

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

$$\frac{(2A+3C)\,\text{ArcTanh}[\text{Sin}[c+d x]]}{2 a d}-\frac{(A+2C)\,\text{Tan}[c+d x]}{a d}+\frac{(2A+3C)\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{2 a d}-\frac{(A+C)\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]}{d\,(a+a\,\text{Sec}[c+d x])}$$

Result (type 3, 316 leaves):

$$\frac{1}{a d\,(A+2C+A\,\text{Cos}[2\,(c+d x)])\,(1+\text{Sec}[c+d x])}\text{Cos}\left[\frac{1}{2}(c+d x)\right]\text{Cos}[c+d x]\,(A+C\,\text{Sec}[c+d x]^2)\Bigg(-4\,(A+C)\,\text{Sec}\left[\frac{c}{2}\right]\text{Sin}\left[\frac{d x}{2}\right]+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\Bigg(-2\,(2A+3C)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+4A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+6C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\frac{C}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{C}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-(4C\,\text{Sin}[d x])\Big/\Bigg(\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg)\Bigg)\Bigg)$$

Problem 124: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d x]\,(A+C\,\text{Sec}[c+d x]^2)}{a+a\,\text{Sec}[c+d x]}\,dx$$

Optimal (type 3, 57 leaves, 4 steps):

$$-\frac{C\,\text{ArcTanh}[\text{Sin}[c+d x]]}{a d}+\frac{C\,\text{Tan}[c+d x]}{a d}+\frac{(A+C)\,\text{Tan}[c+d x]}{a d\,(1+\text{Sec}[c+d x])}$$

Result (type 3, 227 leaves):

$$\Bigg(4\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]\text{Cos}[c+d x]\,(A+C\,\text{Sec}[c+d x]^2)\Bigg(\left(A+C\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]\Bigg(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\text{Sin}[d x]\Big/\Bigg(\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg)\Big/\left(a d\,(A+2C+A\,\text{Cos}[2\,(c+d x)])\,(1+\text{Sec}[c+d x])\right)$$

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

$$\int \frac{A + C\,\text{Sec}[c + d\,x]^2}{a + a\,\text{Sec}[c + d\,x]}\,dx$$

Optimal (type 3, 49 leaves, 4 steps):

$$\frac{A\,x}{a} + \frac{C\,\text{ArcTanh}[\text{Sin}[c + d\,x]]}{a\,d} - \frac{(A + C)\,\text{Tan}[c + d\,x]}{a\,d\,(1 + \text{Sec}[c + d\,x])}$$

Result (type 3, 143 leaves):

$$-\left(\left(4\,\text{Cos}\left[\frac{1}{2}\,(c + d\,x)\right]\,(C + A\,\text{Cos}[c + d\,x]^2)\right.\right.$$
$$\left(-\text{Cos}\left[\frac{1}{2}\,(c + d\,x)\right]\,\left(A\,d\,x - C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c + d\,x)\right] - \text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right]\right] + \right.\right.$$
$$\left.\left.\left.C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c + d\,x)\right] + \text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right]\right]\right) + (A + C)\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right) \Big/$$
$$\left.\left(a\,d\,(1 + \text{Cos}[c + d\,x])\,(A + 2\,C + A\,\text{Cos}[2\,(c + d\,x)])\right)\right)$$

Problem 126: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c + d\,x]\,(A + C\,\text{Sec}[c + d\,x]^2)}{a + a\,\text{Sec}[c + d\,x]}\,dx$$

Optimal (type 3, 52 leaves, 4 steps):

$$-\frac{A\,x}{a} + \frac{(2\,A + C)\,\text{Sin}[c + d\,x]}{a\,d} - \frac{(A + C)\,\text{Sin}[c + d\,x]}{d\,(a + a\,\text{Sec}[c + d\,x])}$$

Result (type 3, 108 leaves):

$$\frac{1}{4\,a\,d}\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]\,\left(-2\,A\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right] - 2\,A\,d\,x\,\text{Cos}\left[c + \frac{d\,x}{2}\right] + \right.$$
$$\left.5\,A\,\text{Sin}\left[\frac{d\,x}{2}\right] + 4\,C\,\text{Sin}\left[\frac{d\,x}{2}\right] + A\,\text{Sin}\left[c + \frac{d\,x}{2}\right] + A\,\text{Sin}\left[c + \frac{3\,d\,x}{2}\right] + A\,\text{Sin}\left[2\,c + \frac{3\,d\,x}{2}\right]\right)$$

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

$$\int \frac{\text{Sec}[c + d\,x]^4\,(A + C\,\text{Sec}[c + d\,x]^2)}{(a + a\,\text{Sec}[c + d\,x])^2}\,dx$$

Optimal (type 3, 172 leaves, 7 steps):

$$-\frac{(2A+5C)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{a^2 d}+\frac{(5A+12C)\,\text{Tan}[c+dx]}{a^2 d}-\frac{(2A+5C)\,\text{Sec}[c+dx]\,\text{Tan}[c+dx]}{a^2 d}-\frac{2\,(2A+5C)\,\text{Sec}[c+dx]^3\,\text{Tan}[c+dx]}{3a^2 d\,(1+\text{Sec}[c+dx])}-\frac{(A+C)\,\text{Sec}[c+dx]^4\,\text{Tan}[c+dx]}{3d\,(a+a\,\text{Sec}[c+dx])^2}+\frac{(5A+12C)\,\text{Tan}[c+dx]^3}{3a^2 d}$$

Result (type 3, 623 leaves):

$$\frac{1}{24a^2 d\,(A+2C+A\,\text{Cos}[2\,(c+dx)])\,(1+\text{Sec}[c+dx])^2}\text{Cos}\left[\frac{1}{2}(c+dx)\right](A+C\,\text{Sec}[c+dx]^2)\left(192\,(2A+5C)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^3\right.$$
$$\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)+$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c]\,\text{Sec}[c+dx]^3\left(-3\,(8A+C)\,\text{Sin}\left[\frac{dx}{2}\right]+(66A+155C)\,\text{Sin}\left[\frac{3dx}{2}\right]-\right.$$
$$60A\,\text{Sin}\left[c-\frac{dx}{2}\right]-153C\,\text{Sin}\left[c-\frac{dx}{2}\right]+24A\,\text{Sin}\left[c+\frac{dx}{2}\right]+21C\,\text{Sin}\left[c+\frac{dx}{2}\right]-$$
$$60A\,\text{Sin}\left[2c+\frac{dx}{2}\right]-135C\,\text{Sin}\left[2c+\frac{dx}{2}\right]-4A\,\text{Sin}\left[c+\frac{3dx}{2}\right]+25C\,\text{Sin}\left[c+\frac{3dx}{2}\right]+$$
$$36A\,\text{Sin}\left[2c+\frac{3dx}{2}\right]+45C\,\text{Sin}\left[2c+\frac{3dx}{2}\right]-34A\,\text{Sin}\left[3c+\frac{3dx}{2}\right]-$$
$$85C\,\text{Sin}\left[3c+\frac{3dx}{2}\right]+42A\,\text{Sin}\left[c+\frac{5dx}{2}\right]+99C\,\text{Sin}\left[c+\frac{5dx}{2}\right]+21C\,\text{Sin}\left[2c+\frac{5dx}{2}\right]+$$
$$24A\,\text{Sin}\left[3c+\frac{5dx}{2}\right]+33C\,\text{Sin}\left[3c+\frac{5dx}{2}\right]-18A\,\text{Sin}\left[4c+\frac{5dx}{2}\right]-$$
$$45C\,\text{Sin}\left[4c+\frac{5dx}{2}\right]+24A\,\text{Sin}\left[2c+\frac{7dx}{2}\right]+57C\,\text{Sin}\left[2c+\frac{7dx}{2}\right]+$$
$$3A\,\text{Sin}\left[3c+\frac{7dx}{2}\right]+18C\,\text{Sin}\left[3c+\frac{7dx}{2}\right]+15A\,\text{Sin}\left[4c+\frac{7dx}{2}\right]+24C\,\text{Sin}\left[4c+\frac{7dx}{2}\right]-$$
$$6A\,\text{Sin}\left[5c+\frac{7dx}{2}\right]-15C\,\text{Sin}\left[5c+\frac{7dx}{2}\right]+10A\,\text{Sin}\left[3c+\frac{9dx}{2}\right]+24C\,\text{Sin}\left[3c+\frac{9dx}{2}\right]+$$
$$\left.\left.3A\,\text{Sin}\left[4c+\frac{9dx}{2}\right]+11C\,\text{Sin}\left[4c+\frac{9dx}{2}\right]+7A\,\text{Sin}\left[5c+\frac{9dx}{2}\right]+13C\,\text{Sin}\left[5c+\frac{9dx}{2}\right]\right)\right)$$

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

$$\int\frac{\text{Sec}[c+dx]^3\,(A+C\,\text{Sec}[c+dx]^2)}{(a+a\,\text{Sec}[c+dx])^2}\,dx$$

Optimal (type 3, 150 leaves, 7 steps):

$$\frac{(2A+7C)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{2a^2d}-\frac{4(A+4C)\,\text{Tan}[c+dx]}{3a^2d}+\frac{(2A+7C)\,\text{Sec}[c+dx]\,\text{Tan}[c+dx]}{2a^2d}-\frac{2(A+4C)\,\text{Sec}[c+dx]^2\,\text{Tan}[c+dx]}{3a^2d\,(1+\text{Sec}[c+dx])}-\frac{(A+C)\,\text{Sec}[c+dx]^3\,\text{Tan}[c+dx]}{3d\,(a+a\,\text{Sec}[c+dx])^2}$$

Result (type 3, 513 leaves):

$$-\frac{1}{24a^2d\,(A+2C+A\,\text{Cos}[2(c+dx)])\,(1+\text{Sec}[c+dx])^2}\text{Cos}\left[\frac{1}{2}(c+dx)\right](A+C\,\text{Sec}[c+dx]^2)\left(96(2A+7C)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^3\right.$$
$$\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)+$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c]\,\text{Sec}[c+dx]^2\left(-2(10A+7C)\,\text{Sin}\left[\frac{dx}{2}\right]+(22A+97C)\,\text{Sin}\left[\frac{3dx}{2}\right]-\right.$$
$$36A\,\text{Sin}\left[c-\frac{dx}{2}\right]-126C\,\text{Sin}\left[c-\frac{dx}{2}\right]+36A\,\text{Sin}\left[c+\frac{dx}{2}\right]+42C\,\text{Sin}\left[c+\frac{dx}{2}\right]-$$
$$20A\,\text{Sin}\left[2c+\frac{dx}{2}\right]-98C\,\text{Sin}\left[2c+\frac{dx}{2}\right]-18A\,\text{Sin}\left[c+\frac{3dx}{2}\right]-3C\,\text{Sin}\left[c+\frac{3dx}{2}\right]+$$
$$22A\,\text{Sin}\left[2c+\frac{3dx}{2}\right]+37C\,\text{Sin}\left[2c+\frac{3dx}{2}\right]-18A\,\text{Sin}\left[3c+\frac{3dx}{2}\right]-$$
$$63C\,\text{Sin}\left[3c+\frac{3dx}{2}\right]+18A\,\text{Sin}\left[c+\frac{5dx}{2}\right]+75C\,\text{Sin}\left[c+\frac{5dx}{2}\right]-6A\,\text{Sin}\left[2c+\frac{5dx}{2}\right]+$$
$$15C\,\text{Sin}\left[2c+\frac{5dx}{2}\right]+18A\,\text{Sin}\left[3c+\frac{5dx}{2}\right]+39C\,\text{Sin}\left[3c+\frac{5dx}{2}\right]-$$
$$6A\,\text{Sin}\left[4c+\frac{5dx}{2}\right]-21C\,\text{Sin}\left[4c+\frac{5dx}{2}\right]+8A\,\text{Sin}\left[2c+\frac{7dx}{2}\right]+32C\,\text{Sin}\left[2c+\frac{7dx}{2}\right]+$$
$$\left.\left.12C\,\text{Sin}\left[3c+\frac{7dx}{2}\right]+8A\,\text{Sin}\left[4c+\frac{7dx}{2}\right]+20C\,\text{Sin}\left[4c+\frac{7dx}{2}\right]\right)\right)$$

Problem 132: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]^2\,(A+C\,\text{Sec}[c+dx]^2)}{(a+a\,\text{Sec}[c+dx])^2}\,dx$$

Optimal (type 3, 99 leaves, 6 steps):

$$-\frac{2C\,\text{ArcTanh}[\text{Sin}[c+dx]]}{a^2d}+\frac{(A+4C)\,\text{Tan}[c+dx]}{3a^2d}+\frac{2C\,\text{Tan}[c+dx]}{a^2d\,(1+\text{Sec}[c+dx])}-\frac{(A+C)\,\text{Sec}[c+dx]^2\,\text{Tan}[c+dx]}{3d\,(a+a\,\text{Sec}[c+dx])^2}$$

Result (type 3, 280 leaves):

$$\frac{1}{3 a^2 d \left(A+2 C+A \text{Cos}\left[2 (c+d x)\right]\right) \left(1+\text{Sec}[c+d x]\right)^2} 4 \text{Cos}\left[\frac{1}{2} (c+d x)\right] \left(A+C \text{Sec}[c+d x]^2\right) \left(\left(A+C\right) \text{Sec}\left[\frac{c}{2}\right] \text{Sin}\left[\frac{d x}{2}\right]+2 (A+7 C) \text{Cos}\left[\frac{1}{2} (c+d x)\right]^2 \text{Sec}\left[\frac{c}{2}\right] \text{Sin}\left[\frac{d x}{2}\right]+6 C \text{Cos}\left[\frac{1}{2} (c+d x)\right]^3 \left(2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\text{Sin}[d x] \Big/ \left(\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)\right)+(A+C) \text{Cos}\left[\frac{1}{2} (c+d x)\right] \text{Tan}\left[\frac{c}{2}\right]\right)$$

Problem 133: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x] \left(A+C \text{Sec}[c+d x]^2\right)}{\left(a+a \text{Sec}[c+d x]\right)^2} \, dx$$

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

$$\frac{C \text{ArcTanh}[\text{Sin}[c+d x]]}{a^2 d}+\frac{(A-5 C) \text{Tan}[c+d x]}{3 a^2 d \left(1+\text{Sec}[c+d x]\right)}+\frac{(A+C) \text{Tan}[c+d x]}{3 d \left(a+a \text{Sec}[c+d x]\right)^2}$$

Result (type 3, 377 leaves):

$$-\frac{1}{6 a^2 d \left(1+\text{Sec}[c+d x]\right)^2} \text{Cos}\left[\frac{1}{2} (c+d x)\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^2 \left(3 C \text{Cos}\left[c+\frac{3 d x}{2}\right] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+3 C \text{Cos}\left[2 c+\frac{3 d x}{2}\right] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+9 C \text{Cos}\left[\frac{d x}{2}\right] \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+9 C \text{Cos}\left[c+\frac{d x}{2}\right] \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)-3 C \text{Cos}\left[c+\frac{3 d x}{2}\right] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-3 C \text{Cos}\left[2 c+\frac{3 d x}{2}\right] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-6 A \text{Sin}\left[\frac{d x}{2}\right]+18 C \text{Sin}\left[\frac{d x}{2}\right]+6 A \text{Sin}\left[c+\frac{d x}{2}\right]-6 C \text{Sin}\left[c+\frac{d x}{2}\right]-4 A \text{Sin}\left[c+\frac{3 d x}{2}\right]+8 C \text{Sin}\left[c+\frac{3 d x}{2}\right]\right)$$

Problem 134: Result more than twice size of optimal antiderivative.

$$\int \frac{A+C \text{Sec}[c+d x]^2}{\left(a+a \text{Sec}[c+d x]\right)^2} \, dx$$

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

$$\frac{A x}{a^2}-\frac{2 (2 A-C) \operatorname{Tan}[c+d x]}{3 a^2 d (1+\operatorname{Sec}[c+d x])}-\frac{(A+C) \operatorname{Tan}[c+d x]}{3 d (a+a \operatorname{Sec}[c+d x])^2}$$

Result (type 3, 141 leaves):

$$\frac{1}{24 a^2 d}\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^3 \left(9 A d x \operatorname{Cos}\left[\frac{d x}{2}\right]+9 A d x \operatorname{Cos}\left[c+\frac{d x}{2}\right]+3 A d x \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]+3 A d x \operatorname{Cos}\left[2 c+\frac{3 d x}{2}\right]-18 A \operatorname{Sin}\left[\frac{d x}{2}\right]+6 C \operatorname{Sin}\left[\frac{d x}{2}\right]+12 A \operatorname{Sin}\left[c+\frac{d x}{2}\right]-10 A \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]+2 C \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]\right)$$

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

$$\int \frac{\operatorname{Cos}[c+d x] \left(A+C \operatorname{Sec}[c+d x]^2\right)}{(a+a \operatorname{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 82 leaves, 5 steps):

$$-\frac{2 A x}{a^2}+\frac{(10 A+C) \operatorname{Sin}[c+d x]}{3 a^2 d}-\frac{2 A \operatorname{Sin}[c+d x]}{a^2 d (1+\operatorname{Sec}[c+d x])}-\frac{(A+C) \operatorname{Sin}[c+d x]}{3 d (a+a \operatorname{Sec}[c+d x])^2}$$

Result (type 3, 195 leaves):

$$\frac{1}{48 a^2 d}\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^3 \left(-36 A d x \operatorname{Cos}\left[\frac{d x}{2}\right]-36 A d x \operatorname{Cos}\left[c+\frac{d x}{2}\right]-12 A d x \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]-12 A d x \operatorname{Cos}\left[2 c+\frac{3 d x}{2}\right]+66 A \operatorname{Sin}\left[\frac{d x}{2}\right]+12 C \operatorname{Sin}\left[\frac{d x}{2}\right]-30 A \operatorname{Sin}\left[c+\frac{d x}{2}\right]-12 C \operatorname{Sin}\left[c+\frac{d x}{2}\right]+41 A \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]+8 C \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]+9 A \operatorname{Sin}\left[2 c+\frac{3 d x}{2}\right]+3 A \operatorname{Sin}\left[2 c+\frac{5 d x}{2}\right]+3 A \operatorname{Sin}\left[3 c+\frac{5 d x}{2}\right]\right)$$

Problem 136: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]^2 \left(A+C \operatorname{Sec}[c+d x]^2\right)}{(a+a \operatorname{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 137 leaves, 6 steps):

$$\frac{(7 A+2 C) x}{2 a^2}-\frac{4 (4 A+C) \operatorname{Sin}[c+d x]}{3 a^2 d}+\frac{(7 A+2 C) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{2 a^2 d}-\frac{2 (4 A+C) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{3 a^2 d (1+\operatorname{Sec}[c+d x])}-\frac{(A+C) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{3 d (a+a \operatorname{Sec}[c+d x])^2}$$

Result (type 3, 281 leaves):

$$\frac{1}{48\,a^2\,d\,(1+\text{Sec}[c+d\,x])^2}\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(36\,(7\,A+2\,C)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+36\,(7\,A+2\,C)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+84\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+24\,C\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+84\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+24\,C\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-381\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-144\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]+147\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+96\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-239\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-80\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-63\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-15\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-15\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+3\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+3\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]\right)$$

Problem 137: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^3\,(A+C\,\text{Sec}[c+d\,x]^2)}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 3, 163 leaves, 7 steps):

$$-\frac{(5\,A+2\,C)\,x}{a^2}+\frac{(12\,A+5\,C)\,\text{Sin}[c+d\,x]}{a^2\,d}-\frac{(5\,A+2\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{a^2\,d}-\frac{2\,(5\,A+2\,C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A+C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Sec}[c+d\,x])^2}-\frac{(12\,A+5\,C)\,\text{Sin}[c+d\,x]^3}{3\,a^2\,d}$$

Result (type 3, 349 leaves):

$$\frac{1}{48\,a^2\,d\,(1+\text{Sec}[c+d\,x])^2}\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(-72\,(5\,A+2\,C)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-72\,(5\,A+2\,C)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-120\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-48\,C\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-120\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-48\,C\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+516\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+264\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]-156\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-120\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+342\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+164\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+118\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+36\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+30\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+12\,C\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+30\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+12\,C\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-3\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-3\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

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

$$\int \frac{\text{Sec}[c+d x]^4 \left(A+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 198 leaves, 8 steps):

$$\frac{(2 A+13 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 a^3 d}-\frac{2 (11 A+76 C) \text{Tan}[c+d x]}{15 a^3 d}+\frac{(2 A+13 C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{2 a^3 d}-\frac{(A+C) \text{Sec}[c+d x]^4 \text{Tan}[c+d x]}{5 d (a+a \text{Sec}[c+d x])^3}-\frac{(A+11 C) \text{Sec}[c+d x]^3 \text{Tan}[c+d x]}{15 a d (a+a \text{Sec}[c+d x])^2}-\frac{(11 A+76 C) \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{15 d \left(a^3+a^3 \text{Sec}[c+d x]\right)}$$

Result (type 3, 632 leaves):

$$-\frac{1}{240 a^3 d \,(A+2 C+A \text{Cos}[2 (c+d x)]) \,(1+\text{Sec}[c+d x])^3} \text{Cos}\left[\frac{1}{2} (c+d x)\right] \text{Sec}[c+d x] \left(A+C \text{Sec}[c+d x]^2\right)$$
$$\left(1920 (2 A+13 C) \text{Cos}\left[\frac{1}{2} (c+d x)\right]^5 \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c] \text{Sec}[c+d x]^2\right.$$
$$\left(-5 (98 A+247 C) \text{Sin}\left[\frac{d x}{2}\right]+5 (106 A+761 C) \text{Sin}\left[\frac{3 d x}{2}\right]-654 A \text{Sin}\left[c-\frac{d x}{2}\right]-\right.$$
$$4329 C \text{Sin}\left[c-\frac{d x}{2}\right]+654 A \text{Sin}\left[c+\frac{d x}{2}\right]+1989 C \text{Sin}\left[c+\frac{d x}{2}\right]-490 A \text{Sin}\left[2 c+\frac{d x}{2}\right]-$$
$$3575 C \text{Sin}\left[2 c+\frac{d x}{2}\right]-350 A \text{Sin}\left[c+\frac{3 d x}{2}\right]-475 C \text{Sin}\left[c+\frac{3 d x}{2}\right]+530 A \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+$$
$$2005 C \text{Sin}\left[2 c+\frac{3 d x}{2}\right]-350 A \text{Sin}\left[3 c+\frac{3 d x}{2}\right]-2275 C \text{Sin}\left[3 c+\frac{3 d x}{2}\right]+$$
$$378 A \text{Sin}\left[c+\frac{5 d x}{2}\right]+2673 C \text{Sin}\left[c+\frac{5 d x}{2}\right]-150 A \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+105 C \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+$$
$$378 A \text{Sin}\left[3 c+\frac{5 d x}{2}\right]+1593 C \text{Sin}\left[3 c+\frac{5 d x}{2}\right]-150 A \text{Sin}\left[4 c+\frac{5 d x}{2}\right]-$$
$$975 C \text{Sin}\left[4 c+\frac{5 d x}{2}\right]+190 A \text{Sin}\left[2 c+\frac{7 d x}{2}\right]+1325 C \text{Sin}\left[2 c+\frac{7 d x}{2}\right]-30 A$$
$$\text{Sin}\left[3 c+\frac{7 d x}{2}\right]+255 C \text{Sin}\left[3 c+\frac{7 d x}{2}\right]+190 A \text{Sin}\left[4 c+\frac{7 d x}{2}\right]+875 C \text{Sin}\left[4 c+\frac{7 d x}{2}\right]-$$
$$30 A \text{Sin}\left[5 c+\frac{7 d x}{2}\right]-195 C \text{Sin}\left[5 c+\frac{7 d x}{2}\right]+44 A \text{Sin}\left[3 c+\frac{9 d x}{2}\right]+304 C \text{Sin}\left[3 c+\frac{9 d x}{2}\right]+$$
$$\left.\left.90 C \text{Sin}\left[4 c+\frac{9 d x}{2}\right]+44 A \text{Sin}\left[5 c+\frac{9 d x}{2}\right]+214 C \text{Sin}\left[5 c+\frac{9 d x}{2}\right]\right)\right)$$

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

$$\int \frac{\text{Sec}[c+d x]^3 \left(A+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 145 leaves, 7 steps):

$$-\frac{3 C \text{ArcTanh}[\text{Sin}[c+d x]]}{a^3 d}+\frac{(2 A+27 C) \text{Tan}[c+d x]}{15 a^3 d}-\frac{(A+C) \text{Sec}[c+d x]^3 \text{Tan}[c+d x]}{5 d (a+a \text{Sec}[c+d x])^3}+\frac{(A-9 C) \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{15 a d (a+a \text{Sec}[c+d x])^2}+\frac{3 C \text{Tan}[c+d x]}{d \left(a^3+a^3 \text{Sec}[c+d x]\right)}$$

Result (type 3, 457 leaves):

$$\frac{1}{60 a^3 d (A+2 C+A \text{Cos}[2 (c+d x)]) (1+\text{Sec}[c+d x])^3} \text{Cos}\left[\frac{1}{2} (c+d x)\right] \text{Sec}[c+d x] \left(A+C \text{Sec}[c+d x]^2\right) \left(2880 C \text{Cos}\left[\frac{1}{2} (c+d x)\right]^5 \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c] \text{Sec}[c+d x] \left(-5 (4 A+51 C) \text{Sin}\left[\frac{d x}{2}\right]+(22 A+567 C) \text{Sin}\left[\frac{3 d x}{2}\right]-10 A \text{Sin}\left[c-\frac{d x}{2}\right]-600 C \text{Sin}\left[c-\frac{d x}{2}\right]+10 A \text{Sin}\left[c+\frac{d x}{2}\right]+375 C \text{Sin}\left[c+\frac{d x}{2}\right]-20 A \text{Sin}\left[2 c+\frac{d x}{2}\right]-480 C \text{Sin}\left[2 c+\frac{d x}{2}\right]-60 C \text{Sin}\left[c+\frac{3 d x}{2}\right]+22 A \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+402 C \text{Sin}\left[2 c+\frac{3 d x}{2}\right]-225 C \text{Sin}\left[3 c+\frac{3 d x}{2}\right]+10 A \text{Sin}\left[c+\frac{5 d x}{2}\right]+315 C \text{Sin}\left[c+\frac{5 d x}{2}\right]+30 C \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+10 A \text{Sin}\left[3 c+\frac{5 d x}{2}\right]+240 C \text{Sin}\left[3 c+\frac{5 d x}{2}\right]-45 C \text{Sin}\left[4 c+\frac{5 d x}{2}\right]+2 A \text{Sin}\left[2 c+\frac{7 d x}{2}\right]+72 C \text{Sin}\left[2 c+\frac{7 d x}{2}\right]+15 C \text{Sin}\left[3 c+\frac{7 d x}{2}\right]+2 A \text{Sin}\left[4 c+\frac{7 d x}{2}\right]+57 C \text{Sin}\left[4 c+\frac{7 d x}{2}\right]\right)\right)$$

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

$$\int \frac{A+C \text{Sec}[c+d x]^2}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 106 leaves, 4 steps):

$$\frac{A x}{a^3}-\frac{(A+C) \text{Tan}[c+d x]}{5 d (a+a \text{Sec}[c+d x])^3}-\frac{(7 A-3 C) \text{Tan}[c+d x]}{15 a d (a+a \text{Sec}[c+d x])^2}-\frac{(22 A-3 C) \text{Tan}[c+d x]}{15 d \left(a^3+a^3 \text{Sec}[c+d x]\right)}$$

Result (type 3, 227 leaves):

$$\frac{1}{480 a^3 d}\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(150 A d x \text{Cos}\left[\frac{d x}{2}\right]+150 A d x \text{Cos}\left[c+\frac{d x}{2}\right]+75 A d x \text{Cos}\left[c+\frac{3 d x}{2}\right]+75 A d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]+15 A d x \text{Cos}\left[2 c+\frac{5 d x}{2}\right]+15 A d x \text{Cos}\left[3 c+\frac{5 d x}{2}\right]-370 A \text{Sin}\left[\frac{d x}{2}\right]+30 C \text{Sin}\left[\frac{d x}{2}\right]+270 A \text{Sin}\left[c+\frac{d x}{2}\right]-30 C \text{Sin}\left[c+\frac{d x}{2}\right]-230 A \text{Sin}\left[c+\frac{3 d x}{2}\right]+30 C \text{Sin}\left[c+\frac{3 d x}{2}\right]+90 A \text{Sin}\left[2 c+\frac{3 d x}{2}\right]-64 A \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+6 C \text{Sin}\left[2 c+\frac{5 d x}{2}\right]\right)$$

Problem 143: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]\left(A+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 120 leaves, 6 steps):

$$-\frac{3 A x}{a^3}+\frac{2 (36 A+C) \text{Sin}[c+d x]}{15 a^3 d}-\frac{(A+C) \text{Sin}[c+d x]}{5 d (a+a \text{Sec}[c+d x])^3}-\frac{(9 A-C) \text{Sin}[c+d x]}{15 a d (a+a \text{Sec}[c+d x])^2}-\frac{3 A \text{Sin}[c+d x]}{d \left(a^3+a^3 \text{Sec}[c+d x]\right)}$$

Result (type 3, 283 leaves):

$$-\frac{1}{960 a^3 d}\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(900 A d x \text{Cos}\left[\frac{d x}{2}\right]+900 A d x \text{Cos}\left[c+\frac{d x}{2}\right]+450 A d x \text{Cos}\left[c+\frac{3 d x}{2}\right]+450 A d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]+90 A d x \text{Cos}\left[2 c+\frac{5 d x}{2}\right]+90 A d x \text{Cos}\left[3 c+\frac{5 d x}{2}\right]-1755 A \text{Sin}\left[\frac{d x}{2}\right]-160 C \text{Sin}\left[\frac{d x}{2}\right]+1125 A \text{Sin}\left[c+\frac{d x}{2}\right]+120 C \text{Sin}\left[c+\frac{d x}{2}\right]-1215 A \text{Sin}\left[c+\frac{3 d x}{2}\right]-80 C \text{Sin}\left[c+\frac{3 d x}{2}\right]+225 A \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+60 C \text{Sin}\left[2 c+\frac{3 d x}{2}\right]-363 A \text{Sin}\left[2 c+\frac{5 d x}{2}\right]-28 C \text{Sin}\left[2 c+\frac{5 d x}{2}\right]-75 A \text{Sin}\left[3 c+\frac{5 d x}{2}\right]-15 A \text{Sin}\left[3 c+\frac{7 d x}{2}\right]-15 A \text{Sin}\left[4 c+\frac{7 d x}{2}\right]\right)$$

Problem 144: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2\left(A+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 183 leaves, 7 steps):

$$\frac{(13A+2C)\,x}{2a^3}-\frac{2\,(76A+11C)\,\mathrm{Sin}[c+d\,x]}{15a^3d}+\frac{(13A+2C)\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{2a^3d}-\frac{(A+C)\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{5d\,(a+a\,\mathrm{Sec}[c+d\,x])^3}-\frac{(11A+C)\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{15a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^2}-\frac{(76A+11C)\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{15d\,(a^3+a^3\,\mathrm{Sec}[c+d\,x])}$$

Result (type 3, 385 leaves):

$$\frac{1}{3840a^3d}\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(600\,(13A+2C)\,d\,x\,\mathrm{Cos}\left[\frac{d\,x}{2}\right]+600\,(13A+2C)\,d\,x\,\mathrm{Cos}\left[c+\frac{d\,x}{2}\right]+3900\,A\,d\,x\,\mathrm{Cos}\left[c+\frac{3d\,x}{2}\right]+600\,C\,d\,x\,\mathrm{Cos}\left[c+\frac{3d\,x}{2}\right]+3900\,A\,d\,x\,\mathrm{Cos}\left[2c+\frac{3d\,x}{2}\right]+600\,C\,d\,x\,\mathrm{Cos}\left[2c+\frac{3d\,x}{2}\right]+780\,A\,d\,x\,\mathrm{Cos}\left[2c+\frac{5d\,x}{2}\right]+120\,C\,d\,x\,\mathrm{Cos}\left[2c+\frac{5d\,x}{2}\right]+780\,A\,d\,x\,\mathrm{Cos}\left[3c+\frac{5d\,x}{2}\right]+120\,C\,d\,x\,\mathrm{Cos}\left[3c+\frac{5d\,x}{2}\right]-12760\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-2960\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+7560\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+2160\,C\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-9230\,A\,\mathrm{Sin}\left[c+\frac{3d\,x}{2}\right]-1840\,C\,\mathrm{Sin}\left[c+\frac{3d\,x}{2}\right]+930\,A\,\mathrm{Sin}\left[2c+\frac{3d\,x}{2}\right]+720\,C\,\mathrm{Sin}\left[2c+\frac{3d\,x}{2}\right]-2782\,A\,\mathrm{Sin}\left[2c+\frac{5d\,x}{2}\right]-512\,C\,\mathrm{Sin}\left[2c+\frac{5d\,x}{2}\right]-750\,A\,\mathrm{Sin}\left[3c+\frac{5d\,x}{2}\right]-105\,A\,\mathrm{Sin}\left[3c+\frac{7d\,x}{2}\right]-105\,A\,\mathrm{Sin}\left[4c+\frac{7d\,x}{2}\right]+15\,A\,\mathrm{Sin}\left[4c+\frac{9d\,x}{2}\right]+15\,A\,\mathrm{Sin}\left[5c+\frac{9d\,x}{2}\right]\right)$$

Problem 145: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[c+d\,x]^3\,(A+C\,\mathrm{Sec}[c+d\,x]^2)}{(a+a\,\mathrm{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 216 leaves, 8 steps):

$$-\frac{(23A+6C)\,x}{2a^3}+\frac{4\,(34A+9C)\,\mathrm{Sin}[c+d\,x]}{5a^3d}-\frac{(23A+6C)\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{2a^3d}-\frac{(A+C)\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{Sin}[c+d\,x]}{5d\,(a+a\,\mathrm{Sec}[c+d\,x])^3}-\frac{(13A+3C)\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{Sin}[c+d\,x]}{15a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^2}-\frac{(23A+6C)\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{Sin}[c+d\,x]}{3d\,(a^3+a^3\,\mathrm{Sec}[c+d\,x])}-\frac{4\,(34A+9C)\,\mathrm{Sin}[c+d\,x]^3}{15a^3d}$$

Result (type 3, 455 leaves):

$$-\frac{1}{3840\,a^3\,d}\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(600\,(23\,A+6\,C)\,d\,x\,\mathrm{Cos}\left[\frac{d\,x}{2}\right]+600\,(23\,A+6\,C)\,d\,x\,\mathrm{Cos}\left[c+\frac{d\,x}{2}\right]+\right.$$
$$6900\,A\,d\,x\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]+1800\,C\,d\,x\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]+6900\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$1800\,C\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+1380\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+360\,C\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$1380\,A\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+360\,C\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-20410\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-$$
$$7020\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+11110\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+4500\,C\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-15380\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]-$$
$$4860\,C\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+380\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+900\,C\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-4777\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$1452\,C\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-1625\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-300\,C\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-$$
$$230\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-60\,C\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-230\,A\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-60\,C\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+$$
$$\left.20\,A\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+20\,A\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]-5\,A\,\mathrm{Sin}\left[5\,c+\frac{11\,d\,x}{2}\right]-5\,A\,\mathrm{Sin}\left[6\,c+\frac{11\,d\,x}{2}\right]\right)$$

Problem 146: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sec}[c+d\,x]^5\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{(a+a\,\mathrm{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 3, 232 leaves, 9 steps):

$$\frac{(2\,A+21\,C)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,a^4\,d}-$$
$$\frac{32\,(5\,A+54\,C)\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d}+\frac{(2\,A+21\,C)\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{2\,a^4\,d}-$$
$$\frac{(10\,A+129\,C)\,\mathrm{Sec}[c+d\,x]^3\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d\,(1+\mathrm{Sec}[c+d\,x])^2}-\frac{16\,(5\,A+54\,C)\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d\,(1+\mathrm{Sec}[c+d\,x])}-$$
$$\frac{(A+C)\,\mathrm{Sec}[c+d\,x]^5\,\mathrm{Tan}[c+d\,x]}{7\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^4}-\frac{2\,C\,\mathrm{Sec}[c+d\,x]^4\,\mathrm{Tan}[c+d\,x]}{5\,a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^3}$$

Result (type 3, 890 leaves):

$$-\left(\left(16\,(2A+21C)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\,(A+2C+A\,\mathrm{Cos}[2c+2d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^4\right)\right)+$$

$$\left(16\,(2A+21C)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\,(A+2C+A\,\mathrm{Cos}[2c+2d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^4\right)+$$

$$\frac{1}{3360\,d\,(A+2C+A\,\mathrm{Cos}[2c+2d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^4}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^4\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(14140\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+73206\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-15160\,A\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]-166668\,C\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]+\right.$$
$$17220\,A\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]+183162\,C\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]-17220\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-100842\,C\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+$$
$$14140\,A\,\mathrm{Sin}\left[2c+\frac{d\,x}{2}\right]+155526\,C\,\mathrm{Sin}\left[2c+\frac{d\,x}{2}\right]+9800\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$37380\,C\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]-15160\,A\,\mathrm{Sin}\left[2c+\frac{3\,d\,x}{2}\right]-101148\,C\,\mathrm{Sin}\left[2c+\frac{3\,d\,x}{2}\right]+$$
$$9800\,A\,\mathrm{Sin}\left[3c+\frac{3\,d\,x}{2}\right]+102900\,C\,\mathrm{Sin}\left[3c+\frac{3\,d\,x}{2}\right]-10920\,A\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]-$$
$$119364\,C\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]+4760\,A\,\mathrm{Sin}\left[2c+\frac{5\,d\,x}{2}\right]+8820\,C\,\mathrm{Sin}\left[2c+\frac{5\,d\,x}{2}\right]-$$
$$10920\,A\,\mathrm{Sin}\left[3c+\frac{5\,d\,x}{2}\right]-78204\,C\,\mathrm{Sin}\left[3c+\frac{5\,d\,x}{2}\right]+4760\,A\,\mathrm{Sin}\left[4c+\frac{5\,d\,x}{2}\right]+$$
$$49980\,C\,\mathrm{Sin}\left[4c+\frac{5\,d\,x}{2}\right]-5890\,A\,\mathrm{Sin}\left[2c+\frac{7\,d\,x}{2}\right]-64053\,C\,\mathrm{Sin}\left[2c+\frac{7\,d\,x}{2}\right]+$$
$$1470\,A\,\mathrm{Sin}\left[3c+\frac{7\,d\,x}{2}\right]-3885\,C\,\mathrm{Sin}\left[3c+\frac{7\,d\,x}{2}\right]-5890\,A\,\mathrm{Sin}\left[4c+\frac{7\,d\,x}{2}\right]-$$
$$44733\,C\,\mathrm{Sin}\left[4c+\frac{7\,d\,x}{2}\right]+1470\,A\,\mathrm{Sin}\left[5c+\frac{7\,d\,x}{2}\right]+15435\,C\,\mathrm{Sin}\left[5c+\frac{7\,d\,x}{2}\right]-$$
$$2030\,A\,\mathrm{Sin}\left[3c+\frac{9\,d\,x}{2}\right]-21987\,C\,\mathrm{Sin}\left[3c+\frac{9\,d\,x}{2}\right]+210\,A\,\mathrm{Sin}\left[4c+\frac{9\,d\,x}{2}\right]-3675\,C$$
$$\mathrm{Sin}\left[4c+\frac{9\,d\,x}{2}\right]-2030\,A\,\mathrm{Sin}\left[5c+\frac{9\,d\,x}{2}\right]-16107\,C\,\mathrm{Sin}\left[5c+\frac{9\,d\,x}{2}\right]+210\,A\,\mathrm{Sin}\left[6c+\frac{9\,d\,x}{2}\right]+$$
$$2205\,C\,\mathrm{Sin}\left[6c+\frac{9\,d\,x}{2}\right]-320\,A\,\mathrm{Sin}\left[4c+\frac{11\,d\,x}{2}\right]-3456\,C\,\mathrm{Sin}\left[4c+\frac{11\,d\,x}{2}\right]-$$
$$\left.840\,C\,\mathrm{Sin}\left[5c+\frac{11\,d\,x}{2}\right]-320\,A\,\mathrm{Sin}\left[6c+\frac{11\,d\,x}{2}\right]-2616\,C\,\mathrm{Sin}\left[6c+\frac{11\,d\,x}{2}\right]\right)$$

Problem 147: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[c+d\,x]^4\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{(a+a\,\mathrm{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 3, 183 leaves, 8 steps):

$$-\frac{4\,C\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a^4\,d}+\frac{2\,(3\,A+122\,C)\,\text{Tan}[c+d\,x]}{105\,a^4\,d}+\frac{(3\,A-88\,C)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{105\,a^4\,d\,(1+\text{Sec}[c+d\,x])^2}+\frac{4\,C\,\text{Tan}[c+d\,x]}{a^4\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A+C)\,\text{Sec}[c+d\,x]^4\,\text{Tan}[c+d\,x]}{7\,d\,(a+a\,\text{Sec}[c+d\,x])^4}+\frac{2\,(A-6\,C)\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{35\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^3}$$

Result (type 3, 544 leaves):

$$\frac{1}{840\,a^4\,d\,(A+2\,C+A\,\text{Cos}[2\,(c+d\,x)])\,(1+\text{Sec}[c+d\,x])^4}$$
$$\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}[c+d\,x]^2\,(A+C\,\text{Sec}[c+d\,x]^2)\,\Bigg(107\,520\,C\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^7$$
$$\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)+$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\Bigg(-70\,(3\,A+154\,C)\,\text{Sin}\left[\frac{d\,x}{2}\right]+28\,(9\,A+671\,C)\,\text{Sin}\left[\frac{3\,d\,x}{2}\right]-$$
$$126\,A\,\text{Sin}\left[c-\frac{d\,x}{2}\right]-20\,524\,C\,\text{Sin}\left[c-\frac{d\,x}{2}\right]+126\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+14\,644\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-$$
$$210\,A\,\text{Sin}\left[2\,c+\frac{d\,x}{2}\right]-16\,660\,C\,\text{Sin}\left[2\,c+\frac{d\,x}{2}\right]-4690\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$252\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+14\,378\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-9100\,C\,\text{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+$$
$$132\,A\,\text{Sin}\left[c+\frac{5\,d\,x}{2}\right]+11\,668\,C\,\text{Sin}\left[c+\frac{5\,d\,x}{2}\right]-630\,C\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$132\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+9358\,C\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-2940\,C\,\text{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+$$
$$42\,A\,\text{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+4228\,C\,\text{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+315\,C\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+$$
$$42\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+3493\,C\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-420\,C\,\text{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]+6\,A\,\text{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]+$$
$$664\,C\,\text{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]+105\,C\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+6\,A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+559\,C\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\Bigg)\Bigg)$$

Problem 151: Result more than twice size of optimal antiderivative.

$$\int \frac{A+C\,\text{Sec}[c+d\,x]^2}{(a+a\,\text{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 3, 136 leaves, 5 steps):

$$\frac{A\,x}{a^4}-\frac{(55\,A-8\,C)\,\text{Tan}[c+d\,x]}{105\,a^4\,d\,(1+\text{Sec}[c+d\,x])^2}-\frac{8\,(20\,A-C)\,\text{Tan}[c+d\,x]}{105\,a^4\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A+C)\,\text{Tan}[c+d\,x]}{7\,d\,(a+a\,\text{Sec}[c+d\,x])^4}-\frac{2\,(5\,A-2\,C)\,\text{Tan}[c+d\,x]}{35\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^3}$$

Result (type 3, 315 leaves):

$$\frac{1}{13440\, a^4\, d} \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^7 \left(3675\,A\,d\,x\,\operatorname{Cos}\left[\frac{d\,x}{2}\right] + 3675\,A\,d\,x\,\operatorname{Cos}\left[c+\frac{d\,x}{2}\right] + 2205\,A\,d\,x\,\operatorname{Cos}\left[c+\frac{3\,d\,x}{2}\right] + 2205\,A\,d\,x\,\operatorname{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right] + 735\,A\,d\,x\,\operatorname{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right] + 735\,A\,d\,x\,\operatorname{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right] + 105\,A\,d\,x\,\operatorname{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right] + 105\,A\,d\,x\,\operatorname{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right] - 9940\,A\,\operatorname{Sin}\left[\frac{d\,x}{2}\right] + 560\,C\,\operatorname{Sin}\left[\frac{d\,x}{2}\right] + 8260\,A\,\operatorname{Sin}\left[c+\frac{d\,x}{2}\right] - 350\,C\,\operatorname{Sin}\left[c+\frac{d\,x}{2}\right] - 7140\,A\,\operatorname{Sin}\left[c+\frac{3\,d\,x}{2}\right] + 336\,C\,\operatorname{Sin}\left[c+\frac{3\,d\,x}{2}\right] + 3780\,A\,\operatorname{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right] - 210\,C\,\operatorname{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right] - 2800\,A\,\operatorname{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right] + 182\,C\,\operatorname{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right] + 840\,A\,\operatorname{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right] - 520\,A\,\operatorname{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right] + 26\,C\,\operatorname{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]\right)$$

Problem 152: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d\,x]\,\left(A+C\operatorname{Sec}[c+d\,x]^2\right)}{\left(a+a\operatorname{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 3, 152 leaves, 7 steps):

$$-\frac{4\,A\,x}{a^4}+\frac{2\,(332\,A+3\,C)\operatorname{Sin}[c+d\,x]}{105\,a^4\,d}-\frac{(88\,A-3\,C)\operatorname{Sin}[c+d\,x]}{105\,a^4\,d\,\left(1+\operatorname{Sec}[c+d\,x]\right)^2}-\frac{4\,A\operatorname{Sin}[c+d\,x]}{a^4\,d\,\left(1+\operatorname{Sec}[c+d\,x]\right)}-\frac{(A+C)\operatorname{Sin}[c+d\,x]}{7\,d\,\left(a+a\operatorname{Sec}[c+d\,x]\right)^4}-\frac{2\,(6\,A-C)\operatorname{Sin}[c+d\,x]}{35\,a\,d\,\left(a+a\operatorname{Sec}[c+d\,x]\right)^3}$$

Result (type 3, 371 leaves):

$$-\frac{1}{26880\,a^4\,d}\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^7 \left(29400\,A\,d\,x\,\operatorname{Cos}\left[\frac{d\,x}{2}\right] + 29400\,A\,d\,x\,\operatorname{Cos}\left[c+\frac{d\,x}{2}\right] + 17640\,A\,d\,x\,\operatorname{Cos}\left[c+\frac{3\,d\,x}{2}\right] + 17640\,A\,d\,x\,\operatorname{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right] + 5880\,A\,d\,x\,\operatorname{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right] + 5880\,A\,d\,x\,\operatorname{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right] + 840\,A\,d\,x\,\operatorname{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right] + 840\,A\,d\,x\,\operatorname{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right] - 60830\,A\,\operatorname{Sin}\left[\frac{d\,x}{2}\right] - 2520\,C\,\operatorname{Sin}\left[\frac{d\,x}{2}\right] + 46130\,A\,\operatorname{Sin}\left[c+\frac{d\,x}{2}\right] + 2520\,C\,\operatorname{Sin}\left[c+\frac{d\,x}{2}\right] - 46116\,A\,\operatorname{Sin}\left[c+\frac{3\,d\,x}{2}\right] - 1764\,C\,\operatorname{Sin}\left[c+\frac{3\,d\,x}{2}\right] + 18060\,A\,\operatorname{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right] + 1260\,C\,\operatorname{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right] - 19292\,A\,\operatorname{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right] - 588\,C\,\operatorname{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right] + 2100\,A\,\operatorname{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right] + 420\,C\,\operatorname{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right] - 3791\,A\,\operatorname{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right] - 144\,C\,\operatorname{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right] - 735\,A\,\operatorname{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right] - 105\,A\,\operatorname{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right] - 105\,A\,\operatorname{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

Problem 153: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2 \left(A+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^4} \, dx$$

Optimal (type 3, 215 leaves, 8 steps):

$$\frac{(21 A+2 C) x}{2 a^4}-\frac{32 (54 A+5 C) \text{Sin}[c+d x]}{105 a^4 d}+\frac{(21 A+2 C) \text{Cos}[c+d x] \text{Sin}[c+d x]}{2 a^4 d}-\frac{(129 A+10 C) \text{Cos}[c+d x] \text{Sin}[c+d x]}{105 a^4 d (1+\text{Sec}[c+d x])^2}-\frac{16 (54 A+5 C) \text{Cos}[c+d x] \text{Sin}[c+d x]}{105 a^4 d (1+\text{Sec}[c+d x])}-\frac{(A+C) \text{Cos}[c+d x] \text{Sin}[c+d x]}{7 d (a+a \text{Sec}[c+d x])^4}-\frac{2 A \text{Cos}[c+d x] \text{Sin}[c+d x]}{5 a d (a+a \text{Sec}[c+d x])^3}$$

Result (type 3, 505 leaves):

$$\frac{1}{107520 a^4 d} \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{1}{2} (c+d x)\right]^7 \left(14700 (21 A+2 C) d x \text{Cos}\left[\frac{d x}{2}\right]+14700 (21 A+2 C) d x \text{Cos}\left[c+\frac{d x}{2}\right]+185220 A d x \text{Cos}\left[c+\frac{3 d x}{2}\right]+17640 C d x \text{Cos}\left[c+\frac{3 d x}{2}\right]+185220 A d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]+17640 C d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]+61740 A d x \text{Cos}\left[2 c+\frac{5 d x}{2}\right]+5880 C d x \text{Cos}\left[2 c+\frac{5 d x}{2}\right]+61740 A d x \text{Cos}\left[3 c+\frac{5 d x}{2}\right]+5880 C d x \text{Cos}\left[3 c+\frac{5 d x}{2}\right]+8820 A d x \text{Cos}\left[3 c+\frac{7 d x}{2}\right]+840 C d x \text{Cos}\left[3 c+\frac{7 d x}{2}\right]+8820 A d x \text{Cos}\left[4 c+\frac{7 d x}{2}\right]+840 C d x \text{Cos}\left[4 c+\frac{7 d x}{2}\right]-539490 A \text{Sin}\left[\frac{d x}{2}\right]-79520 C \text{Sin}\left[\frac{d x}{2}\right]+386190 A \text{Sin}\left[c+\frac{d x}{2}\right]+66080 C \text{Sin}\left[c+\frac{d x}{2}\right]-422478 A \text{Sin}\left[c+\frac{3 d x}{2}\right]-57120 C \text{Sin}\left[c+\frac{3 d x}{2}\right]+132930 A \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+30240 C \text{Sin}\left[2 c+\frac{3 d x}{2}\right]-181461 A \text{Sin}\left[2 c+\frac{5 d x}{2}\right]-22400 C \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+3675 A \text{Sin}\left[3 c+\frac{5 d x}{2}\right]+6720 C \text{Sin}\left[3 c+\frac{5 d x}{2}\right]-36003 A \text{Sin}\left[3 c+\frac{7 d x}{2}\right]-4160 C \text{Sin}\left[3 c+\frac{7 d x}{2}\right]-9555 A \text{Sin}\left[4 c+\frac{7 d x}{2}\right]-945 A \text{Sin}\left[4 c+\frac{9 d x}{2}\right]-945 A \text{Sin}\left[5 c+\frac{9 d x}{2}\right]+105 A \text{Sin}\left[5 c+\frac{11 d x}{2}\right]+105 A \text{Sin}\left[6 c+\frac{11 d x}{2}\right]\right)$$

Problem 154: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^3 \left(A+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^4} \, dx$$

Optimal (type 3, 248 leaves, 9 steps):

$$-\frac{2\,(11\,A+2\,C)\,x}{a^4}+\frac{4\,(454\,A+83\,C)\,\text{Sin}[c+d\,x]}{35\,a^4\,d}-\frac{2\,(11\,A+2\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{a^4\,d}-\frac{(178\,A+31\,C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{105\,a^4\,d\,(1+\text{Sec}[c+d\,x])^2}-\frac{4\,(11\,A+2\,C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{3\,a^4\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A+C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{7\,d\,(a+a\,\text{Sec}[c+d\,x])^4}-\frac{2\,(8\,A+C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{35\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^3}-\frac{4\,(454\,A+83\,C)\,\text{Sin}[c+d\,x]^3}{105\,a^4\,d}$$

Result (type 3, 575 leaves):

$$-\frac{1}{107520\,a^4\,d}\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^7\Bigg(58800\,(11\,A+2\,C)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+58800\,(11\,A+2\,C)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+$$
$$388080\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+70560\,C\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+388080\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$70560\,C\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+129360\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+23520\,C\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$129360\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+23520\,C\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+18480\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]+$$
$$3360\,C\,d\,x\,\text{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]+18480\,A\,d\,x\,\text{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right]+3360\,C\,d\,x\,\text{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right]-$$
$$1010660\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-243320\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]+687260\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+$$
$$184520\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-814107\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-184464\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$204645\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+72240\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-357609\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$77168\,C\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-18025\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+8400\,C\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-$$
$$72522\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-15164\,C\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-24010\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-$$
$$2940\,C\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-2310\,A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-420\,C\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-$$
$$2310\,A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]-420\,C\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+175\,A\,\text{Sin}\left[5\,c+\frac{11\,d\,x}{2}\right]+$$
$$175\,A\,\text{Sin}\left[6\,c+\frac{11\,d\,x}{2}\right]-35\,A\,\text{Sin}\left[6\,c+\frac{13\,d\,x}{2}\right]-35\,A\,\text{Sin}\left[7\,c+\frac{13\,d\,x}{2}\right]\Bigg)$$

Problem 160: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

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

$$\frac{\sqrt{a}\ A\,\text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{A\sqrt{a+a\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{d}-\frac{a\,(A-2\,C)\,\text{Tan}[c+d\,x]}{d\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 398 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{a\,(1+\text{Sec}[c+d\,x])}\,\left(\frac{1}{2}(-A+4\,C)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{2}A\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]\right)-$$
$$\frac{1}{d}4\left(-3-2\sqrt{2}\right)A\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\ \text{Sec}\left[\frac{1}{2}(c+d\,x)\right]}$$
$$\text{Sec}[c+d\,x]\sqrt{a\,(1+\text{Sec}[c+d\,x])}\ \sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

Problem 161: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^2\sqrt{a+a\,\text{Sec}[c+d\,x]}\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 3, 110 leaves, 4 steps):

$$\frac{\sqrt{a}\ (3\,A+8\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{4\,d}+$$
$$\frac{a\,A\,\text{Sin}[c+d\,x]}{4\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{A\,\text{Cos}[c+d\,x]\sqrt{a+a\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 410 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}\left(-\frac{1}{8}A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{4}A\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{8}A\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)+$$

$$\frac{1}{d}\left(2+\frac{3}{\sqrt{2}}\right)(3A+8C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\;\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$

$$\text{Sec}[c+d x]\sqrt{a\,(1+\text{Sec}[c+d x])}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 162: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3\sqrt{a+a\,\text{Sec}[c+d x]}\left(A+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 153 leaves, 5 steps):

$$\frac{\sqrt{a}\,(5A+8C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{8d}+\frac{a\,(5A+8C)\,\text{Sin}[c+d x]}{8d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$

$$\frac{a\,A\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{12d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{A\,\text{Cos}[c+d x]^2\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{3d}$$

Result (type 4, 439 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a(1+\text{Sec}[c+d x])}\left(-\frac{1}{48}(11 A+24 C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{6}(2 A+3 C)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{16}A\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]+\frac{1}{24}A\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]\right)+$$

$$\frac{1}{d}\left(1+\frac{3}{2\sqrt{2}}\right)(5 A+8 C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\;\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$

$$\text{Sec}[c+d x]\sqrt{a(1+\text{Sec}[c+d x])}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 163: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^4\sqrt{a+a\,\text{Sec}[c+d x]}\left(A+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 196 leaves, 6 steps):

$$\frac{\sqrt{a}\,(35 A+48 C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{64 d}+$$

$$\frac{a(35 A+48 C)\,\text{Sin}[c+d x]}{64 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a(35 A+48 C)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{96 d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$

$$\frac{a A\,\text{Cos}[c+d x]^2\,\text{Sin}[c+d x]}{24 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{A\,\text{Cos}[c+d x]^3\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{4 d}$$

Result (type 4, 460 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}$$
$$\left(-\frac{1}{384}(41 A+48 C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{48}(11 A+12 C)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\right.$$
$$\left.\frac{1}{128}(15 A+16 C)\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]+\frac{1}{48}A\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]+\frac{1}{64}A\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]\right)+$$
$$\frac{1}{\left(-64+48\sqrt{2}\right)d}(35 A+48 C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\;\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$
$$\text{Sec}[c+d x]\sqrt{a\,(1+\text{Sec}[c+d x])}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 169: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2\,(a+a\,\text{Sec}[c+d x])^{3/2}\,\left(A+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 151 leaves, 5 steps):

$$\frac{a^{3/2}(7 A+8 C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{4 d}+\frac{a^2(5 A-8 C)\,\text{Sin}[c+d x]}{4 d\sqrt{a+a\,\text{Sec}[c+d x]}}-$$
$$\frac{a\,(A-4 C)\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{2 d}+\frac{A\,\text{Cos}[c+d x]\,(a+a\,\text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{2 d}$$

Result (type 4, 424 leaves):

$$\frac{1}{2}\left(\frac{1}{d}\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 (a(1+\text{Sec}[c+d x]))^{3/2}\right.$$
$$\left(-\frac{1}{8}(5A-16C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{3}{4}A\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{8}A\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)+$$
$$\frac{1}{d}\left(2+\frac{3}{\sqrt{2}}\right)(7A+8C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3(a(1+\text{Sec}[c+d x]))^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)$$

Problem 171: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^4\,(a+a\,\text{Sec}[c+d x])^{3/2}\left(A+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 200 leaves, 6 steps):

$$\frac{a^{3/2}(75A+112C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{64 d}+\frac{a^2(75A+112C)\,\text{Sin}[c+d x]}{64 d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$
$$\frac{a^2(13A+16C)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{32 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a A\,\text{Cos}[c+d x]^2\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{8 d}+$$
$$\frac{A\,\text{Cos}[c+d x]^3(a+a\,\text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{4 d}$$

Result (type 4, 534 leaves):

$$\left(\text{Cos}[c+d x]^3\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+C\,\text{Sec}[c+d x]^2\right)\left(-\frac{1}{128}(43 A+80 C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{3}{16}(3 A+4 C)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{128}(23 A+16 C)\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]+\frac{1}{16}A\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]+\frac{1}{64}A\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]\right)\right)\Big/\left(d\left(A+2 C+A\,\text{Cos}[2 c+2 d x]\right)\right)+\frac{1}{\left(-64+48\sqrt{2}\right)d\left(A+2 C+A\,\text{Cos}[2 c+2 d x]\right)}$$

$$(75 A+112 C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Cos}[c+d x]^2$$

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\;\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+C\,\text{Sec}[c+d x]^2\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 172: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^5\left(a+a\,\text{Sec}[c+d x]\right)^{3/2}\left(A+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 245 leaves, 7 steps):

$$\frac{a^{3/2}\left(133 A+176 C\right) \text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{128 d}+\frac{a^2\left(133 A+176 C\right) \text{Sin}[c+d x]}{128 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{a^2\left(133 A+176 C\right) \text{Cos}[c+d x] \text{Sin}[c+d x]}{192 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{a^2\left(67 A+80 C\right) \text{Cos}[c+d x]^2 \text{Sin}[c+d x]}{240 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{3 a A \text{Cos}[c+d x]^3 \sqrt{a+a \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{40 d}+\frac{A \text{Cos}[c+d x]^4\left(a+a \text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]}{5 d}$$

Result (type 4, 556 leaves):

$$\left(\text{Cos}[c+d x]^3 \text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+C \text{Sec}[c+d x]^2\right)\left(-\frac{\left(1019 A+1360 C\right) \text{Sin}\left[\frac{1}{2}\left(c+d x\right)\right]}{3840}+\frac{1}{480}\left(239 A+280 C\right) \text{Sin}\left[\frac{3}{2}\left(c+d x\right)\right]+\frac{1}{256}\left(49 A+48 C\right) \text{Sin}\left[\frac{5}{2}\left(c+d x\right)\right]+\frac{1}{240}\left(17 A+10 C\right) \text{Sin}\left[\frac{7}{2}\left(c+d x\right)\right]+\frac{3}{128} A \text{Sin}\left[\frac{9}{2}\left(c+d x\right)\right]+\frac{1}{160} A \text{Sin}\left[\frac{11}{2}\left(c+d x\right)\right]\right)\right)\Big/\left(d\left(A+2 C+A \text{Cos}[2 c+2 d x]\right)\right)+$$

$$\frac{1}{64 d\left(A+2 C+A \text{Cos}[2 c+2 d x]\right)}\left(4+3\sqrt{2}\right)\left(133 A+176 C\right) \text{Cos}\left[\frac{1}{4}\left(c+d x\right)\right]^4 \sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]}{1+\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]\right)$$

$$\text{Cos}[c+d x]^2\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]+2 \text{EllipticPi}\left[-3+2\sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]\right) \text{Sec}\left[\frac{1}{4}\left(c+d x\right)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]\right) \text{Sec}\left[\frac{1}{4}\left(c+d x\right)\right]^2}\ \text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^3$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+C \text{Sec}[c+d x]^2\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\left(c+d x\right)\right]^2}$$

Problem 178: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2 \left(a+a \,\text{Sec}[c+d x]\right)^{5/2} \left(A+C \,\text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 3, 188 leaves, 6 steps):

$$\frac{a^{5/2} (19 A+8 C) \,\text{ArcTan}\left[\frac{\sqrt{a} \,\text{Tan}[c+d x]}{\sqrt{a+a \,\text{Sec}[c+d x]}}\right]}{4 d}+\frac{a^3 (27 A-56 C) \,\text{Sin}[c+d x]}{12 d \sqrt{a+a \,\text{Sec}[c+d x]}}-\frac{a^2 (A-8 C) \sqrt{a+a \,\text{Sec}[c+d x]} \,\text{Sin}[c+d x]}{2 d}-\frac{a (3 A-4 C) (a+a \,\text{Sec}[c+d x])^{3/2} \,\text{Sin}[c+d x]}{6 d}+\frac{A \,\text{Cos}[c+d x] (a+a \,\text{Sec}[c+d x])^{5/2} \,\text{Sin}[c+d x]}{2 d}$$

Result (type 4, 455 leaves):

$$\frac{1}{2}\left(\frac{1}{d}\text{Cos}[c+d x]^2 \,\text{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{5/2} \left(-\frac{1}{48} (27 A-128 C) \,\text{Sin}\left[\frac{1}{2} (c+d x)\right]+\frac{1}{3} C \,\text{Sec}[c+d x] \,\text{Sin}\left[\frac{1}{2} (c+d x)\right]+\frac{5}{8} A \,\text{Sin}\left[\frac{3}{2} (c+d x)\right]+\frac{1}{16} A \,\text{Sin}\left[\frac{5}{2} (c+d x)\right]\right)+\right.$$
$$\frac{1}{d}\left(1+\frac{3}{2 \sqrt{2}}\right) (19 A+8 C) \,\text{Cos}\left[\frac{1}{4} (c+d x)\right]^4 \sqrt{\frac{7-5 \sqrt{2}+\left(10-7 \sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \text{Cos}[c+d x] \left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right],\right.\right.$$
$$\left.\left.17-12 \sqrt{2}\right]+2 \,\text{EllipticPi}\left[-3+2 \sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right],17-12 \sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \text{Sec}\left[\frac{1}{4} (c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \text{Sec}\left[\frac{1}{4} (c+d x)\right]^2}$$
$$\left.\text{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{5/2} \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4} (c+d x)\right]^2}\right)$$

Problem 180: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}\,(A+C\,\mathrm{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 3, 200 leaves, 6 steps):

$$\frac{a^{5/2}\,(163\,A+304\,C)\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{64\,d}+\frac{a^3\,(299\,A+432\,C)\,\mathrm{Sin}[c+d\,x]}{192\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(17\,A+16\,C)\,\mathrm{Cos}[c+d\,x]\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{32\,d}+$$
$$\frac{5\,a\,A\,\mathrm{Cos}[c+d\,x]^2\,(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{24\,d}+$$
$$\frac{A\,\mathrm{Cos}[c+d\,x]^3\,(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}\,\mathrm{Sin}[c+d\,x]}{4\,d}$$

Result (type 4, 535 leaves):

$$\left(\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{1}{768}(265\,A+432\,C)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{5}{96}(11\,A+12\,C)\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+\right.$$
$$\left.\left.\frac{1}{256}(47\,A+16\,C)\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+\frac{5}{96}A\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]+\frac{1}{128}A\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]\right)\right)\Big/$$
$$\left(d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+\frac{1}{64\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$
$$\left(4+3\sqrt{2}\right)(163\,A+304\,C)\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4$$
$$\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)$$
$$\text{Cos}[c+d\,x]^3\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}\;\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5$$
$$\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

Problem 181: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^5\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 3, 245 leaves, 7 steps):

$$\frac{a^{5/2}\,(283\,A+400\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{128\,d}+$$

$$\frac{a^3\,(283\,A+400\,C)\,\text{Sin}[c+d\,x]}{128\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,(787\,A+1040\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{960\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$

$$\frac{a^2\,(79\,A+80\,C)\,\text{Cos}[c+d\,x]^2\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{240\,d}+$$

$$\frac{a\,A\,\text{Cos}[c+d\,x]^3\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{8\,d}+$$

$$\frac{A\,\text{Cos}[c+d\,x]^4\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 4, 556 leaves):

$$\left(\text{Cos}[c+d x]^4 \,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 \left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2} \left(A+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(-\frac{(2309 A+3760 C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{7680}+\frac{1}{960}(509 A+640 C)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\right.$$
$$\frac{5}{512}(19 A+16 C)\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]+\frac{1}{240}(16 A+5 C)\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]+$$
$$\left.\left.\frac{5}{256} A\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]+\frac{1}{320} A\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]\right)\right) \Big/ \left(d\left(A+2 C+A\,\text{Cos}[2 c+2 d x]\right)\right)+$$
$$\frac{1}{64 d\left(A+2 C+A\,\text{Cos}[2 c+2 d x]\right)}\left(2+\frac{3}{\sqrt{2}}\right)(283 A+400 C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4$$
$$\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)$$
$$\text{Cos}[c+d x]^3\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5$$
$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(A+C\,\text{Sec}[c+d x]^2\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 182: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d x]^6 \left(a+a\,\text{Sec}[c+d x]\right)^{5/2}\left(A+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 290 leaves, 8 steps):

$$\frac{a^{5/2}\,(1015\,A+1304\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{512\,d}+\frac{a^3\,(1015\,A+1304\,C)\,\text{Sin}[c+d\,x]}{512\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$

$$\frac{a^3\,(1015\,A+1304\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{768\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,(109\,A+136\,C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{192\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$

$$\frac{a^2\,(23\,A+24\,C)\,\text{Cos}[c+d\,x]^3\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{96\,d}+$$

$$\frac{a\,A\,\text{Cos}[c+d\,x]^4\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{12\,d}+$$

$$\frac{A\,\text{Cos}[c+d\,x]^5\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{6\,d}$$

Result (type 4, 577 leaves) :

$$\left(\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(-\frac{(1589\,A+2120\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{6144}+\frac{11}{384}\,(17\,A+20\,C)\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+\right.$$

$$\frac{(1145\,A+1128\,C)\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]}{6144}+\frac{1}{384}\,(29\,A+20\,C)\,\text{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]+$$

$$\left.\left.\frac{(83\,A+24\,C)\,\text{Sin}\left[\frac{9}{2}\,(c+d\,x)\right]}{3072}+\frac{1}{128}\,A\,\text{Sin}\left[\frac{11}{2}\,(c+d\,x)\right]+\frac{1}{768}\,A\,\text{Sin}\left[\frac{13}{2}\,(c+d\,x)\right]\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+\frac{1}{512\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$

$$\left(4+3\,\sqrt{2}\right)\,(1015\,A+1304\,C)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4$$

$$\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}\,\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

$$\text{Cos}[c+d\,x]^3\,\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$

$$\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$

Problem 183: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^4\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 236 leaves, 7 steps):

$$-\frac{\sqrt{2}\,(A+C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{\sqrt{a}\,d}+\frac{4\,(147 A+143 C)\,\text{Tan}[c+d x]}{315\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{2\,(21 A+19 C)\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]}{105\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}-\frac{2\,C\,\text{Sec}[c+d x]^3\,\text{Tan}[c+d x]}{63\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{2\,C\,\text{Sec}[c+d x]^4\,\text{Tan}[c+d x]}{9\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}-\frac{2\,(21 A+29 C)\,\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{315\,a\,d}$$

Result (type 3, 474 leaves):

$$\frac{1}{(A+2 C+A\,\text{Cos}[2 c+2 d x])\,\sqrt{a\,(1+\text{Sec}[c+d x])}}\text{Cos}[c+d x]^2\,\sqrt{(1+\text{Cos}[c+d x])\,\text{Sec}[c+d x]}\,\sqrt{1+\text{Sec}[c+d x]}\,\left(A+C\,\text{Sec}[c+d x]^2\right)\left(\frac{8\,(-84 A-126 C+273 A\,\text{Cos}[c]+257 C\,\text{Cos}[c])\,\text{Sin}\left[\frac{c}{2}\right]}{315\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Cos}\left[\frac{3 c}{2}\right]\right)}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(357 A\,\text{Sin}\left[\frac{d x}{2}\right]+383 C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{315\,d}+\frac{4\,C\,\text{Sec}[c]\,\text{Sec}[c+d x]^4\,\text{Sin}[d x]}{9\,d}+\frac{1}{315\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d x]\,(63 A\,\text{Sin}[c]+97 C\,\text{Sin}[c]-84 A\,\text{Sin}[d x]-126 C\,\text{Sin}[d x])-\frac{1}{315\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d x]^2\,(40 C\,\text{Sin}[c]-63 A\,\text{Sin}[d x]-97 C\,\text{Sin}[d x])+\frac{4\,\text{Sec}[c]\,\text{Sec}[c+d x]^3\,(7 C\,\text{Sin}[c]-8 C\,\text{Sin}[d x])}{63\,d}\right)+$$

$$\left(2\sqrt{2}\,(A+C)\,\text{ArcTan}\left[\frac{\sqrt{2}}{\sqrt{-1+\text{Sec}[c+d x]}}\right]\text{Cos}[c+d x]^4\,\sqrt{-1+\text{Sec}[c+d x]}\,(1+\text{Sec}[c+d x])^2\left(A+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c+d x]\right)\Big/\left(d\,(1+\text{Cos}[c+d x])\,\sqrt{1-\text{Cos}[c+d x]^2}\,(A+2 C+A\,\text{Cos}[2 c+2 d x])\,\sqrt{a\,(1+\text{Sec}[c+d x])}\,\sqrt{\text{Cos}[c+d x]^2\,(-1+\text{Sec}[c+d x])\,(1+\text{Sec}[c+d x])}\right)$$

Problem 184: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d x]^3\,\left(A+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+a\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 3, 193 leaves, 6 steps):

$$\frac{\sqrt{2}\,(A+C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{\sqrt{a}\,d}-\frac{4\,(35 A+37 C)\,\text{Tan}[c+d x]}{105\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}-\frac{2\,C\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]}{35\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{2\,C\,\text{Sec}[c+d x]^3\,\text{Tan}[c+d x]}{7\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{2\,(35 A+31 C)\,\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{105\,a\,d}$$

Result (type 3, 432 leaves):

$$\Bigg(\text{Cos}[c+d x]^2\,\sqrt{(1+\text{Cos}[c+d x])\,\text{Sec}[c+d x]}\,\sqrt{1+\text{Sec}[c+d x]}\,\left(A+C\,\text{Sec}[c+d x]^2\right)\Bigg(-\frac{8\,(-35 A-49 C+35 A\,\text{Cos}[c]+43 C\,\text{Cos}[c])\,\text{Sin}\left[\frac{c}{2}\right]}{105\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Cos}\left[\frac{3 c}{2}\right]\right)}-\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\,\left(35 A\,\text{Sin}\left[\frac{d x}{2}\right]+46 C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{105\,d}+\frac{4\,C\,\text{Sec}[c]\,\text{Sec}[c+d x]^3\,\text{Sin}[d x]}{7\,d}-\frac{1}{105\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d x]\,(18 C\,\text{Sin}[c]-35 A\,\text{Sin}[d x]-49 C\,\text{Sin}[d x])+\frac{4\,\text{Sec}[c]\,\text{Sec}[c+d x]^2\,(5 C\,\text{Sin}[c]-6 C\,\text{Sin}[d x])}{35\,d}\Bigg)\Bigg)\Big/\left((A+2 C+A\,\text{Cos}[2 c+2 d x])\,\sqrt{a\,(1+\text{Sec}[c+d x])}\right)-\left(2\sqrt{2}\,(A+C)\,\text{ArcTan}\left[\frac{\sqrt{2}}{\sqrt{-1+\text{Sec}[c+d x]}}\right]\text{Cos}[c+d x]^4\,\sqrt{-1+\text{Sec}[c+d x]}\,(1+\text{Sec}[c+d x])^2\,\left(A+C\,\text{Sec}[c+d x]^2\right)\,\text{Sin}[c+d x]\right)\Big/\left(d\,(1+\text{Cos}[c+d x])\,\sqrt{1-\text{Cos}[c+d x]^2}\,(A+2 C+A\,\text{Cos}[2 c+2 d x])\,\sqrt{a\,(1+\text{Sec}[c+d x])}\,\sqrt{\text{Cos}[c+d x]^2\,(-1+\text{Sec}[c+d x])\,(1+\text{Sec}[c+d x])}\right)$$

Problem 185: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d x]^2\,\left(A+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+a\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 3, 152 leaves, 5 steps):

$$-\frac{\sqrt{2}\,(A+C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{\sqrt{a}\,d}+\frac{2\,(15 A+14 C)\,\text{Tan}[c+d x]}{15\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{2\,C\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]}{5\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}-\frac{2\,C\,\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{15\,a\,d}$$

Result (type 3, 392 leaves):

$$\left(\text{Cos}[c+d x]^2 \sqrt{(1+\text{Cos}[c+d x]) \text{Sec}[c+d x]} \sqrt{1+\text{Sec}[c+d x]}\right.$$
$$(A+C\,\text{Sec}[c+d x]^2)\left(\frac{8 (-4 C+15 A \text{Cos}[c]+13 C \text{Cos}[c]) \text{Sin}\left[\frac{c}{2}\right]}{15 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Cos}\left[\frac{3 c}{2}\right]\right)}+\right.$$
$$\frac{4 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(15 A \text{Sin}\left[\frac{d x}{2}\right]+17 C \text{Sin}\left[\frac{d x}{2}\right]\right)}{15 d}+$$
$$\left.\left.\frac{4 C \text{Sec}[c] \text{Sec}[c+d x]^2 \text{Sin}[d x]}{5 d}+\frac{4 \text{Sec}[c] \text{Sec}[c+d x] (3 C \text{Sin}[c]-4 C \text{Sin}[d x])}{15 d}\right)\right)\Big/$$
$$\left((A+2 C+A \text{Cos}[2 c+2 d x]) \sqrt{a (1+\text{Sec}[c+d x])}\right)+$$
$$\left(2 \sqrt{2} (A+C) \text{ArcTan}\left[\frac{\sqrt{2}}{\sqrt{-1+\text{Sec}[c+d x]}}\right] \text{Cos}[c+d x]^4 \sqrt{-1+\text{Sec}[c+d x]}\right.$$
$$\left.(1+\text{Sec}[c+d x])^2 (A+C\,\text{Sec}[c+d x]^2) \text{Sin}[c+d x]\right)\Big/$$
$$\left(d (1+\text{Cos}[c+d x]) \sqrt{1-\text{Cos}[c+d x]^2} (A+2 C+A \text{Cos}[2 c+2 d x])\right.$$
$$\left.\sqrt{a (1+\text{Sec}[c+d x])} \sqrt{\text{Cos}[c+d x]^2 (-1+\text{Sec}[c+d x]) (1+\text{Sec}[c+d x])}\right)$$

Problem 192: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^4 (A+C\,\text{Sec}[c+d x]^2)}{(a+a\,\text{Sec}[c+d x])^{3/2}}\,dx$$

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

$$\frac{(11 A+19 C) \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sec}[c+d x]}}\right]}{2 \sqrt{2} a^{3/2} d}-\frac{(A+C) \text{Sec}[c+d x]^4 \text{Tan}[c+d x]}{2 d (a+a \text{Sec}[c+d x])^{3/2}}-$$
$$\frac{(455 A+799 C) \text{Tan}[c+d x]}{105 a d \sqrt{a+a \text{Sec}[c+d x]}}-\frac{(35 A+67 C) \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{70 a d \sqrt{a+a \text{Sec}[c+d x]}}+$$
$$\frac{(7 A+11 C) \text{Sec}[c+d x]^3 \text{Tan}[c+d x]}{14 a d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{(245 A+397 C) \sqrt{a+a \text{Sec}[c+d x]} \text{Tan}[c+d x]}{210 a^2 d}$$

Result (type 3, 528 leaves):

$$\frac{1}{(A+2C+A\,\text{Cos}[2c+2dx])\,(a\,(1+\text{Sec}[c+dx]))^{3/2}}\text{Cos}[c+dx]^2\sqrt{(1+\text{Cos}[c+dx])\,\text{Sec}[c+dx]}\,(1+\text{Sec}[c+dx])^{3/2}$$
$$(A+C\,\text{Sec}[c+dx]^2)\left(-\frac{2\,(-140A-448C+665A\,\text{Cos}[c]+1201C\,\text{Cos}[c])\,\text{Sin}[\frac{c}{2}]}{105d\,(\text{Cos}[\frac{c}{2}]+\text{Cos}[\frac{3c}{2}])}+\right.$$
$$\frac{\text{Sec}[\frac{c}{2}]\,\text{Sec}[\frac{c}{2}+\frac{dx}{2}]^2\,(A\,\text{Sin}[\frac{c}{2}]+C\,\text{Sin}[\frac{c}{2}])}{2d}+$$
$$\frac{\text{Sec}[\frac{c}{2}]\,\text{Sec}[\frac{c}{2}+\frac{dx}{2}]\,(-805A\,\text{Sin}[\frac{dx}{2}]-1649C\,\text{Sin}[\frac{dx}{2}])}{105d}+$$
$$\frac{\text{Sec}[\frac{c}{2}]\,\text{Sec}[\frac{c}{2}+\frac{dx}{2}]^3\,(A\,\text{Sin}[\frac{dx}{2}]+C\,\text{Sin}[\frac{dx}{2}])}{2d}+\frac{4C\,\text{Sec}[c]\,\text{Sec}[c+dx]^3\,\text{Sin}[dx]}{7d}-$$
$$\frac{1}{105d}4\,\text{Sec}[c]\,\text{Sec}[c+dx]\,(39C\,\text{Sin}[c]-35A\,\text{Sin}[dx]-112C\,\text{Sin}[dx])+$$
$$\left.\frac{4\,\text{Sec}[c]\,\text{Sec}[c+dx]^2\,(5C\,\text{Sin}[c]-13C\,\text{Sin}[dx])}{35d}\right)-$$
$$\left((11A+19C)\,\text{ArcTan}\left[\frac{\sqrt{2}}{\sqrt{-1+\text{Sec}[c+dx]}}\right]\text{Cos}[c+dx]^4\sqrt{-1+\text{Sec}[c+dx]}\right.$$
$$\left.(1+\text{Sec}[c+dx])^3\,(A+C\,\text{Sec}[c+dx]^2)\,\text{Sin}[c+dx]\right)\Big/$$
$$\left(\sqrt{2}\,d\,(1+\text{Cos}[c+dx])\sqrt{1-\text{Cos}[c+dx]^2}\,(A+2C+A\,\text{Cos}[2c+2dx])\right.$$
$$\left.(a\,(1+\text{Sec}[c+dx]))^{3/2}\sqrt{\text{Cos}[c+dx]^2\,(-1+\text{Sec}[c+dx])\,(1+\text{Sec}[c+dx])}\right)$$

Problem 193: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]^3\,(A+C\,\text{Sec}[c+dx]^2)}{(a+a\,\text{Sec}[c+dx])^{3/2}}\,dx$$

Optimal (type 3, 214 leaves, 6 steps):

$$-\frac{(7A+15C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{2}\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{2\sqrt{2}\,a^{3/2}\,d}-$$
$$\frac{(A+C)\,\text{Sec}[c+dx]^3\,\text{Tan}[c+dx]}{2d\,(a+a\,\text{Sec}[c+dx])^{3/2}}+\frac{(15A+31C)\,\text{Tan}[c+dx]}{5ad\sqrt{a+a\,\text{Sec}[c+dx]}}+$$
$$\frac{(5A+9C)\,\text{Sec}[c+dx]^2\,\text{Tan}[c+dx]}{10ad\sqrt{a+a\,\text{Sec}[c+dx]}}-\frac{(5A+13C)\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Tan}[c+dx]}{10a^2d}$$

Result (type 3, 490 leaves):

$$\frac{1}{\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{3/2}}\text{Cos}[c+dx]^2\sqrt{\left(1+\text{Cos}[c+dx]\right)\text{Sec}[c+dx]}\left(1+\text{Sec}[c+dx]\right)^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\frac{2\left(-12C+25A\,\text{Cos}[c]+49C\,\text{Cos}[c]\right)\text{Sin}\left[\frac{c}{2}\right]}{5d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Cos}\left[\frac{3c}{2}\right]\right)}+\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(-A\,\text{Sin}\left[\frac{c}{2}\right]-C\,\text{Sin}\left[\frac{c}{2}\right]\right)}{2d}+\right.$$
$$\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]-C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{2d}+$$
$$\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(25A\,\text{Sin}\left[\frac{dx}{2}\right]+61C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5d}+$$
$$\left.\frac{4C\,\text{Sec}[c]\,\text{Sec}[c+dx]^2\,\text{Sin}[dx]}{5d}+\frac{4\,\text{Sec}[c]\,\text{Sec}[c+dx]\left(C\,\text{Sin}[c]-3C\,\text{Sin}[dx]\right)}{5d}\right)+$$
$$\left(\left(7A+15C\right)\text{ArcTan}\left[\frac{\sqrt{2}}{\sqrt{-1+\text{Sec}[c+dx]}}\right]\text{Cos}[c+dx]^4\sqrt{-1+\text{Sec}[c+dx]}\right.$$
$$\left.\left(1+\text{Sec}[c+dx]\right)^3\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c+dx]\right)\Big/$$
$$\left(\sqrt{2}\,d\left(1+\text{Cos}[c+dx]\right)\sqrt{1-\text{Cos}[c+dx]^2}\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right.$$
$$\left.\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{3/2}\sqrt{\text{Cos}[c+dx]^2\left(-1+\text{Sec}[c+dx]\right)\left(1+\text{Sec}[c+dx]\right)}\right)$$

Problem 194: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]^2\left(A+C\,\text{Sec}[c+dx]^2\right)}{\left(a+a\,\text{Sec}[c+dx]\right)^{3/2}}\,dx$$

Optimal (type 3, 169 leaves, 5 steps):

$$\frac{\left(3A+11C\right)\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{2}\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{2\sqrt{2}\,a^{3/2}\,d}-\frac{\left(A+C\right)\text{Sec}[c+dx]^2\,\text{Tan}[c+dx]}{2d\left(a+a\,\text{Sec}[c+dx]\right)^{3/2}}-$$
$$\frac{\left(3A+13C\right)\text{Tan}[c+dx]}{3ad\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{\left(3A+7C\right)\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Tan}[c+dx]}{6a^2d}$$

Result (type 3, 458 leaves):

$$\left(\text{Cos}[c+d x]^2 \sqrt{(1+\text{Cos}[c+d x]) \text{Sec}[c+d x]} (1+\text{Sec}[c+d x])^{3/2} \left(A+C \text{Sec}[c+d x]^2\right)\right.$$
$$\left(-\frac{2 (-4 C+3 A \text{Cos}[c]+19 C \text{Cos}[c]) \text{Sin}\left[\frac{c}{2}\right]}{3 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Cos}\left[\frac{3 c}{2}\right]\right)}+\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \left(A \text{Sin}\left[\frac{c}{2}\right]+C \text{Sin}\left[\frac{c}{2}\right]\right)}{2 d}+\right.$$
$$\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(-3 A \text{Sin}\left[\frac{d x}{2}\right]-23 C \text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}+$$
$$\left.\left.\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3 \left(A \text{Sin}\left[\frac{d x}{2}\right]+C \text{Sin}\left[\frac{d x}{2}\right]\right)}{2 d}+\frac{4 C \text{Sec}[c] \text{Sec}[c+d x] \text{Sin}[d x]}{3 d}\right)\right) \Big/$$
$$\left((A+2 C+A \text{Cos}[2 c+2 d x]) (a (1+\text{Sec}[c+d x]))^{3/2}\right)-$$
$$\left((3 A+11 C) \text{ArcTan}\left[\frac{\sqrt{2}}{\sqrt{-1+\text{Sec}[c+d x]}}\right] \text{Cos}[c+d x]^4 \sqrt{-1+\text{Sec}[c+d x]}\right.$$
$$\left.(1+\text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right) \text{Sin}[c+d x]\right) \Big/$$
$$\left(\sqrt{2} d (1+\text{Cos}[c+d x]) \sqrt{1-\text{Cos}[c+d x]^2} (A+2 C+A \text{Cos}[2 c+2 d x])\right.$$
$$\left.(a (1+\text{Sec}[c+d x]))^{3/2} \sqrt{\text{Cos}[c+d x]^2 (-1+\text{Sec}[c+d x]) (1+\text{Sec}[c+d x])}\right)$$

Problem 204: Result more than twice size of optimal antiderivative.

$$\int \frac{A+C \text{Sec}[c+d x]^2}{(a+a \text{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 162 leaves, 7 steps):

$$\frac{2 A \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{a^{5/2} d}-\frac{(43 A-5 C) \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sec}[c+d x]}}\right]}{16 \sqrt{2} a^{5/2} d}-$$
$$\frac{(A+C) \text{Tan}[c+d x]}{4 d (a+a \text{Sec}[c+d x])^{5/2}}-\frac{(11 A-5 C) \text{Tan}[c+d x]}{16 a d (a+a \text{Sec}[c+d x])^{3/2}}$$

Result (type 3, 725 leaves):

$$\Big(\mathrm{Cos}[c+d\,x]^2\,(1+\mathrm{Sec}[c+d\,x])^{5/2}\,(A+C\,\mathrm{Sec}[c+d\,x]^2)$$

$$\Bigg(-\Bigg(\Bigg(\sqrt{2}\,(-11\,A+5\,C)\,\mathrm{ArcTan}\Big[\frac{\sqrt{2}}{\sqrt{-1+\mathrm{Sec}[c+d\,x]}}\Big]\,\mathrm{Cos}[c+d\,x]^2$$

$$\sqrt{-1+\mathrm{Sec}[c+d\,x]}\,(1+\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]\Bigg)\Big/\Big(d\,(1+\mathrm{Cos}[c+d\,x])$$

$$\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,\sqrt{\mathrm{Cos}[c+d\,x]^2\,(-1+\mathrm{Sec}[c+d\,x])\,(1+\mathrm{Sec}[c+d\,x])}\Big)\Bigg)+$$

$$\Bigg(32\,A\,\Bigg(\sqrt{2}\,\mathrm{ArcTan}\Big[\frac{\sqrt{2}}{\sqrt{-1+\mathrm{Sec}[c+d\,x]}}\Big]+\mathrm{ArcTan}\Big[\frac{-2+\sqrt{1+\mathrm{Sec}[c+d\,x]}}{\sqrt{-1+\mathrm{Sec}[c+d\,x]}}\Big]-$$

$$\mathrm{ArcTan}\Big[\frac{2+\sqrt{1+\mathrm{Sec}[c+d\,x]}}{\sqrt{-1+\mathrm{Sec}[c+d\,x]}}\Big]\Bigg)\,\mathrm{Cos}[c+d\,x]^2\,\sqrt{-1+\mathrm{Sec}[c+d\,x]}$$

$$(1+\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]\Bigg)\Big/\Big(d\,(1+\mathrm{Cos}[c+d\,x])\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}$$

$$\sqrt{\mathrm{Cos}[c+d\,x]^2\,(-1+\mathrm{Sec}[c+d\,x])\,(1+\mathrm{Sec}[c+d\,x])}\Big)\Bigg)\Bigg)\Big/$$

$$\Big(16\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}\Big)+$$

$$\frac{1}{(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}}$$

$$\mathrm{Cos}[c+d\,x]^2$$

$$\sqrt{(1+\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]}$$

$$(1+\mathrm{Sec}[c+d\,x])^{5/2}$$

$$(A+C\,\mathrm{Sec}[c+d\,x]^2)$$

$$\Bigg(\frac{\mathrm{Sec}[\frac{c}{2}]\,\mathrm{Sec}[\frac{c}{2}+\frac{d\,x}{2}]^4\,(-A\,\mathrm{Sin}[\frac{c}{2}]-C\,\mathrm{Sin}[\frac{c}{2}])}{8\,d}+$$

$$\frac{\mathrm{Sec}[\frac{c}{2}]\,\mathrm{Sec}[\frac{c}{2}+\frac{d\,x}{2}]^2\,(19\,A\,\mathrm{Sin}[\frac{c}{2}]+3\,C\,\mathrm{Sin}[\frac{c}{2}])}{16\,d}+$$

$$\frac{\mathrm{Sec}[\frac{c}{2}]\,\mathrm{Sec}[\frac{c}{2}+\frac{d\,x}{2}]^5\,(-A\,\mathrm{Sin}[\frac{d\,x}{2}]-C\,\mathrm{Sin}[\frac{d\,x}{2}])}{8\,d}+$$

$$\frac{\mathrm{Sec}[\frac{c}{2}]\,\mathrm{Sec}[\frac{c}{2}+\frac{d\,x}{2}]\,(-15\,A\,\mathrm{Sin}[\frac{d\,x}{2}]+C\,\mathrm{Sin}[\frac{d\,x}{2}])}{8\,d}+$$

$$\frac{\mathrm{Sec}[\frac{c}{2}]\,\mathrm{Sec}[\frac{c}{2}+\frac{d\,x}{2}]^3\,(19\,A\,\mathrm{Sin}[\frac{d\,x}{2}]+3\,C\,\mathrm{Sin}[\frac{d\,x}{2}])}{16\,d}-\frac{(15\,A-C)\,\mathrm{Tan}[\frac{c}{2}]}{8\,d}\Bigg)$$

Problem 205: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 199 leaves, 8 steps):

$$-\frac{5\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{a^{5/2}\,d}+\frac{\left(115\,A+3\,C\right)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}-\frac{\left(A+C\right)\,\text{Sin}[c+d\,x]}{4\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}-\frac{\left(15\,A-C\right)\,\text{Sin}[c+d\,x]}{16\,a\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}+\frac{\left(35\,A+3\,C\right)\,\text{Sin}[c+d\,x]}{16\,a^2\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 739 leaves):

$$\left(\text{Cos}[c+d x]^2 \left(1+\text{Sec}[c+d x]\right)^{5/2} \left(A+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(\left(\left(\sqrt{2}\,(-35 A-3 C)\,\text{ArcTan}\left[\frac{\sqrt{2}}{\sqrt{-1+\text{Sec}[c+d x]}}\right] \text{Cos}[c+d x]^2\right.\right.\right.$$
$$\left.\sqrt{-1+\text{Sec}[c+d x]}\,\left(1+\text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]\right) \Big/ \left(d\,\left(1+\text{Cos}[c+d x]\right)\right.$$
$$\left.\sqrt{1-\text{Cos}[c+d x]^2}\,\sqrt{\text{Cos}[c+d x]^2 \left(-1+\text{Sec}[c+d x]\right) \left(1+\text{Sec}[c+d x]\right)}\right) -$$
$$\left(80 A \left(\sqrt{2}\,\text{ArcTan}\left[\frac{\sqrt{2}}{\sqrt{-1+\text{Sec}[c+d x]}}\right]+\text{ArcTan}\left[\frac{-2+\sqrt{1+\text{Sec}[c+d x]}}{\sqrt{-1+\text{Sec}[c+d x]}}\right]-\right.\right.$$
$$\left.\text{ArcTan}\left[\frac{2+\sqrt{1+\text{Sec}[c+d x]}}{\sqrt{-1+\text{Sec}[c+d x]}}\right]\right) \text{Cos}[c+d x]^2 \sqrt{-1+\text{Sec}[c+d x]}$$
$$\left.\left(1+\text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]\right) \Big/ \left(d\,\left(1+\text{Cos}[c+d x]\right)\,\sqrt{1-\text{Cos}[c+d x]^2}\right.$$
$$\left.\left.\left.\sqrt{\text{Cos}[c+d x]^2 \left(-1+\text{Sec}[c+d x]\right) \left(1+\text{Sec}[c+d x]\right)}\right)\right)\right) \Big/$$
$$\left(16\,\left(A+2 C+A\,\text{Cos}[2 c+2 d x]\right)\,\left(a\,\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\right)+$$
$$\frac{1}{\left(A+2 C+A\,\text{Cos}[2 c+2 d x]\right)\,\left(a\,\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}}$$
$$\text{Cos}[c+d x]^2$$
$$\sqrt{\left(1+\text{Cos}[c+d x]\right) \text{Sec}[c+d x]}$$
$$\left(1+\text{Sec}[c+d x]\right)^{5/2}$$
$$\left(A+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \left(-27 A\,\text{Sin}\left[\frac{c}{2}\right]-11 C\,\text{Sin}\left[\frac{c}{2}\right]\right)}{16 d}+\right.$$
$$\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(A\,\text{Sin}\left[\frac{c}{2}\right]+C\,\text{Sin}\left[\frac{c}{2}\right]\right)}{8 d}+\frac{2 A\,\text{Cos}[d x]\,\text{Sin}[c]}{d}+$$
$$\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3 \left(-27 A\,\text{Sin}\left[\frac{d x}{2}\right]-11 C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{16 d}+$$
$$\frac{7\,\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(A\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{8 d}+$$
$$\left.\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5 \left(A\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{8 d}+\frac{2 A\,\text{Cos}[c]\,\text{Sin}[d x]}{d}+\frac{7\,(A+C)\,\text{Tan}\left[\frac{c}{2}\right]}{8 d}\right)$$

Problem 207: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^{3/2} \left(a+a \text{Sec}[c+d x]\right) \left(A+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 205 leaves, 9 steps):

$$-\frac{1}{5 d}2 a \left(5 A+3 C\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} \left(c+d x\right), 2\right] \sqrt{\text{Sec}[c+d x]}+\frac{1}{21 d}2 a \left(7 A+5 C\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} \left(c+d x\right), 2\right] \sqrt{\text{Sec}[c+d x]}+\frac{2 a \left(5 A+3 C\right) \sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{5 d}+\frac{2 a \left(7 A+5 C\right) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{21 d}+\frac{2 a C \text{Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{5 d}+\frac{2 a C \text{Sec}[c+d x]^{7/2} \text{Sin}[c+d x]}{7 d}$$

Result (type 5, 624 leaves):

$$a\left(-\left(\left(2\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}[c+dx]^2\,\text{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right)\right)-\left(6\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}[c+dx]^2\,\text{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(5d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right)+\left(4A\,\text{Cos}[c+dx]^{5/2}\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right)+\left(20C\,\text{Cos}[c+dx]^{5/2}\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(21d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right)+\left(\left(A+C\,\text{Sec}[c+dx]^2\right)\left(\frac{4(5A+3C)\,\text{Cos}[dx]\,\text{Csc}[c]}{5d}+\frac{4C\,\text{Sec}[c]\,\text{Sec}[c+dx]^3\,\text{Sin}[dx]}{7d}+\frac{4\,\text{Sec}[c]\,\text{Sec}[c+dx]^2\left(5C\,\text{Sin}[c]+7C\,\text{Sin}[dx]\right)}{35d}+\frac{1}{105d}4\,\text{Sec}[c]\,\text{Sec}[c+dx]\left(21C\,\text{Sin}[c]+35A\,\text{Sin}[dx]+25C\,\text{Sin}[dx]\right)+\frac{4(7A+5C)\,\text{Tan}[c]}{21d}\right)\right)\Big/\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{3/2}\right)\right)$$

Problem 208: Result unnecessarily involves higher level functions.

$$\int\sqrt{\text{Sec}[c+dx]}\,\left(a+a\,\text{Sec}[c+dx]\right)\left(A+C\,\text{Sec}[c+dx]^2\right)dx$$

Optimal (type 4, 172 leaves, 8 steps):

$$-\frac{1}{5d}2a\,(5A+3C)\,\sqrt{\text{Cos}[c+dx]}\ \text{EllipticE}\Big[\frac{1}{2}(c+dx),2\Big]\sqrt{\text{Sec}[c+dx]}+\frac{2a\,(3A+C)\,\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\big[\frac{1}{2}(c+dx),2\big]\sqrt{\text{Sec}[c+dx]}}{3d}+\frac{2a\,(5A+3C)\,\sqrt{\text{Sec}[c+dx]}\ \text{Sin}[c+dx]}{5d}+\frac{2aC\,\text{Sec}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{3d}+\frac{2aC\,\text{Sec}[c+dx]^{5/2}\,\text{Sin}[c+dx]}{5d}$$

Result (type 5, 282 leaves):

$$\frac{1}{15d\,\left(1+e^{2i(c+dx)}\right)^2\left(A+2C+A\,\text{Cos}[2(c+dx)]\right)\text{Sec}[c+dx]^{3/2}}2a\,e^{-i(2c+dx)}\left(-1+e^{2ic}\right)\text{Csc}[c]\Big(15A+9C+5C\,e^{i(c+dx)}+30A\,e^{2i(c+dx)}+24C\,e^{2i(c+dx)}+15A\,e^{4i(c+dx)}+3C\,e^{4i(c+dx)}-5C\,e^{5i(c+dx)}-5i\,(3A+C)\,e^{i(c+dx)}\left(1+e^{2i(c+dx)}\right)^2\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\Big[\frac{1}{2}(c+dx),2\Big]-3\,(5A+3C)\left(1+e^{2i(c+dx)}\right)^{5/2}\text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\Big]\Big)\left(A+C\,\text{Sec}[c+dx]^2\right)$$

Problem 209: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\text{Sec}[c+dx])\,\left(A+C\,\text{Sec}[c+dx]^2\right)}{\sqrt{\text{Sec}[c+dx]}}\,dx$$

Optimal (type 4, 135 leaves, 7 steps):

$$\frac{2a\,(A-C)\,\sqrt{\text{Cos}[c+dx]}\ \text{EllipticE}\big[\frac{1}{2}(c+dx),2\big]\sqrt{\text{Sec}[c+dx]}}{d}+\frac{2a\,(3A+C)\,\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\big[\frac{1}{2}(c+dx),2\big]\sqrt{\text{Sec}[c+dx]}}{3d}+\frac{2aC\sqrt{\text{Sec}[c+dx]}\ \text{Sin}[c+dx]}{d}+\frac{2aC\,\text{Sec}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{3d}$$

Result (type 5, 197 leaves):

$$\frac{1}{3d}a\,e^{-i(2c+dx)}\,\text{Sec}[c+dx]^{3/2}\Big(-3iA+3iC-3iA\,\text{Cos}[2(c+dx)]+3iC\,\text{Cos}[2(c+dx)]+2\,(3A+C)\,\text{Cos}[c+dx]^{3/2}\,\text{EllipticF}\Big[\frac{1}{2}(c+dx),2\Big]+3i\,(A-C)\,e^{-2i(c+dx)}\left(1+e^{2i(c+dx)}\right)^{3/2}\text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\Big]+2C\,\text{Sin}[c+dx]+3C\,\text{Sin}[2(c+dx)]\Big)\left(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx]\right)$$

Problem 210: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a\,\text{Sec}[c + d\,x])\,\left(A + C\,\text{Sec}[c + d\,x]^2\right)}{\text{Sec}[c + d\,x]^{3/2}}\,dx$$

Optimal (type 4, 135 leaves, 7 steps):

$$\frac{2\,a\,(A - C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x), 2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{d} + \frac{2\,a\,(A + 3\,C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x), 2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{3\,d} + \frac{2\,a\,A\,\text{Sin}[c + d\,x]}{3\,d\,\sqrt{\text{Sec}[c + d\,x]}} + \frac{2\,a\,C\,\sqrt{\text{Sec}[c + d\,x]}\,\text{Sin}[c + d\,x]}{d}$$

Result (type 5, 182 leaves):

$$\frac{1}{3\,d}a\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\text{Sec}[c + d\,x]}\,\left(-6\,i\,A\,\text{Cos}[c + d\,x] + 6\,i\,C\,\text{Cos}[c + d\,x] + 2\,(A + 3\,C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x), 2\right] + 6\,i\,(A - C)\,e^{-i\,(c+d\,x)}\,\sqrt{1 + e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2\,i\,(c+d\,x)}\right] + 6\,C\,\text{Sin}[c + d\,x] + A\,\text{Sin}[2\,(c + d\,x)]\right)\,(\text{Cos}[2\,c + d\,x] + i\,\text{Sin}[2\,c + d\,x])$$

Problem 211: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a\,\text{Sec}[c + d\,x])\,\left(A + C\,\text{Sec}[c + d\,x]^2\right)}{\text{Sec}[c + d\,x]^{5/2}}\,dx$$

Optimal (type 4, 141 leaves, 7 steps):

$$\frac{2\,a\,(3\,A + 5\,C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x), 2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{5\,d} + \frac{2\,a\,(A + 3\,C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x), 2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{3\,d} + \frac{2\,a\,A\,\text{Sin}[c + d\,x]}{5\,d\,\text{Sec}[c + d\,x]^{3/2}} + \frac{2\,a\,A\,\text{Sin}[c + d\,x]}{3\,d\,\sqrt{\text{Sec}[c + d\,x]}}$$

Result (type 5, 183 leaves):

$$\frac{1}{30\,d}a\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\operatorname{Sec}[c+d\,x]}\,\Big(20\,(A+3\,C)\,\sqrt{\operatorname{Cos}[c+d\,x]}\,\operatorname{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]+12\,i\,(3\,A+5\,C)\,e^{-i\,(c+d\,x)}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\operatorname{Hypergeometric2F1}\Big[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\Big]+2\operatorname{Cos}[c+d\,x]\,\big(-6\,i\,(3\,A+5\,C)+10\,A\operatorname{Sin}[c+d\,x]+3\,A\operatorname{Sin}[2\,(c+d\,x)]\big)\Big)\,(\operatorname{Cos}[2\,c+d\,x]+i\operatorname{Sin}[2\,c+d\,x])$$

Problem 212: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\operatorname{Sec}[c+d\,x])\,\big(A+C\operatorname{Sec}[c+d\,x]^2\big)}{\operatorname{Sec}[c+d\,x]^{7/2}}\,dx$$

Optimal (type 4, 174 leaves, 8 steps):

$$\frac{2\,a\,(3\,A+5\,C)\,\sqrt{\operatorname{Cos}[c+d\,x]}\,\operatorname{EllipticE}\big[\frac{1}{2}\,(c+d\,x),\,2\big]\,\sqrt{\operatorname{Sec}[c+d\,x]}}{5\,d}+\frac{1}{21\,d}2\,a\,(5\,A+7\,C)\,\sqrt{\operatorname{Cos}[c+d\,x]}\,\operatorname{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]\,\sqrt{\operatorname{Sec}[c+d\,x]}+\frac{2\,a\,A\operatorname{Sin}[c+d\,x]}{7\,d\operatorname{Sec}[c+d\,x]^{5/2}}+\frac{2\,a\,A\operatorname{Sin}[c+d\,x]}{5\,d\operatorname{Sec}[c+d\,x]^{3/2}}+\frac{2\,a\,(5\,A+7\,C)\operatorname{Sin}[c+d\,x]}{21\,d\,\sqrt{\operatorname{Sec}[c+d\,x]}}$$

Result (type 5, 202 leaves):

$$\frac{1}{420\,d}\,a\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\operatorname{Sec}[c+d\,x]}\,\Big(40\,(5\,A+7\,C)\,\sqrt{\operatorname{Cos}[c+d\,x]}\,\operatorname{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]+168\,i\,(3\,A+5\,C)\,e^{-i\,(c+d\,x)}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\operatorname{Hypergeometric2F1}\Big[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\Big]+2\operatorname{Cos}[c+d\,x]\,\big(-84\,i\,(3\,A+5\,C)+5\,(23\,A+28\,C)\operatorname{Sin}[c+d\,x]+42\,A\operatorname{Sin}[2\,(c+d\,x)]+15\,A\operatorname{Sin}[3\,(c+d\,x)]\big)\Big)\,(\operatorname{Cos}[2\,c+d\,x]+i\operatorname{Sin}[2\,c+d\,x])$$

Problem 213: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\operatorname{Sec}[c+d\,x])\,\big(A+C\operatorname{Sec}[c+d\,x]^2\big)}{\operatorname{Sec}[c+d\,x]^{9/2}}\,dx$$

Optimal (type 4, 205 leaves, 9 steps):

$$\frac{2\,a\,(7\,A+9\,C)\,\sqrt{\operatorname{Cos}[c+d\,x]}\,\operatorname{EllipticE}\big[\frac{1}{2}\,(c+d\,x),\,2\big]\,\sqrt{\operatorname{Sec}[c+d\,x]}}{15\,d}+\frac{1}{21\,d}2\,a\,(5\,A+7\,C)\,\sqrt{\operatorname{Cos}[c+d\,x]}\,\operatorname{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]\,\sqrt{\operatorname{Sec}[c+d\,x]}+\frac{2\,a\,A\operatorname{Sin}[c+d\,x]}{9\,d\operatorname{Sec}[c+d\,x]^{7/2}}+\frac{2\,a\,A\operatorname{Sin}[c+d\,x]}{7\,d\operatorname{Sec}[c+d\,x]^{5/2}}+\frac{2\,a\,(7\,A+9\,C)\operatorname{Sin}[c+d\,x]}{45\,d\operatorname{Sec}[c+d\,x]^{3/2}}+\frac{2\,a\,(5\,A+7\,C)\operatorname{Sin}[c+d\,x]}{21\,d\,\sqrt{\operatorname{Sec}[c+d\,x]}}$$

Result (type 5, 218 leaves):

$$\frac{1}{2520\,d}\,a\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\text{Sec}[c+d\,x]}\,\Big(240\,(5\,A+7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]+336\,i\,(7\,A+9\,C)\,e^{-i\,(c+d\,x)}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\Big]+2\,\text{Cos}[c+d\,x]\,\big(-1176\,i\,A-1512\,i\,C+30\,(23\,A+28\,C)\,\text{Sin}[c+d\,x]+14\,(19\,A+18\,C)\,\text{Sin}[2\,(c+d\,x)]+90\,A\,\text{Sin}[3\,(c+d\,x)]+35\,A\,\text{Sin}[4\,(c+d\,x)]\big)\Big)\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])$$

Problem 214: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 270 leaves, 10 steps):

$$-\frac{1}{15\,d}16\,a^2\,(3\,A+2\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{21\,d}4\,a^2\,(7\,A+5\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{16\,a^2\,(3\,A+2\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d}+\frac{4\,a^2\,(7\,A+5\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{21\,d}+\frac{2\,a^2\,(21\,A+19\,C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{105\,d}+\frac{2\,C\,\text{Sec}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{9\,d}+\frac{8\,C\,\text{Sec}[c+d\,x]^{5/2}\,\left(a^2+a^2\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{63\,d}$$

Result (type 5, 801 leaves):

$$-\left(\left(4\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}[c+dx]^4\,\text{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(5d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right)\right)-\left(8\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}[c+dx]^4\,\text{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(15d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right)+\left(2A\sqrt{\text{Cos}[c+dx]}\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{7/2}\right)+\left(10C\sqrt{\text{Cos}[c+dx]}\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(21d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{7/2}\right)+\left(\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+C\,\text{Sec}[c+dx]^2\right)\left(\frac{8(3A+2C)\,\text{Cos}[dx]\,\text{Csc}[c]}{15d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+dx]^4\,\text{Sin}[dx]}{9d}+\frac{\text{Sec}[c]\,\text{Sec}[c+dx]^3\left(7C\,\text{Sin}[c]+18C\,\text{Sin}[dx]\right)}{63d}+\frac{1}{315d}\text{Sec}[c]\,\text{Sec}[c+dx]^2\left(90C\,\text{Sin}[c]+63A\,\text{Sin}[dx]+112C\,\text{Sin}[dx]\right)+\frac{1}{315d}\text{Sec}[c]\,\text{Sec}[c+dx]\left(63A\,\text{Sin}[c]+112C\,\text{Sin}[c]+210A\,\text{Sin}[dx]+150C\,\text{Sin}[dx]\right)+\frac{2(7A+5C)\,\text{Tan}[c]}{21d}\right)\right)\Big/\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{7/2}\right)$$

Problem 215: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Sec}[c+dx]}\,\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+C\,\text{Sec}[c+dx]^2\right)dx$$

Optimal (type 4, 237 leaves, 9 steps):

$$-\frac{1}{5d}4a^2(5A+3C)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}+\frac{1}{21d}8a^2(7A+3C)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}+\frac{4a^2(5A+3C)\sqrt{\text{Sec}[c+dx]}\ \text{Sin}[c+dx]}{5d}+\frac{2a^2(35A+33C)\ \text{Sec}[c+dx]^{3/2}\ \text{Sin}[c+dx]}{105d}+\frac{2C\ \text{Sec}[c+dx]^{3/2}(a+a\ \text{Sec}[c+dx])^2\ \text{Sin}[c+dx]}{7d}+\frac{8C\ \text{Sec}[c+dx]^{3/2}(a^2+a^2\ \text{Sec}[c+dx])\ \text{Sin}[c+dx]}{35d}$$

Result (type 5, 757 leaves) :

$$-\left(\left(\left(\sqrt{2}\ A\ e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\ \text{Cos}[c+dx]^4\ \text{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4(a+a\ \text{Sec}[c+dx])^2\left(A+C\ \text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\ \text{Cos}[2c+2dx]\right)\right)\right)-$$

$$\left(3\sqrt{2}\ C\ e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\ \text{Cos}[c+dx]^4\ \text{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4(a+a\ \text{Sec}[c+dx])^2\left(A+C\ \text{Sec}[c+dx]^2\right)\right)\Big/\left(5d\left(A+2C+A\ \text{Cos}[2c+2dx]\right)\right)+$$

$$\left(4A\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4(a+a\ \text{Sec}[c+dx])^2\left(A+C\ \text{Sec}[c+dx]^2\right)\right)\Big/\left(3d\left(A+2C+A\ \text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{7/2}\right)+$$

$$\left(4C\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4(a+a\ \text{Sec}[c+dx])^2\left(A+C\ \text{Sec}[c+dx]^2\right)\right)\Big/\left(7d\left(A+2C+A\ \text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{7/2}\right)+$$

$$\left(\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4(a+a\ \text{Sec}[c+dx])^2\left(A+C\ \text{Sec}[c+dx]^2\right)\left(\frac{2(5A+3C)\ \text{Cos}[dx]\ \text{Csc}[c]}{5d}+\frac{C\ \text{Sec}[c]\ \text{Sec}[c+dx]^3\ \text{Sin}[dx]}{7d}+\frac{\text{Sec}[c]\ \text{Sec}[c+dx]^2(5C\ \text{Sin}[c]+14C\ \text{Sin}[dx])}{35d}+\frac{1}{105d}\text{Sec}[c]\ \text{Sec}[c+dx](42C\ \text{Sin}[c]+35A\ \text{Sin}[dx]+60C\ \text{Sin}[dx])+\frac{(7A+12C)\ \text{Tan}[c]}{21d}\right)\right)\Big/$$

$$\left(\left(A+2C+A\ \text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{7/2}\right)$$

Problem 216: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a\,\text{Sec}[c + d\,x])^2\,(A + C\,\text{Sec}[c + d\,x]^2)}{\sqrt{\text{Sec}[c + d\,x]}}\,dx$$

Optimal (type 4, 196 leaves, 8 steps):

$$-\frac{16\,a^2\,C\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{5\,d} + \frac{4\,a^2\,(3\,A + C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{3\,d} + \frac{2\,a^2\,(15\,A + 17\,C)\,\sqrt{\text{Sec}[c + d\,x]}\,\text{Sin}[c + d\,x]}{15\,d} + \frac{2\,C\,\sqrt{\text{Sec}[c + d\,x]}\,(a + a\,\text{Sec}[c + d\,x])^2\,\text{Sin}[c + d\,x]}{5\,d} + \frac{8\,C\,\sqrt{\text{Sec}[c + d\,x]}\,(a^2 + a^2\,\text{Sec}[c + d\,x])\,\text{Sin}[c + d\,x]}{15\,d}$$

Result (type 5, 436 leaves):

$$-\frac{1}{15\,d\,(-1 + e^{2\,i\,c})\,(A + 2\,C + A\,\text{Cos}[2\,c + 2\,d\,x])}\,2\,i\,\sqrt{2}\,e^{-i\,(c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1 + e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c + d\,x]^4\,\Bigg(12\,C\,(1 + e^{2\,i\,(c+d\,x)}) + 12\,C\,(-1 + e^{2\,i\,c})\,\sqrt{1 + e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right] + 5\,(3\,A + C)\,e^{i\,(c+d\,x)}\,(-1 + e^{2\,i\,c})\,\sqrt{1 + e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{2},\,\frac{5}{4},\,-e^{2\,i\,(c+d\,x)}\right]\Bigg)\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,(a + a\,\text{Sec}[c + d\,x])^2\,(A + C\,\text{Sec}[c + d\,x]^2) + \Bigg(\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,(a + a\,\text{Sec}[c + d\,x])^2\,(A + C\,\text{Sec}[c + d\,x]^2)\,\Bigg(-\frac{(-5\,A - 16\,C + 5\,A\,\text{Cos}[2\,c])\,\text{Cos}[d\,x]\,\text{Csc}[c]}{10\,d} + \frac{A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{d} + \frac{C\,\text{Sec}[c]\,\text{Sec}[c + d\,x]^2\,\text{Sin}[d\,x]}{5\,d} + \frac{\text{Sec}[c]\,\text{Sec}[c + d\,x]\,(3\,C\,\text{Sin}[c] + 10\,C\,\text{Sin}[d\,x])}{15\,d} + \frac{2\,C\,\text{Tan}[c]}{3\,d}\Bigg)\Bigg)\Bigg/\left((A + 2\,C + A\,\text{Cos}[2\,c + 2\,d\,x])\,\text{Sec}[c + d\,x]^{7/2}\right)$$

Problem 217: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a\,\text{Sec}[c + d\,x])^2\,(A + C\,\text{Sec}[c + d\,x]^2)}{\text{Sec}[c + d\,x]^{3/2}}\,dx$$

Optimal (type 4, 198 leaves, 8 steps):

$$\frac{4 a^2 (A-C) \sqrt{\mathrm{Cos}[c+d x]}\, \mathrm{EllipticE}\left[\frac{1}{2}(c+d x), 2\right] \sqrt{\mathrm{Sec}[c+d x]}}{d}+\frac{8 a^2 (A+C) \sqrt{\mathrm{Cos}[c+d x]}\, \mathrm{EllipticF}\left[\frac{1}{2}(c+d x), 2\right] \sqrt{\mathrm{Sec}[c+d x]}}{3 d}-\frac{2 a^2 (A-5 C) \sqrt{\mathrm{Sec}[c+d x]}\, \mathrm{Sin}[c+d x]}{3 d}+\frac{2 A (a+a \mathrm{Sec}[c+d x])^2 \mathrm{Sin}[c+d x]}{3 d \sqrt{\mathrm{Sec}[c+d x]}}-\frac{2 (A-C) \sqrt{\mathrm{Sec}[c+d x]}\, (a^2+a^2 \mathrm{Sec}[c+d x])\, \mathrm{Sin}[c+d x]}{3 d}$$

Result (type 5, 215 leaves):

$$\frac{1}{6 d} a^2 e^{-i (2 c+d x)} \mathrm{Sec}[c+d x]^{3/2} \Big(-12 i A+12 i C-12 i A \mathrm{Cos}[2 (c+d x)]+ 12 i C \mathrm{Cos}[2 (c+d x)]+16 (A+C) \mathrm{Cos}[c+d x]^{3/2} \mathrm{EllipticF}\left[\frac{1}{2}(c+d x), 2\right]+ 12 i (A-C) e^{-2 i (c+d x)} \left(1+e^{2 i (c+d x)}\right)^{3/2} \mathrm{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (c+d x)}\right]+ A \mathrm{Sin}[c+d x]+4 C \mathrm{Sin}[c+d x]+12 C \mathrm{Sin}[2 (c+d x)]+A \mathrm{Sin}[3 (c+d x)]\Big) (\mathrm{Cos}[2 c+d x]+i \mathrm{Sin}[2 c+d x])$$

Problem 218: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a \mathrm{Sec}[c+d x])^2 (A+C \mathrm{Sec}[c+d x]^2)}{\mathrm{Sec}[c+d x]^{5/2}}\, dx$$

Optimal (type 4, 196 leaves, 8 steps):

$$\frac{16 a^2 A \sqrt{\mathrm{Cos}[c+d x]}\, \mathrm{EllipticE}\left[\frac{1}{2}(c+d x), 2\right] \sqrt{\mathrm{Sec}[c+d x]}}{5 d}+\frac{4 a^2 (A+3 C) \sqrt{\mathrm{Cos}[c+d x]}\, \mathrm{EllipticF}\left[\frac{1}{2}(c+d x), 2\right] \sqrt{\mathrm{Sec}[c+d x]}}{3 d}-\frac{2 a^2 (7 A-15 C) \sqrt{\mathrm{Sec}[c+d x]}\, \mathrm{Sin}[c+d x]}{15 d}+\frac{2 A (a+a \mathrm{Sec}[c+d x])^2 \mathrm{Sin}[c+d x]}{5 d \mathrm{Sec}[c+d x]^{3/2}}+\frac{8 A (a^2+a^2 \mathrm{Sec}[c+d x])\, \mathrm{Sin}[c+d x]}{15 d \sqrt{\mathrm{Sec}[c+d x]}}$$

Result (type 5, 209 leaves):

$$\left(a^2\left(\text{Cos}\left[\frac{c}{2}\right]-i\,\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}\right]+i\,\text{Sin}\left[\frac{c}{2}\right]\right)\right.$$
$$\left(-96\,i\,A+\frac{192\,i\,A\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]}{\sqrt{1+e^{2\,i\,(c+d\,x)}}}-\right.$$
$$\frac{80\,i\,(A+3\,C)\,e^{i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]}{\sqrt{1+e^{2\,i\,(c+d\,x)}}}+40\,A\,\text{Sin}[c+d\,x]+$$
$$\left.\left.3\,A\,\text{Sec}[c+d\,x]\,\text{Sin}[3\,(c+d\,x)]+3\,A\,\text{Tan}[c+d\,x]+60\,C\,\text{Tan}[c+d\,x]\right)\right)\Big/\left(30\,d\,\sqrt{\text{Sec}[c+d\,x]}\right)$$

Problem 219: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{7/2}}\,dx$$

Optimal (type 4, 204 leaves, 8 steps):

$$\frac{1}{5\,d}4\,a^2\,(3\,A+5\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{1}{21\,d}8\,a^2\,(3\,A+7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{2\,a^2\,(33\,A+35\,C)\,\text{Sin}[c+d\,x]}{105\,d\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{2\,A\,(a+a\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{7\,d\,\text{Sec}[c+d\,x]^{5/2}}+$$
$$\frac{8\,A\,\left(a^2+a^2\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{35\,d\,\text{Sec}[c+d\,x]^{3/2}}$$

Result (type 5, 203 leaves):

$$\frac{1}{420\,d}a^2\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\text{Sec}[c+d\,x]}$$
$$\left(160\,(3\,A+7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]+336\,i\,(3\,A+5\,C)\,e^{-i\,(c+d\,x)}\right.$$
$$\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]+2\,\text{Cos}[c+d\,x]$$
$$\left.\left(-504\,i\,A-840\,i\,C+5\,(51\,A+28\,C)\,\text{Sin}[c+d\,x]+84\,A\,\text{Sin}[2\,(c+d\,x)]+15\,A\,\text{Sin}[3\,(c+d\,x)]\right)\right)$$
$$(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])$$

Problem 220: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{9/2}}\,dx$$

Optimal (type 4, 237 leaves, 9 steps):

$$\frac{1}{15\,d}16\,a^2\,\left(2\,A+3\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\;+$$
$$\frac{1}{21\,d}4\,a^2\,\left(5\,A+7\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\;+$$
$$\frac{2\,a^2\,\left(19\,A+21\,C\right)\,\text{Sin}[c+d\,x]}{105\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{4\,a^2\,\left(5\,A+7\,C\right)\,\text{Sin}[c+d\,x]}{21\,d\,\sqrt{\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,A\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{9\,d\,\text{Sec}[c+d\,x]^{7/2}}+\frac{8\,A\,\left(a^2+a^2\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{63\,d\,\text{Sec}[c+d\,x]^{5/2}}$$

Result (type 5, 850 leaves) :

$$\left(8 \sqrt{2}\, A\, e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\, \mathrm{Cos}[c+d x]^4\, \mathrm{Csc}[c] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}}\, \mathrm{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (c+d x)}\right]\right) \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a\, \mathrm{Sec}[c+d x])^2 \left(A+C\, \mathrm{Sec}[c+d x]^2\right)\right) \Big/ (15 d (A+2 C+A\, \mathrm{Cos}[2 c+2 d x]))+$$

$$\left(4 \sqrt{2}\, C\, e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\, \mathrm{Cos}[c+d x]^4\, \mathrm{Csc}[c] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}}\, \mathrm{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (c+d x)}\right]\right) \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a\, \mathrm{Sec}[c+d x])^2 \left(A+C\, \mathrm{Sec}[c+d x]^2\right)\right) \Big/ (5 d (A+2 C+A\, \mathrm{Cos}[2 c+2 d x]))+$$

$$\left(10 A \sqrt{\mathrm{Cos}[c+d x]}\, \mathrm{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a\, \mathrm{Sec}[c+d x])^2 \left(A+C\, \mathrm{Sec}[c+d x]^2\right)\right) \Big/ \left(21 d (A+2 C+A\, \mathrm{Cos}[2 c+2 d x])\, \mathrm{Sec}[c+d x]^{7/2}\right)+$$

$$\left(2 C \sqrt{\mathrm{Cos}[c+d x]}\, \mathrm{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a\, \mathrm{Sec}[c+d x])^2 \left(A+C\, \mathrm{Sec}[c+d x]^2\right)\right) \Big/ \left(3 d (A+2 C+A\, \mathrm{Cos}[2 c+2 d x])\, \mathrm{Sec}[c+d x]^{7/2}\right)+$$

$$\frac{1}{(A+2 C+A\, \mathrm{Cos}[2 c+2 d x])\, \mathrm{Sec}[c+d x]^{7/2}} \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a\, \mathrm{Sec}[c+d x])^2 \left(A+C\, \mathrm{Sec}[c+d x]^2\right) \left(-\frac{1}{720 d} (347 A+558 C+421 A\, \mathrm{Cos}[2 c]+594 C\, \mathrm{Cos}[2 c])\, \mathrm{Cos}[d x]\, \mathrm{Csc}[c]+\frac{(13 A+14 C)\, \mathrm{Cos}[2 d x]\, \mathrm{Sin}[2 c]}{42 d}+\frac{(79 A+36 C)\, \mathrm{Cos}[3 d x]\, \mathrm{Sin}[3 c]}{720 d}+\frac{A\, \mathrm{Cos}[4 d x]\, \mathrm{Sin}[4 c]}{28 d}+\frac{A\, \mathrm{Cos}[5 d x]\, \mathrm{Sin}[5 c]}{144 d}+\frac{(421 A+594 C)\, \mathrm{Cos}[c]\, \mathrm{Sin}[d x]}{360 d}+\frac{(13 A+14 C)\, \mathrm{Cos}[2 c]\, \mathrm{Sin}[2 d x]}{42 d}+\frac{(79 A+36 C)\, \mathrm{Cos}[3 c]\, \mathrm{Sin}[3 d x]}{720 d}+\frac{A\, \mathrm{Cos}[4 c]\, \mathrm{Sin}[4 d x]}{28 d}+\frac{A\, \mathrm{Cos}[5 c]\, \mathrm{Sin}[5 d x]}{144 d}\right)$$

Problem 221: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\, \mathrm{Sec}[c+d x])^2 \left(A+C\, \mathrm{Sec}[c+d x]^2\right)}{\mathrm{Sec}[c+d x]^{11/2}}\, dx$$

Optimal (type 4, 270 leaves, 10 steps):

$$\frac{1}{15\,d}4\,a^2\,(7\,A+9\,C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{1}{231\,d}8\,a^2\,(25\,A+33\,C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{2\,a^2\,(89\,A+99\,C)\,\text{Sin}[c+d\,x]}{693\,d\,\text{Sec}[c+d\,x]^{5/2}}+\frac{4\,a^2\,(7\,A+9\,C)\,\text{Sin}[c+d\,x]}{45\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{8\,a^2\,(25\,A+33\,C)\,\text{Sin}[c+d\,x]}{231\,d\,\sqrt{\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,A\,(a+a\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{11\,d\,\text{Sec}[c+d\,x]^{9/2}}+\frac{8\,A\,(a^2+a^2\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]}{99\,d\,\text{Sec}[c+d\,x]^{7/2}}$$

Result (type 5, 896 leaves) :

$$\left(7\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\mathrm{Cos}[c+dx]^4\,\mathrm{Csc}[c]\right.$$
$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$
$$\left.\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+dx]\right)^2\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/\left(15\,d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\right)+$$

$$\left(3\sqrt{2}\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\mathrm{Cos}[c+dx]^4\,\mathrm{Csc}[c]\right.$$
$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$
$$\left.\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+dx]\right)^2\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/\left(5\,d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\right)+$$

$$\left(100\,A\sqrt{\mathrm{Cos}[c+dx]}\,\mathrm{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+dx]\right)^2\right.$$
$$\left.\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/\left(231\,d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\mathrm{Sec}[c+dx]^{7/2}\right)+$$
$$\left(4\,C\sqrt{\mathrm{Cos}[c+dx]}\,\mathrm{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+dx]\right)^2\right.$$
$$\left.\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/\left(7\,d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\mathrm{Sec}[c+dx]^{7/2}\right)+$$
$$\frac{1}{\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\mathrm{Sec}[c+dx]^{7/2}}\,\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+dx]\right)^2$$
$$\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\left(-\frac{1}{360\,d}\left(149A+198C+187A\,\mathrm{Cos}[2c]+234C\,\mathrm{Cos}[2c]\right)\mathrm{Cos}[dx]\,\mathrm{Csc}[c]+\right.$$
$$\frac{\left(2185A+2376C\right)\mathrm{Cos}[2dx]\,\mathrm{Sin}[2c]}{7392\,d}+\frac{\left(43A+36C\right)\mathrm{Cos}[3dx]\,\mathrm{Sin}[3c]}{360\,d}+$$
$$\frac{\left(27A+11C\right)\mathrm{Cos}[4dx]\,\mathrm{Sin}[4c]}{616\,d}+\frac{A\,\mathrm{Cos}[5dx]\,\mathrm{Sin}[5c]}{72\,d}+$$
$$\frac{A\,\mathrm{Cos}[6dx]\,\mathrm{Sin}[6c]}{352\,d}+\frac{\left(187A+234C\right)\mathrm{Cos}[c]\,\mathrm{Sin}[dx]}{180\,d}+$$
$$\frac{\left(2185A+2376C\right)\mathrm{Cos}[2c]\,\mathrm{Sin}[2dx]}{7392\,d}+\frac{\left(43A+36C\right)\mathrm{Cos}[3c]\,\mathrm{Sin}[3dx]}{360\,d}+$$
$$\left.\frac{\left(27A+11C\right)\mathrm{Cos}[4c]\,\mathrm{Sin}[4dx]}{616\,d}+\frac{A\,\mathrm{Cos}[5c]\,\mathrm{Sin}[5dx]}{72\,d}+\frac{A\,\mathrm{Cos}[6c]\,\mathrm{Sin}[6dx]}{352\,d}\right)$$

Problem 222: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 319 leaves, 11 steps):

$$-\frac{1}{5\,d}4\,a^3\,(7\,A+5\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\,+$$
$$\frac{1}{231\,d}4\,a^3\,(143\,A+105\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\,+$$
$$\frac{4\,a^3\,(7\,A+5\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{5\,d}+\frac{4\,a^3\,(143\,A+105\,C)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{231\,d}+$$
$$\frac{8\,a^3\,(44\,A+35\,C)\,\mathrm{Sec}[c+d\,x]^{5/2}\,\mathrm{Sin}[c+d\,x]}{385\,d}+\frac{2\,C\,\mathrm{Sec}[c+d\,x]^{5/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\mathrm{Sin}[c+d\,x]}{11\,d}+$$
$$\frac{4\,C\,\mathrm{Sec}[c+d\,x]^{5/2}\,\left(a^2+a^2\,\mathrm{Sec}[c+d\,x]\right)^2\,\mathrm{Sin}[c+d\,x]}{33\,a\,d}+$$
$$\frac{2\,(33\,A+35\,C)\,\mathrm{Sec}[c+d\,x]^{5/2}\,\left(a^3+a^3\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Sin}[c+d\,x]}{231\,d}$$

Result (type 5, 841 leaves):

$$-\left(\left(\left(7 A e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\operatorname{Cos}[c+dx]^5\operatorname{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\operatorname{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\operatorname{Sec}[c+dx]\right)^3\left(A+C\operatorname{Sec}[c+dx]^2\right)\right)\Big/\left(5\sqrt{2}\,d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\right)\right)-$$

$$\left(C e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\operatorname{Cos}[c+dx]^5\operatorname{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\operatorname{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\operatorname{Sec}[c+dx]\right)^3\left(A+C\operatorname{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(\sqrt{2}\,d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\right)+$$

$$\left(13 A\sqrt{\operatorname{Cos}[c+dx]}\operatorname{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\operatorname{Sec}[c+dx]\right)^3\left(A+C\operatorname{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(21 d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\operatorname{Sec}[c+dx]^{9/2}\right)+$$

$$\left(5 C\sqrt{\operatorname{Cos}[c+dx]}\operatorname{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\operatorname{Sec}[c+dx]\right)^3\left(A+C\operatorname{Sec}[c+dx]^2\right)\right)\Big/\left(11 d\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\operatorname{Sec}[c+dx]^{9/2}\right)+$$

$$\frac{1}{\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\operatorname{Sec}[c+dx]^{9/2}}\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\operatorname{Sec}[c+dx]\right)^3$$

$$\left(A+C\operatorname{Sec}[c+dx]^2\right)\left(\frac{(7A+5C)\operatorname{Cos}[dx]\operatorname{Csc}[c]}{5d}+\frac{C\operatorname{Sec}[c]\operatorname{Sec}[c+dx]^5\operatorname{Sin}[dx]}{22d}+\right.$$

$$\frac{\operatorname{Sec}[c]\operatorname{Sec}[c+dx]^4\left(3C\operatorname{Sin}[c]+11C\operatorname{Sin}[dx]\right)}{66d}+\frac{1}{462d}$$

$$\operatorname{Sec}[c]\operatorname{Sec}[c+dx]^3\left(77C\operatorname{Sin}[c]+33A\operatorname{Sin}[dx]+126C\operatorname{Sin}[dx]\right)+\frac{1}{2310d}$$

$$\operatorname{Sec}[c]\operatorname{Sec}[c+dx]^2\left(165A\operatorname{Sin}[c]+630C\operatorname{Sin}[c]+693A\operatorname{Sin}[dx]+770C\operatorname{Sin}[dx]\right)+\frac{1}{2310d}$$

$$\operatorname{Sec}[c]\operatorname{Sec}[c+dx]\left(693A\operatorname{Sin}[c]+770C\operatorname{Sin}[c]+1430A\operatorname{Sin}[dx]+1050C\operatorname{Sin}[dx]\right)+$$

$$\left.\frac{(143A+105C)\operatorname{Tan}[c]}{231d}\right)$$

Problem 223: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 286 leaves, 10 steps):

$$-\frac{1}{15\,d}4\,a^3\,(27\,A+17\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{21\,d}4\,a^3\,(21\,A+11\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{4\,a^3\,(27\,A+17\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d}+\frac{8\,a^3\,(21\,A+16\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{105\,d}+\frac{2\,C\,\text{Sec}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{9\,d}+\frac{4\,C\,\text{Sec}[c+d\,x]^{3/2}\,(a^2+a^2\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{21\,a\,d}+\frac{2\,(63\,A+73\,C)\,\text{Sec}[c+d\,x]^{3/2}\,(a^3+a^3\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]}{315\,d}$$

Result (type 5, 798 leaves):

$$- \left(\left(\left(9 A e^{-i (2c+dx)} \sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}} \operatorname{Cos}[c+dx]^5 \operatorname{Csc}[c] \left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right) \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 (a+a\operatorname{Sec}[c+dx])^3 \left(A+C\operatorname{Sec}[c+dx]^2\right)\right) \Big/ \left(5\sqrt{2}\, d\,(A+2C+A\operatorname{Cos}[2c+2dx])\right)\right) -$$

$$\left(17 C e^{-i (2c+dx)} \sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}} \operatorname{Cos}[c+dx]^5 \operatorname{Csc}[c] \left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right) \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 (a+a\operatorname{Sec}[c+dx])^3 \left(A+C\operatorname{Sec}[c+dx]^2\right)\right) \Big/$$

$$\left(15\sqrt{2}\, d\,(A+2C+A\operatorname{Cos}[2c+2dx])\right) +$$

$$\left(A\sqrt{\operatorname{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 (a+a\operatorname{Sec}[c+dx])^3 \left(A+C\operatorname{Sec}[c+dx]^2\right)\right) \Big/ \left(d\,(A+2C+A\operatorname{Cos}[2c+2dx])\operatorname{Sec}[c+dx]^{9/2}\right) +$$

$$\left(11 C\sqrt{\operatorname{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 (a+a\operatorname{Sec}[c+dx])^3 \left(A+C\operatorname{Sec}[c+dx]^2\right)\right) \Big/ \left(21\, d\,(A+2C+A\operatorname{Cos}[2c+2dx])\operatorname{Sec}[c+dx]^{9/2}\right) +$$

$$\left(\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 (a+a\operatorname{Sec}[c+dx])^3 \left(A+C\operatorname{Sec}[c+dx]^2\right) \left(\frac{(27A+17C)\operatorname{Cos}[dx]\operatorname{Csc}[c]}{15d} + \frac{C\operatorname{Sec}[c]\operatorname{Sec}[c+dx]^4\operatorname{Sin}[dx]}{18d} + \frac{\operatorname{Sec}[c]\operatorname{Sec}[c+dx]^3(7C\operatorname{Sin}[c]+27C\operatorname{Sin}[dx])}{126d} + \frac{1}{630d}\operatorname{Sec}[c]\operatorname{Sec}[c+dx]^2(135C\operatorname{Sin}[c]+63A\operatorname{Sin}[dx]+238C\operatorname{Sin}[dx]) + \frac{1}{630d}\operatorname{Sec}[c]\operatorname{Sec}[c+dx](63A\operatorname{Sin}[c]+238C\operatorname{Sin}[c]+315A\operatorname{Sin}[dx]+330C\operatorname{Sin}[dx]) + \frac{(21A+22C)\operatorname{Tan}[c]}{42d}\right)\right) \Big/ \left((A+2C+A\operatorname{Cos}[2c+2dx])\operatorname{Sec}[c+dx]^{9/2}\right)$$

Problem 224: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a\,\text{Sec}[c + d\,x])^3\,(A + C\,\text{Sec}[c + d\,x]^2)}{\sqrt{\text{Sec}[c + d\,x]}}\,dx$$

Optimal (type 4, 253 leaves, 9 steps):

$$-\frac{1}{5\,d}4\,a^3\,(5\,A + 7\,C)\,\sqrt{\text{Cos}[c + d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\sqrt{\text{Sec}[c + d\,x]}\,+$$
$$\frac{1}{21\,d}4\,a^3\,(35\,A + 13\,C)\,\sqrt{\text{Cos}[c + d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\sqrt{\text{Sec}[c + d\,x]}\,+$$
$$\frac{8\,a^3\,(70\,A + 53\,C)\,\sqrt{\text{Sec}[c + d\,x]}\;\text{Sin}[c + d\,x]}{105\,d} + \frac{2\,C\,\sqrt{\text{Sec}[c + d\,x]}\,(a + a\,\text{Sec}[c + d\,x])^3\,\text{Sin}[c + d\,x]}{7\,d}\,+$$
$$\frac{12\,C\,\sqrt{\text{Sec}[c + d\,x]}\,(a^2 + a^2\,\text{Sec}[c + d\,x])^2\,\text{Sin}[c + d\,x]}{35\,a\,d}\,+$$
$$\frac{2\,(5\,A + 7\,C)\,\sqrt{\text{Sec}[c + d\,x]}\,(a^3 + a^3\,\text{Sec}[c + d\,x])\,\text{Sin}[c + d\,x]}{15\,d}$$

Result (type 5, 778 leaves):

$$-\Bigg(\Bigg(A\, e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\;\text{Cos}[c+dx]^5\,\text{Csc}[c]\,\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\,\text{Sec}[c+dx]\right)^3\left(A+C\,\text{Sec}[c+dx]^2\right)\Bigg)\Big/\left(\sqrt{2}\;d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right)\Bigg)-\Bigg(7\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\;\text{Cos}[c+dx]^5\,\text{Csc}[c]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\,\text{Sec}[c+dx]\right)^3\left(A+C\,\text{Sec}[c+dx]^2\right)\Bigg)\Big/\left(5\sqrt{2}\;d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right)+\left(5A\sqrt{\text{Cos}[c+dx]}\;\text{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\,\text{Sec}[c+dx]\right)^3\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{9/2}\right)+\left(13\,C\sqrt{\text{Cos}[c+dx]}\;\text{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\,\text{Sec}[c+dx]\right)^3\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(21d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{9/2}\right)+\Bigg(\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\,\text{Sec}[c+dx]\right)^3\left(A+C\,\text{Sec}[c+dx]^2\right)\Bigg(-\frac{\left(-25A-28C+5A\,\text{Cos}[2c]\right)\text{Cos}[dx]\,\text{Csc}[c]}{20d}+\frac{A\,\text{Cos}[c]\,\text{Sin}[dx]}{2d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+dx]^3\,\text{Sin}[dx]}{14d}+\frac{\text{Sec}[c]\,\text{Sec}[c+dx]^2\left(5C\,\text{Sin}[c]+21C\,\text{Sin}[dx]\right)}{70d}+\frac{1}{210d}\text{Sec}[c]\,\text{Sec}[c+dx]\left(63C\,\text{Sin}[c]+35A\,\text{Sin}[dx]+130C\,\text{Sin}[dx]\right)+\frac{\left(7A+26C\right)\text{Tan}[c]}{42d}\Bigg)\Bigg)\Big/\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{9/2}\right)$$

Problem 225: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(a+a\,\text{Sec}[c+dx]\right)^3\left(A+C\,\text{Sec}[c+dx]^2\right)}{\text{Sec}[c+dx]^{3/2}}\,dx$$

Optimal (type 4, 259 leaves, 9 steps):

$$\frac{1}{5\,d}4\,a^3\,\left(5\,A-9\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{1}{3\,d}4\,a^3\,\left(5\,A+3\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{4\,a^3\,\left(5\,A+21\,C\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\,\text{Sin}[c+d\,x]}{15\,d}+\frac{2\,A\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Sec}[c+d\,x]}}-$$
$$\frac{2\,\left(5\,A-3\,C\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\,\left(a^2+a^2\,\text{Sec}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{15\,a\,d}-$$
$$\frac{2\,\left(5\,A-9\,C\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{15\,d}$$

Result (type 5, 764 leaves) :

$$\left(A\,e^{-i\,(2c+d x)}\sqrt{\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}}\ \text{Cos}[c+d x]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2 i\,(c+d x)}+\left(-1+e^{2 i c}\right)\sqrt{1+e^{2 i\,(c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i\,(c+d x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(a+a\,\text{Sec}[c+d x]\right)^3\left(A+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\ d\left(A+2 C+A\,\text{Cos}[2c+2d x]\right)\right)-\left(9\,C\,e^{-i\,(2c+d x)}\sqrt{\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}}\ \text{Cos}[c+d x]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2 i\,(c+d x)}+\left(-1+e^{2 i c}\right)\sqrt{1+e^{2 i\,(c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i\,(c+d x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(a+a\,\text{Sec}[c+d x]\right)^3\left(A+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(5\sqrt{2}\ d\left(A+2 C+A\,\text{Cos}[2c+2d x]\right)\right)+$$
$$\left(5\,A\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}\left(c+d x\right),2\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(a+a\,\text{Sec}[c+d x]\right)^3\right.$$
$$\left.\left(A+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(3\,d\left(A+2 C+A\,\text{Cos}[2c+2d x]\right)\text{Sec}[c+d x]^{9/2}\right)+$$
$$\left(C\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}\left(c+d x\right),2\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(a+a\,\text{Sec}[c+d x]\right)^3\right.$$
$$\left.\left(A+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(d\left(A+2 C+A\,\text{Cos}[2c+2d x]\right)\text{Sec}[c+d x]^{9/2}\right)+$$
$$\left(\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(a+a\,\text{Sec}[c+d x]\right)^3\left(A+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(-\frac{\left(5A-36C+15A\,\text{Cos}[2c]\right)\text{Cos}[d x]\,\text{Csc}[c]}{20\,d}+\frac{A\,\text{Cos}[2d x]\,\text{Sin}[2c]}{12\,d}+\frac{3A\,\text{Cos}[c]\,\text{Sin}[d x]}{2\,d}+\right.$$
$$\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d x]^2\,\text{Sin}[d x]}{10\,d}+\frac{\text{Sec}[c]\,\text{Sec}[c+d x]\left(C\,\text{Sin}[c]+5\,C\,\text{Sin}[d x]\right)}{10\,d}+$$
$$\left.\left.\frac{A\,\text{Cos}[2c]\,\text{Sin}[2d x]}{12\,d}+\frac{C\,\text{Tan}[c]}{2\,d}\right)\right)\Big/\left(\left(A+2C+A\,\text{Cos}[2c+2d x]\right)\text{Sec}[c+d x]^{9/2}\right)$$

Problem 226: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+a\,\text{Sec}[c+d x]\right)^3\left(A+C\,\text{Sec}[c+d x]^2\right)}{\text{Sec}[c+d x]^{5/2}}\,dx$$

Optimal (type 4, 253 leaves, 9 steps):

$$\frac{1}{5d}4a^3(9A-5C)\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\mathrm{Sec}[c+dx]}+\frac{1}{3d}4a^3(3A+5C)\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\mathrm{Sec}[c+dx]}-\frac{8a^3(3A-10C)\sqrt{\mathrm{Sec}[c+dx]}\ \mathrm{Sin}[c+dx]}{15d}+\frac{2A(a+a\,\mathrm{Sec}[c+dx])^3\mathrm{Sin}[c+dx]}{5d\,\mathrm{Sec}[c+dx]^{3/2}}+\frac{4A(a^2+a^2\mathrm{Sec}[c+dx])^2\mathrm{Sin}[c+dx]}{5ad\sqrt{\mathrm{Sec}[c+dx]}}-\frac{2(9A-5C)\sqrt{\mathrm{Sec}[c+dx]}\ (a^3+a^3\mathrm{Sec}[c+dx])\ \mathrm{Sin}[c+dx]}{15d}$$

Result (type 5, 245 leaves):

$$\frac{1}{60d}a^3 e^{-i(2c+dx)}\mathrm{Sec}[c+dx]^{3/2}\Big(-216\,i\,A+120\,i\,C-216\,i\,A\,\mathrm{Cos}[2(c+dx)]+120\,i\,C\,\mathrm{Cos}[2(c+dx)]+80(3A+5C)\mathrm{Cos}[c+dx]^{3/2}\mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]+24\,i\,(9A-5C)e^{-2i(c+dx)}\left(1+e^{2i(c+dx)}\right)^{3/2}\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]+30A\,\mathrm{Sin}[c+dx]+40C\,\mathrm{Sin}[c+dx]+6A\,\mathrm{Sin}[2(c+dx)]+180C\,\mathrm{Sin}[2(c+dx)]+30A\,\mathrm{Sin}[3(c+dx)]+3A\,\mathrm{Sin}[4(c+dx)]\Big)(\mathrm{Cos}[2c+dx]+i\,\mathrm{Sin}[2c+dx])$$

Problem 227: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\mathrm{Sec}[c+dx])^3(A+C\,\mathrm{Sec}[c+dx]^2)}{\mathrm{Sec}[c+dx]^{7/2}}\,dx$$

Optimal (type 4, 253 leaves, 9 steps):

$$\frac{1}{5d}4a^3(7A+5C)\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\mathrm{Sec}[c+dx]}+\frac{1}{21d}4a^3(13A+35C)\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\mathrm{Sec}[c+dx]}-\frac{4a^3(41A-35C)\sqrt{\mathrm{Sec}[c+dx]}\ \mathrm{Sin}[c+dx]}{105d}+\frac{2A(a+a\,\mathrm{Sec}[c+dx])^3\mathrm{Sin}[c+dx]}{7d\,\mathrm{Sec}[c+dx]^{5/2}}+\frac{12A(a^2+a^2\mathrm{Sec}[c+dx])^2\mathrm{Sin}[c+dx]}{35ad\,\mathrm{Sec}[c+dx]^{3/2}}+\frac{2(7A+5C)(a^3+a^3\mathrm{Sec}[c+dx])\ \mathrm{Sin}[c+dx]}{15d\sqrt{\mathrm{Sec}[c+dx]}}$$

Result (type 5, 231 leaves):

$$\frac{1}{420\,d} a^3 e^{-i(2c+dx)} \sqrt{\text{Sec}[c+dx]} \left(-2352\, i\, A \,\text{Cos}[c+dx] - 1680\, i\, C\, \text{Cos}[c+dx] + 80\,(13 A + 35 C) \sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx), 2\right] + 336\, i\,(7 A + 5 C)\, e^{-i(c+dx)} \sqrt{1+e^{2i(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2i(c+dx)}\right] + 126 A \,\text{Sin}[c+dx] + 840 C\,\text{Sin}[c+dx] + 550 A\,\text{Sin}[2(c+dx)] + 140 C\,\text{Sin}[2(c+dx)] + 126 A\,\text{Sin}[3(c+dx)] + 15 A\,\text{Sin}[4(c+dx)]\right) (\text{Cos}[2c+dx] + i\,\text{Sin}[2c+dx])$$

Problem 228: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a\,\text{Sec}[c+dx])^3 \,(A + C\,\text{Sec}[c+dx]^2)}{\text{Sec}[c+dx]^{9/2}}\, dx$$

Optimal (type 4, 253 leaves, 9 steps):

$$\frac{1}{15\,d} 4 a^3 (17 A + 27 C) \sqrt{\text{Cos}[c+dx]}\ \text{EllipticE}\left[\frac{1}{2}(c+dx), 2\right] \sqrt{\text{Sec}[c+dx]} + \frac{1}{21\,d} 4 a^3 (11 A + 21 C) \sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx), 2\right] \sqrt{\text{Sec}[c+dx]} + \frac{8 a^3 (16 A + 21 C)\,\text{Sin}[c+dx]}{105\, d \sqrt{\text{Sec}[c+dx]}} + \frac{2 A\,(a + a\,\text{Sec}[c+dx])^3\,\text{Sin}[c+dx]}{9\, d\, \text{Sec}[c+dx]^{7/2}} + \frac{4 A\,(a^2 + a^2\,\text{Sec}[c+dx])^2\,\text{Sin}[c+dx]}{21\, a\, d\,\text{Sec}[c+dx]^{5/2}} + \frac{2\,(73 A + 63 C)\,(a^3 + a^3\,\text{Sec}[c+dx])\,\text{Sin}[c+dx]}{315\, d\,\text{Sec}[c+dx]^{3/2}}$$

Result (type 5, 847 leaves):

$$\left(17\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2\,i\,(c+dx)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+dx)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(15\sqrt{2}\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+\left(9\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2\,i\,(c+dx)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+dx)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(5\sqrt{2}\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(11\,A\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right.$$
$$\left.\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(21\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\left(C\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right.$$
$$\left.\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\frac{1}{\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}}\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(-\frac{1}{1440\,d}\left(743\,A+1278\,C+889\,A\,\text{Cos}[2\,c]+1314\,C\,\text{Cos}[2\,c]\right)\text{Cos}[d\,x]\,\text{Csc}[c]+\right.$$
$$\frac{(53\,A+42\,C)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{168\,d}+\frac{(151\,A+36\,C)\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{1440\,d}+$$
$$\frac{3\,A\,\text{Cos}[4\,d\,x]\,\text{Sin}[4\,c]}{112\,d}+\frac{A\,\text{Cos}[5\,d\,x]\,\text{Sin}[5\,c]}{288\,d}+$$
$$\frac{(889\,A+1314\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{720\,d}+\frac{(53\,A+42\,C)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{168\,d}+$$
$$\left.\frac{(151\,A+36\,C)\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{1440\,d}+\frac{3\,A\,\text{Cos}[4\,c]\,\text{Sin}[4\,d\,x]}{112\,d}+\frac{A\,\text{Cos}[5\,c]\,\text{Sin}[5\,d\,x]}{288\,d}\right)$$

Problem 229: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a\,\mathrm{Sec}[c + d\,x])^3\,(A + C\,\mathrm{Sec}[c + d\,x]^2)}{\mathrm{Sec}[c + d\,x]^{11/2}}\,dx$$

Optimal (type 4, 286 leaves, 10 steps):

$$\frac{1}{5\,d}4\,a^3\,(5\,A + 7\,C)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]} + \frac{1}{231\,d}4\,a^3\,(105\,A + 143\,C)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]} + \frac{8\,a^3\,(35\,A + 44\,C)\,\mathrm{Sin}[c + d\,x]}{385\,d\,\mathrm{Sec}[c + d\,x]^{3/2}} + \frac{4\,a^3\,(105\,A + 143\,C)\,\mathrm{Sin}[c + d\,x]}{231\,d\,\sqrt{\mathrm{Sec}[c + d\,x]}} + \frac{2\,A\,(a + a\,\mathrm{Sec}[c + d\,x])^3\,\mathrm{Sin}[c + d\,x]}{11\,d\,\mathrm{Sec}[c + d\,x]^{9/2}} + \frac{4\,A\,(a^2 + a^2\,\mathrm{Sec}[c + d\,x])^2\,\mathrm{Sin}[c + d\,x]}{33\,a\,d\,\mathrm{Sec}[c + d\,x]^{7/2}} + \frac{2\,(35\,A + 33\,C)\,(a^3 + a^3\,\mathrm{Sec}[c + d\,x])\,\mathrm{Sin}[c + d\,x]}{231\,d\,\mathrm{Sec}[c + d\,x]^{5/2}}$$

Result (type 5, 893 leaves):

$$\left(A\, e^{-i\,(2c+dx)} \sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\, \text{Cos}[c+dx]^5\, \text{Csc}[c]\right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\,\text{Sec}[c+dx]\right)^3 \left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(\sqrt{2}\ d\ \left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right)+\left(7C\, e^{-i\,(2c+dx)} \sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\, \text{Cos}[c+dx]^5\, \text{Csc}[c]\right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \left(a+a\,\text{Sec}[c+dx]\right)^3 \left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(5\sqrt{2}\ d\ \left(A+2C+A\,\text{Cos}[2c+2dx]\right)\right)+$$

$$\left(5A\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\,\text{Sec}[c+dx]\right)^3\right.$$

$$\left.\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(11\,d\,\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{9/2}\right)+$$

$$\left(13C\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\,\text{Sec}[c+dx]\right)^3\right.$$

$$\left.\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(21\,d\,\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{9/2}\right)+$$

$$\frac{1}{\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{9/2}}\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(a+a\,\text{Sec}[c+dx]\right)^3$$

$$\left(A+C\,\text{Sec}[c+dx]^2\right)\left(-\frac{1}{480\,d}\left(215A+318C+265A\,\text{Cos}[2c]+354C\,\text{Cos}[2c]\right)\text{Cos}[dx]\,\text{Csc}[c]+\right.$$

$$\frac{(4473A+4840C)\,\text{Cos}[2dx]\,\text{Sin}[2c]}{14784\,d}+\frac{(55A+36C)\,\text{Cos}[3dx]\,\text{Sin}[3c]}{480\,d}+$$

$$\frac{(49A+11C)\,\text{Cos}[4dx]\,\text{Sin}[4c]}{1232\,d}+\frac{A\,\text{Cos}[5dx]\,\text{Sin}[5c]}{96\,d}+$$

$$\frac{A\,\text{Cos}[6dx]\,\text{Sin}[6c]}{704\,d}+\frac{(265A+354C)\,\text{Cos}[c]\,\text{Sin}[dx]}{240\,d}+$$

$$\frac{(4473A+4840C)\,\text{Cos}[2c]\,\text{Sin}[2dx]}{14784\,d}+\frac{(55A+36C)\,\text{Cos}[3c]\,\text{Sin}[3dx]}{480\,d}+$$

$$\left.\frac{(49A+11C)\,\text{Cos}[4c]\,\text{Sin}[4dx]}{1232\,d}+\frac{A\,\text{Cos}[5c]\,\text{Sin}[5dx]}{96\,d}+\frac{A\,\text{Cos}[6c]\,\text{Sin}[6dx]}{704\,d}\right)$$

Problem 230: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a\,\text{Sec}[c + d\,x])^3\,(A + C\,\text{Sec}[c + d\,x]^2)}{\text{Sec}[c + d\,x]^{13/2}}\,dx$$

Optimal (type 4, 319 leaves, 11 steps):

$$\frac{1}{195\,d}4\,a^3\,(175\,A + 221\,C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]} + \frac{1}{231\,d}4\,a^3\,(95\,A + 121\,C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]} + \frac{40\,a^3\,(118\,A + 143\,C)\,\text{Sin}[c + d\,x]}{9009\,d\,\text{Sec}[c + d\,x]^{5/2}} + \frac{4\,a^3\,(175\,A + 221\,C)\,\text{Sin}[c + d\,x]}{585\,d\,\text{Sec}[c + d\,x]^{3/2}} + \frac{4\,a^3\,(95\,A + 121\,C)\,\text{Sin}[c + d\,x]}{231\,d\,\sqrt{\text{Sec}[c + d\,x]}} + \frac{2\,A\,(a + a\,\text{Sec}[c + d\,x])^3\,\text{Sin}[c + d\,x]}{13\,d\,\text{Sec}[c + d\,x]^{11/2}} + \frac{12\,A\,(a^2 + a^2\,\text{Sec}[c + d\,x])^2\,\text{Sin}[c + d\,x]}{143\,a\,d\,\text{Sec}[c + d\,x]^{9/2}} + \frac{2\,(145\,A + 143\,C)\,(a^3 + a^3\,\text{Sec}[c + d\,x])\,\text{Sin}[c + d\,x]}{1287\,d\,\text{Sec}[c + d\,x]^{7/2}}$$

Result (type 5, 942 leaves):

$$\left(35\,A\,e^{-i\,(2c+d x)}\sqrt{\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}}\,\mathrm{Cos}[c+d x]^5\,\mathrm{Csc}[c]\left(1+e^{2 i\,(c+d x)}+\left(-1+e^{2 i c}\right)\sqrt{1+e^{2 i\,(c+d x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i\,(c+d x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d x]\right)^3\left(A+C\,\mathrm{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(39\sqrt{2}\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2 c+2 d x]\right)\right)+\left(17\,C\,e^{-i\,(2c+d x)}\sqrt{\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}}\,\mathrm{Cos}[c+d x]^5\,\mathrm{Csc}[c]\left(1+e^{2 i\,(c+d x)}+\left(-1+e^{2 i c}\right)\sqrt{1+e^{2 i\,(c+d x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i\,(c+d x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d x]\right)^3\left(A+C\,\mathrm{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(15\sqrt{2}\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(95\,A\sqrt{\mathrm{Cos}[c+d x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\left(c+d x\right),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d x]\right)^3\left(A+C\,\mathrm{Sec}[c+d x]^2\right)\right)\Big/\left(231\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2 c+2 d x]\right)\mathrm{Sec}[c+d x]^{9/2}\right)+$$

$$\left(11\,C\sqrt{\mathrm{Cos}[c+d x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\left(c+d x\right),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d x]\right)^3\left(A+C\,\mathrm{Sec}[c+d x]^2\right)\right)\Big/\left(21\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2 c+2 d x]\right)\mathrm{Sec}[c+d x]^{9/2}\right)+$$

$$\frac{1}{\left(A+2\,C+A\,\mathrm{Cos}[2 c+2 d x]\right)\mathrm{Sec}[c+d x]^{9/2}}\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d x]\right)^3\left(A+C\,\mathrm{Sec}[c+d x]^2\right)$$

$$\left(-\frac{1}{149760\,d}\left(59375\,A+77272\,C+75025\,A\,\mathrm{Cos}[2 c]+92456\,C\,\mathrm{Cos}[2 c]\right)\mathrm{Cos}[d x]\,\mathrm{Csc}[c]+\right.$$
$$\frac{\left(4267\,A+4664\,C\right)\mathrm{Cos}[2 d x]\,\mathrm{Sin}[2 c]}{14784\,d}+\frac{\left(9005\,A+7852\,C\right)\mathrm{Cos}[3 d x]\,\mathrm{Sin}[3 c]}{74880\,d}+$$
$$\frac{\left(59\,A+33\,C\right)\mathrm{Cos}[4 d x]\,\mathrm{Sin}[4 c]}{1232\,d}+\frac{\left(245\,A+52\,C\right)\mathrm{Cos}[5 d x]\,\mathrm{Sin}[5 c]}{14976\,d}+$$
$$\frac{3\,A\,\mathrm{Cos}[6 d x]\,\mathrm{Sin}[6 c]}{704\,d}+\frac{A\,\mathrm{Cos}[7 d x]\,\mathrm{Sin}[7 c]}{1664\,d}+$$
$$\frac{\left(75025\,A+92456\,C\right)\mathrm{Cos}[c]\,\mathrm{Sin}[d x]}{74880\,d}+\frac{\left(4267\,A+4664\,C\right)\mathrm{Cos}[2 c]\,\mathrm{Sin}[2 d x]}{14784\,d}+$$
$$\frac{\left(9005\,A+7852\,C\right)\mathrm{Cos}[3 c]\,\mathrm{Sin}[3 d x]}{74880\,d}+\frac{\left(59\,A+33\,C\right)\mathrm{Cos}[4 c]\,\mathrm{Sin}[4 d x]}{1232\,d}+$$
$$\left.\frac{\left(245\,A+52\,C\right)\mathrm{Cos}[5 c]\,\mathrm{Sin}[5 d x]}{14976\,d}+\frac{3\,A\,\mathrm{Cos}[6 c]\,\mathrm{Sin}[6 d x]}{704\,d}+\frac{A\,\mathrm{Cos}[7 c]\,\mathrm{Sin}[7 d x]}{1664\,d}\right)$$

Problem 231: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^{5/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 232 leaves, 9 steps):

$$-\frac{1}{5\,a\,d}3\,\left(5\,A+7\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,-\frac{\left(3\,A+5\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{3\,a\,d}+\frac{3\,\left(5\,A+7\,C\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\,\text{Sin}[c+d\,x]}{5\,a\,d}-\frac{\left(3\,A+5\,C\right)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,a\,d}+\frac{\left(5\,A+7\,C\right)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{5\,a\,d}-\frac{\left(A+C\right)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{d\,\left(a+a\,\text{Sec}[c+d\,x]\right)}$$

Result (type 5, 828 leaves):

$$-\left(\left(3\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)\right)-$$

$$\left(21\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(5d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)-$$

$$\left(2A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)-$$

$$\left(10C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(A+C\,\text{Sec}[c+dx]^2\right)\left(\frac{6(5A+7C)\,\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{d}+\frac{8C\,\text{Sec}[c]\,\text{Sec}[c+dx]^2\,\text{Sin}[dx]}{5d}+\frac{8\,\text{Sec}[c]\,\text{Sec}[c+dx]\left(3C\,\text{Sin}[c]-5C\,\text{Sin}[dx]\right)}{15d}-\frac{4\left(2C+3A\,\text{Cos}[c]+5C\,\text{Cos}[c]\right)\text{Sec}[c]\,\text{Tan}\left[\frac{c}{2}\right]}{3d}\right)\right)\Big/$$

$$\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)$$

Problem 232: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^{3/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 190 leaves, 8 steps):

$$\frac{(A+3\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}}{a\,d}+\frac{(3\,A+5\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}}{3\,a\,d}-\frac{(A+3\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{a\,d}+\frac{(3\,A+5\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,a\,d}-\frac{(A+C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 5, 791 leaves):

$$\left(\sqrt{2}\, A\, e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\; \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2 \text{Cos}[c+dx]\, \text{Csc}\left[\frac{c}{2}\right] \left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\; \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right) \text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right) \Big/ \left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(3\sqrt{2}\, C\, e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\; \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2 \text{Cos}[c+dx]\, \text{Csc}\left[\frac{c}{2}\right] \left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\; \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right) \text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right) \Big/ \left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(2A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\;\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(10\,C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\;\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(A+C\,\text{Sec}[c+dx]^2\right)\left(-\frac{2(A+3C)\,\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{d}+\frac{8\,C\,\text{Sec}[c]\,\text{Sec}[c+dx]\,\text{Sin}[dx]}{3d}+\frac{4\left(2C+3A\,\text{Cos}[c]+5C\,\text{Cos}[c]\right)\text{Sec}[c]\,\text{Tan}\left[\frac{c}{2}\right]}{3d}\right)\right)\Big/\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\;\left(a+a\,\text{Sec}[c+dx]\right)\right)$$

Problem 233: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+dx]}\;\left(A+C\,\text{Sec}[c+dx]^2\right)}{a+a\,\text{Sec}[c+dx]}\,dx$$

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

$$-\frac{(A+3C)\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\mathrm{Sec}[c+dx]}}{a\,d}+\frac{(A-C)\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\mathrm{Sec}[c+dx]}}{a\,d}+\frac{(A+3C)\sqrt{\mathrm{Sec}[c+dx]}\ \mathrm{Sin}[c+dx]}{a\,d}-\frac{(A+C)\,\mathrm{Sec}[c+dx]^{3/2}\,\mathrm{Sin}[c+dx]}{d\,(a+a\,\mathrm{Sec}[c+dx])}$$

Result (type 5, 755 leaves):

$$-\left(\left(\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\ \mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\mathrm{Cos}[c+dx]\,\mathrm{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\ \mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)\right)-$$

$$\left(3\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\ \mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\mathrm{Cos}[c+dx]\,\mathrm{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\ \mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)+$$

$$\left(2A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\mathrm{Sin}[c]\right)\Big/\left(d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\sqrt{\mathrm{Sec}[c+dx]}\ \left(a+a\,\mathrm{Sec}[c+dx]\right)\right)-$$

$$\left(2C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\mathrm{Sin}[c]\right)\Big/\left(d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\sqrt{\mathrm{Sec}[c+dx]}\ \left(a+a\,\mathrm{Sec}[c+dx]\right)\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\left(\frac{2(A+3C)\,\mathrm{Cos}[dx]\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]}{d}-\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\mathrm{Sin}\left[\frac{dx}{2}\right]+C\,\mathrm{Sin}\left[\frac{dx}{2}\right]\right)}{d}-\frac{4(A+C)\,\mathrm{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Big/\left(\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\sqrt{\mathrm{Sec}[c+dx]}\ \left(a+a\,\mathrm{Sec}[c+dx]\right)\right)$$

Problem 234: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + C\,\text{Sec}[c + d\,x]^2}{\sqrt{\text{Sec}[c + d\,x]}\,\left(a + a\,\text{Sec}[c + d\,x]\right)}\,dx$$

Optimal (type 4, 124 leaves, 6 steps):

$$\frac{(3\,A + C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{a\,d} - \frac{(A - C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{a\,d} - \frac{(A + C)\,\sqrt{\text{Sec}[c + d\,x]}\,\text{Sin}[c + d\,x]}{d\,\left(a + a\,\text{Sec}[c + d\,x]\right)}$$

Result (type 5, 772 leaves):

$$\left(3\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)-$$

$$\left(2A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(2C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(A+C\,\text{Sec}[c+dx]^2\right)\left(-\frac{2\left(2A+C+A\,\text{Cos}[2c]\right)\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{d}+\frac{8A\,\text{Cos}[c]\,\text{Sin}[dx]}{d}+\frac{4(A+C)\,\text{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Big/\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)$$

Problem 235: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+dx]^2}{\text{Sec}[c+dx]^{3/2}\left(a+a\,\text{Sec}[c+dx]\right)}\,dx$$

Optimal (type 4, 162 leaves, 7 steps):

$$-\frac{(3\,A+C)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{a\,d}+\frac{(5\,A+3\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{3\,a\,d}+\frac{(5\,A+3\,C)\,\text{Sin}[c+d\,x]}{3\,a\,d\,\sqrt{\text{Sec}[c+d\,x]}}-\frac{(A+C)\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Sec}[c+d\,x]}\,\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 5, 809 leaves) :

$$-\left(\left(3\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\mathrm{Cos}[c+dx]\,\mathrm{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)\right)-$$

$$\left(\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\mathrm{Cos}[c+dx]\,\mathrm{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)+$$

$$\left(10\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\mathrm{Cos}[c+dx]}\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\mathrm{Sin}[c]\right)\Big/\left(3\,d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\sqrt{\mathrm{Sec}[c+dx]}\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)+$$

$$\left(2\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\mathrm{Cos}[c+dx]}\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\mathrm{Sin}[c]\right)\Big/\left(d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\sqrt{\mathrm{Sec}[c+dx]}\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\left(\frac{2\left(2A+C+A\,\mathrm{Cos}[2c]\right)\mathrm{Cos}[dx]\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]}{d}+\frac{4\,A\,\mathrm{Cos}[2dx]\,\mathrm{Sin}[2c]}{3d}-\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\mathrm{Sin}\left[\frac{dx}{2}\right]+C\,\mathrm{Sin}\left[\frac{dx}{2}\right]\right)}{d}-\frac{8\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[dx]}{d}+\frac{4\,A\,\mathrm{Cos}[2c]\,\mathrm{Sin}[2dx]}{3d}-\frac{4\left(A+C\right)\mathrm{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Big/\left(\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\sqrt{\mathrm{Sec}[c+dx]}\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)$$

Problem 236: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\mathrm{Sec}[c+dx]^2}{\mathrm{Sec}[c+dx]^{5/2}\left(a+a\,\mathrm{Sec}[c+dx]\right)}\,dx$$

Optimal (type 4, 199 leaves, 8 steps):

$$\frac{3\,(7\,A+5\,C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{5\,a\,d}-\frac{(5\,A+3\,C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{3\,a\,d}+\frac{(7\,A+5\,C)\,\text{Sin}[c+d\,x]}{5\,a\,d\,\text{Sec}[c+d\,x]^{3/2}}-\frac{(5\,A+3\,C)\,\text{Sin}[c+d\,x]}{3\,a\,d\,\sqrt{\text{Sec}[c+d\,x]}}-\frac{(A+C)\,\text{Sin}[c+d\,x]}{d\,\text{Sec}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 5, 865 leaves):

$$\left(21\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\mathrm{Cos}[c+dx]\,\mathrm{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/\left(5d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)+$$

$$\left(3\sqrt{2}\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\mathrm{Cos}[c+dx]\,\mathrm{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)-$$

$$\left(10A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\mathrm{Cos}[c+dx]}\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\mathrm{Sin}[c]\right)\Big/\left(3d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\sqrt{\mathrm{Sec}[c+dx]}\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)-$$

$$\left(2C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\mathrm{Cos}[c+dx]}\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\mathrm{Sin}[c]\right)\Big/\left(d\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\sqrt{\mathrm{Sec}[c+dx]}\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(A+C\,\mathrm{Sec}[c+dx]^2\right)\left(-\frac{1}{10d}\left(51A+40C+33A\,\mathrm{Cos}[2c]+20C\,\mathrm{Cos}[2c]\right)\mathrm{Cos}[dx]\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]-\frac{4A\,\mathrm{Cos}[2dx]\,\mathrm{Sin}[2c]}{3d}+\frac{2A\,\mathrm{Cos}[3dx]\,\mathrm{Sin}[3c]}{5d}+\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\mathrm{Sin}\left[\frac{dx}{2}\right]+C\,\mathrm{Sin}\left[\frac{dx}{2}\right]\right)}{d}+\frac{2\left(33A+20C\right)\mathrm{Cos}[c]\,\mathrm{Sin}[dx]}{5d}-\frac{4A\,\mathrm{Cos}[2c]\,\mathrm{Sin}[2dx]}{3d}+\frac{2A\,\mathrm{Cos}[3c]\,\mathrm{Sin}[3dx]}{5d}+\frac{4\left(A+C\right)\mathrm{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Big/\left(\left(A+2C+A\,\mathrm{Cos}[2c+2dx]\right)\sqrt{\mathrm{Sec}[c+dx]}\left(a+a\,\mathrm{Sec}[c+dx]\right)\right)$$

Problem 237: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sec}[c+dx]^{5/2}\left(A+C\,\mathrm{Sec}[c+dx]^2\right)}{\left(a+a\,\mathrm{Sec}[c+dx]\right)^2}\,dx$$

Optimal (type 4, 229 leaves, 9 steps):

$$\frac{(A+7C)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{a^2 d}+$$
$$\frac{2(A+5C)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{3a^2 d}-$$
$$\frac{(A+7C)\sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{a^2 d}+\frac{2(A+5C)\,\text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{3a^2 d}-$$
$$\frac{(A+7C)\,\text{Sec}[c+d x]^{5/2}\,\text{Sin}[c+d x]}{3a^2 d\,(1+\text{Sec}[c+d x])}-\frac{(A+C)\,\text{Sec}[c+d x]^{7/2}\,\text{Sin}[c+d x]}{3d\,(a+a\,\text{Sec}[c+d x])^2}$$

Result (type 5, 860 leaves) :

$$\left(2\sqrt{2}\, A\, e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\, \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\, \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$

$$\left(14\sqrt{2}\, C\, e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\, \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\, \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$

$$\left(8\, A\, \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$

$$\left(40\, C\, \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\left(-\frac{4(A+7C)\,\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+4C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+\frac{16\,C\,\text{Sec}[c]\,\text{Sec}[c+dx]\,\text{Sin}[dx]}{3d}+\frac{16\left(C+A\,\text{Cos}[c]+5C\,\text{Cos}[c]\right)\text{Sec}[c]\,\text{Tan}\left[\frac{c}{2}\right]}{3d}+\frac{4(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3d}\right)\right)\Big/\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)$$

Problem 238: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)}{\left(a+a\,\text{Sec}[c+dx]\right)^2}\,dx$$

Optimal (type 4, 191 leaves, 8 steps):

$$-\frac{4\,C\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{a^2\,d}+\frac{(A-5\,C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{3\,a^2\,d}+\frac{4\,C\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{a^2\,d}+\frac{(A-5\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A+C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Sec}[c+d\,x])^2}$$

Result (type 5, 643 leaves):

$$-\left(\left(8\,\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2\right)\right)+$$
$$\left(4\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\text{Cos}[c+d\,x]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c]\right)\Big/\left(3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2\right)-$$
$$\left(20\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\text{Cos}[c+d\,x]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c]\right)\Big/\left(3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{16\,C\,\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}+\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-5\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-\frac{8\,(-A+5\,C)\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}-\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/\left((A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2\right)$$

Problem 239: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 165 leaves, 7 steps):

$$-\frac{(A-C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{a^2\,d}+\frac{2\,(A+C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{3\,a^2\,d}+\frac{(A-C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{a^2\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A+C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Sec}[c+d\,x])^2}$$

Result (type 5, 835 leaves):

$$-\left(\left(\left(2\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\right.\right.\right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)\Bigg)+$$

$$\left(2\sqrt{2}\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$

$$\left(8\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(3\,d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$

$$\left(8\,C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(3\,d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\right.$$

$$\left(\frac{4\left(A-C\right)\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}-\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(2\,A\,\text{Sin}\left[\frac{dx}{2}\right]-C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3\,d}+\right.$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3\,d}-\frac{16\left(2A-C\right)\text{Tan}\left[\frac{c}{2}\right]}{3\,d}+$$

$$\left.\left.\frac{4\left(A+C\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)$$

Problem 240: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + C\,\text{Sec}[c + d\,x]^2}{\sqrt{\text{Sec}[c + d\,x]}\,\left(a + a\,\text{Sec}[c + d\,x]\right)^2}\,dx$$

Optimal (type 4, 170 leaves, 7 steps):

$$\frac{4\,A\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{a^2\,d} - \frac{(5\,A - C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{3\,a^2\,d} - \frac{(5\,A - C)\,\sqrt{\text{Sec}[c + d\,x]}\,\text{Sin}[c + d\,x]}{3\,a^2\,d\,(1 + \text{Sec}[c + d\,x])} - \frac{(A + C)\,\sqrt{\text{Sec}[c + d\,x]}\,\text{Sin}[c + d\,x]}{3\,d\,\left(a + a\,\text{Sec}[c + d\,x]\right)^2}$$

Result (type 5, 659 leaves):

$$\left(8\sqrt{2}\,A\,e^{-i\,(2c+d x)}\sqrt{\frac{e^{i\,(c+d x)}}{1+e^{2\,i\,(c+d x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2\right)-$$
$$\left(20\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+d x]}\right.$$
$$\left.\left(A+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/\left(3\,d\left(A+2C+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2\right)+$$
$$\left(4\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+d x]}\right.$$
$$\left.\left(A+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/\left(3\,d\left(A+2C+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\sqrt{\text{Sec}[c+d x]}\left(A+C\,\text{Sec}[c+d x]^2\right)\left(-\frac{4\,A\left(3+\text{Cos}[2c]\right)\text{Cos}[d x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}-\right.\right.$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(A\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3\,d}+$$
$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(7\,A\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3\,d}+\frac{16\,A\,\text{Cos}[c]\,\text{Sin}[d x]}{d}+$$
$$\left.\left.\frac{8\,(7A+C)\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}-\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left(\left(A+2C+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2\right)$$

Problem 241: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+d x]^2}{\text{Sec}[c+d x]^{3/2}\left(a+a\,\text{Sec}[c+d x]\right)^2}\,dx$$

Optimal (type 4, 201 leaves, 8 steps):

$$-\frac{(7A+C)\sqrt{\text{Cos}[c+d x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{a^2 d}+$$
$$\frac{2\,(5A+C)\sqrt{\text{Cos}[c+d x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{3\,a^2 d}+\frac{2\,(5A+C)\,\text{Sin}[c+d x]}{3\,a^2 d\sqrt{\text{Sec}[c+d x]}}-$$
$$\frac{(7A+C)\,\text{Sin}[c+d x]}{3\,a^2 d\sqrt{\text{Sec}[c+d x]}\left(1+\text{Sec}[c+d x]\right)}-\frac{(A+C)\,\text{Sin}[c+d x]}{3\,d\sqrt{\text{Sec}[c+d x]}\left(a+a\,\text{Sec}[c+d x]\right)^2}$$

Result (type 5, 888 leaves) :

$$-\left(\left(\left(14\sqrt{2}\,A\,e^{-i\,(2c+d x)}\sqrt{\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\right.\right.\right.$$

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

$$\left.\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2\right)\right)-$$

$$\left(2\sqrt{2}\,C\,e^{-i\,(2c+d x)}\sqrt{\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(d\left(A+2C+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2\right)+$$

$$\left(40\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\left(c+d x\right),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+d x]}\left(A+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(3\,d\left(A+2C+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2\right)+$$

$$\left(8\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\left(c+d x\right),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+d x]}\left(A+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(3\,d\left(A+2C+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\sqrt{\text{Sec}[c+d x]}\left(A+C\,\text{Sec}[c+d x]^2\right)\right.$$

$$\left(\frac{4\left(5A+C+2A\,\text{Cos}[2c]\right)\text{Cos}[d x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}+\right.$$

$$\frac{8\,A\,\text{Cos}[2d x]\,\text{Sin}[2c]}{3d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(A\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3d}-$$

$$\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(5A\,\text{Sin}\left[\frac{d x}{2}\right]+2C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3d}-\frac{32\,A\,\text{Cos}[c]\,\text{Sin}[d x]}{d}+$$

$$\left.\left.\frac{8\,A\,\text{Cos}[2c]\,\text{Sin}[2d x]}{3d}-\frac{16\left(5A+2C\right)\text{Tan}\left[\frac{c}{2}\right]}{3d}+\frac{4\left(A+C\right)\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3d}\right)\right)\Big/$$

$$\left(\left(A+2C+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2\right)$$

Problem 242: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + C\,\text{Sec}[c + d\,x]^2}{\text{Sec}[c + d\,x]^{5/2}\,\left(a + a\,\text{Sec}[c + d\,x]\right)^2}\,dx$$

Optimal (type 4, 236 leaves, 9 steps):

$$\frac{4\,(14\,A + 5\,C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{5\,a^2\,d} - \frac{5\,(3\,A + C)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{3\,a^2\,d} + \frac{4\,(14\,A + 5\,C)\,\text{Sin}[c + d\,x]}{15\,a^2\,d\,\text{Sec}[c + d\,x]^{3/2}} - \frac{5\,(3\,A + C)\,\text{Sin}[c + d\,x]}{3\,a^2\,d\,\sqrt{\text{Sec}[c + d\,x]}} - \frac{(3\,A + C)\,\text{Sin}[c + d\,x]}{a^2\,d\,\text{Sec}[c + d\,x]^{3/2}\,\left(1 + \text{Sec}[c + d\,x]\right)} - \frac{(A + C)\,\text{Sin}[c + d\,x]}{3\,d\,\text{Sec}[c + d\,x]^{3/2}\,\left(a + a\,\text{Sec}[c + d\,x]\right)^2}$$

Result (type 5, 941 leaves):

$$\left(112\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(5d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)+$$

$$\left(8\sqrt{2}\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)-$$

$$\left(20\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)-$$

$$\left(20\,C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)+$$

$$\frac{1}{(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2}\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Sec}[c+dx]}\left(A+C\,\text{Sec}[c+dx]^2\right)\left(-\frac{1}{5d}(151A+60C+73A\,\text{Cos}[2c]+20C\,\text{Cos}[2c])\,\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]-\frac{16A\,\text{Cos}[2dx]\,\text{Sin}[2c]}{3d}+\frac{4A\,\text{Cos}[3dx]\,\text{Sin}[3c]}{5d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(13A\,\text{Sin}\left[\frac{dx}{2}\right]+7C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+\frac{4\,(73A+20C)\,\text{Cos}[c]\,\text{Sin}[dx]}{5d}-\frac{16A\,\text{Cos}[2c]\,\text{Sin}[2dx]}{3d}+\frac{4A\,\text{Cos}[3c]\,\text{Sin}[3dx]}{5d}+\frac{8\,(13A+7C)\,\text{Tan}\left[\frac{c}{2}\right]}{3d}-\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3d}\right)$$

Problem 243: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{7/2} \left(A+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 4, 282 leaves, 10 steps):

$$\frac{(9 A+119 C) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{10 a^3 d}+\frac{(A+11 C) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{2 a^3 d}-\frac{(9 A+119 C) \sqrt{\text{Sec}[c+d x]} \, \text{Sin}[c+d x]}{10 a^3 d}+\frac{(A+11 C) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{2 a^3 d}-\frac{(A+C) \text{Sec}[c+d x]^{9/2} \text{Sin}[c+d x]}{5 d (a+a \text{Sec}[c+d x])^3}-\frac{2 C \text{Sec}[c+d x]^{7/2} \text{Sin}[c+d x]}{3 a d (a+a \text{Sec}[c+d x])^2}-\frac{(9 A+119 C) \text{Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{30 d \left(a^3+a^3 \text{Sec}[c+d x]\right)}$$

Result (type 5, 964 leaves):

$$\left(18\sqrt{2}\, A\, e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\, \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(5d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\left(238\sqrt{2}\, C\, e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\, \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(5d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\left(4A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\left(44C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\frac{1}{\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3}\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)$$

$$\left(-\frac{4\left(9A+119C\right)\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5d}+\right.$$

$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(3A\,\text{Sin}\left[\frac{dx}{2}\right]+13C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{15d}+$$

$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(3A\,\text{Sin}\left[\frac{dx}{2}\right]+29C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+$$

$$\frac{32C\,\text{Sec}[c]\,\text{Sec}[c+dx]\,\text{Sin}[dx]}{3d}+\frac{8\left(4C+3A\,\text{Cos}[c]+33C\,\text{Cos}[c]\right)\text{Sec}[c]\,\text{Tan}\left[\frac{c}{2}\right]}{3d}+$$

$$\left.\frac{8\left(3A+13C\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15d}+\frac{4\left(A+C\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5d}\right)$$

Problem 244: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{5/2} \left(A+C \,\text{Sec}[c+d x]^2\right)}{\left(a+a \,\text{Sec}[c+d x]\right)^3} \, dx$$

Optimal (type 4, 249 leaves, 9 steps):

$$\frac{(A-49 C) \sqrt{\text{Cos}[c+d x]} \,\text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{10 a^3 d}+\frac{(A-13 C) \sqrt{\text{Cos}[c+d x]} \,\text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{6 a^3 d}-\frac{(A-49 C) \sqrt{\text{Sec}[c+d x]} \,\text{Sin}[c+d x]}{10 a^3 d}-\frac{(A+C) \,\text{Sec}[c+d x]^{7/2} \,\text{Sin}[c+d x]}{5 d \left(a+a \,\text{Sec}[c+d x]\right)^3}+\frac{2 (A-4 C) \,\text{Sec}[c+d x]^{5/2} \,\text{Sin}[c+d x]}{15 a d \left(a+a \,\text{Sec}[c+d x]\right)^2}+\frac{(A-13 C) \,\text{Sec}[c+d x]^{3/2} \,\text{Sin}[c+d x]}{6 d \left(a^3+a^3 \,\text{Sec}[c+d x]\right)}$$

Result (type 5, 933 leaves):

$$\left(2\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(5d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)-$$
$$\left(98\sqrt{2}\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(5d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$
$$\left(4A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)-$$
$$\left(52C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\left(-\frac{4(A-49C)\,\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5d}+\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\text{Sin}\left[\frac{dx}{2}\right]-13C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(A\,\text{Sin}\left[\frac{dx}{2}\right]-4C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{15d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5d}-\frac{8(-A+13C)\,\text{Tan}\left[\frac{c}{2}\right]}{3d}+\frac{16(A-4C)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15d}-\frac{4(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5d}\right)\right)\Big/$$
$$\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)$$

Problem 245: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{3/2} \left(A+C \,\text{Sec}[c+d x]^2\right)}{(a+a \,\text{Sec}[c+d x])^3} \, dx$$

Optimal (type 4, 220 leaves, 8 steps):

$$-\frac{(A-9 C) \sqrt{\text{Cos}[c+d x]} \,\text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{10 a^3 d}+\frac{(A+3 C) \sqrt{\text{Cos}[c+d x]} \,\text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{6 a^3 d}-\frac{(A+C) \,\text{Sec}[c+d x]^{5/2} \,\text{Sin}[c+d x]}{5 d (a+a \,\text{Sec}[c+d x])^3}+\frac{2 (2 A-3 C) \,\text{Sec}[c+d x]^{3/2} \,\text{Sin}[c+d x]}{15 a d (a+a \,\text{Sec}[c+d x])^2}+\frac{(A-9 C) \sqrt{\text{Sec}[c+d x]} \,\text{Sin}[c+d x]}{10 d \left(a^3+a^3 \,\text{Sec}[c+d x]\right)}$$

Result (type 5, 932 leaves):

$$-\left(\left(\left(2 \sqrt{2} A e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}} \,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right) \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+C \,\text{Sec}[c+d x]^2\right)\right) \Big/ \left(5 d (A+2 C+A \,\text{Cos}[2 c+2 d x]) (a+a \,\text{Sec}[c+d x])^3\right)\right)+\left(18 \sqrt{2} C e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}} \,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right) \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+C \,\text{Sec}[c+d x]^2\right)\right) \Big/ \left(5 d (A+2 C+A \,\text{Cos}[2 c+2 d x]) (a+a \,\text{Sec}[c+d x])^3\right)+\left(4 A \,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\text{Cos}[c+d x]} \,\text{Csc}\left[\frac{c}{2}\right] \,\text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^{3/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(4\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^{3/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Sec}[c+d\,x]^{3/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{4\,\left(A-9\,C\right)\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5\,d}-\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(7\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-3\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+\right.$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$
$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+\frac{8\,\left(A+3\,C\right)\text{Tan}\left[\frac{c}{2}\right]}{3\,d}-$$
$$\left.\left.\frac{8\,\left(7\,A-3\,C\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{4\,\left(A+C\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 246: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 222 leaves, 8 steps):

$$-\frac{\left(9\,A-C\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}}{10\,a^3\,d}+$$
$$\frac{\left(3\,A+C\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}}{6\,a^3\,d}-$$
$$\frac{\left(A+C\right)\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}+$$
$$\frac{2\,\left(3\,A-2\,C\right)\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,a\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+\frac{\left(3\,A+C\right)\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{6\,d\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}$$

Result (type 5, 934 leaves):

$$-\Bigg(\Bigg(\Bigg(18\sqrt{2}\,A\,e^{-i\,(2c+d x)}\sqrt{\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]$$

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

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\left(A+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/$$

$$\left(5 d\left(A+2C+A\,\text{Cos}[2c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^3\right)\Bigg)+$$

$$\Bigg(2\sqrt{2}\,C\,e^{-i\,(2c+d x)}\sqrt{\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]$$

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

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\left(A+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/$$

$$\left(5 d\left(A+2C+A\,\text{Cos}[2c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$

$$\Bigg(4 A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d x\right),2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^{3/2}\left(A+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\Bigg)\Big/$$

$$\left(d\left(A+2C+A\,\text{Cos}[2c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$

$$\Bigg(4 C\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d x\right),2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^{3/2}\left(A+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\Bigg)\Big/$$

$$\left(3 d\left(A+2C+A\,\text{Cos}[2c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$

$$\Bigg(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Sec}[c+d x]^{3/2}\left(A+C\,\text{Sec}[c+d x]^2\right)$$

$$\Bigg(\frac{4\left(9A-C\right)\text{Cos}[d x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5 d}-\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(9A\,\text{Sin}\left[\frac{d x}{2}\right]-C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}-$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5\left(A\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+$$

$$\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(6A\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{15 d}-\frac{8\left(9A-C\right)\text{Tan}\left[\frac{c}{2}\right]}{3 d}+$$

$$\left.\left.\frac{16\,(6\,A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d}-\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$

$$\left((A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)$$

Problem 247: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{\sqrt{\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 226 leaves, 8 steps):

$$\frac{(49\,A-C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{10\,a^3\,d}-$$

$$\frac{(13\,A-C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{6\,a^3\,d}-$$

$$\frac{(A+C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^3}-\frac{2\,(4\,A-C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^2}-$$

$$\frac{(13\,A-C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{6\,d\,(a^3+a^3\,\text{Sec}[c+d\,x])}$$

Result (type 5, 955 leaves):

$$\left(98\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(5d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)-$$

$$\left(2\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(5d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)-$$

$$\left(52\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\left(4\,C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\frac{1}{\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3}\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\left(-\frac{4\left(39A-C+10A\,\text{Cos}[2c]\right)\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5d}+\right.$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5d}+\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(23A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}-$$

$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(17A\,\text{Sin}\left[\frac{dx}{2}\right]+7C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{15d}+\frac{32A\,\text{Cos}[c]\,\text{Sin}[dx]}{d}+$$

$$\left.\frac{8(23A+C)\,\text{Tan}\left[\frac{c}{2}\right]}{3d}-\frac{8(17A+7C)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15d}+\frac{4(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5d}\right)$$

Problem 248: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+C\,\mathrm{Sec}[c+d\,x]^2}{\mathrm{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 249 leaves, 9 steps):

$$-\frac{1}{10\,a^3\,d}\left(119\,A+9\,C\right)\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\mathrm{Sec}[c+d\,x]}+\frac{\left(11\,A+C\right)\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\mathrm{Sec}[c+d\,x]}}{2\,a^3\,d}+\frac{\left(11\,A+C\right)\mathrm{Sin}[c+d\,x]}{2\,a^3\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}-\frac{\left(A+C\right)\mathrm{Sin}[c+d\,x]}{5\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3}-\frac{2\,A\,\mathrm{Sin}[c+d\,x]}{3\,a\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2}-\frac{\left(119\,A+9\,C\right)\mathrm{Sin}[c+d\,x]}{30\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(a^3+a^3\,\mathrm{Sec}[c+d\,x]\right)}$$

Result (type 5, 988 leaves):

$$-\left(\left(\left(238\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\mathrm{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d\,x]\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(5\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\right)\right)-$$

$$\left(18\,\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\mathrm{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d\,x]\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(5\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\right)+$$

$$\left(44\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d\,x]^{3/2}\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sin}[c]\right)\Big/$$

$$\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$
$$\left(4\,C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$
$$\frac{1}{\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3}$$
$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\frac{4\left(89A+9C+30A\,\text{Cos}[2c]\right)\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5d}+\right.$$
$$\frac{16A\,\text{Cos}[2dx]\,\text{Sin}[2c]}{3d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5d}+$$
$$\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(11A\,\text{Sin}\left[\frac{dx}{2}\right]+6C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{15d}-$$
$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(43A\,\text{Sin}\left[\frac{dx}{2}\right]+9C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}-$$
$$\frac{96A\,\text{Cos}[c]\,\text{Sin}[dx]}{d}+\frac{16A\,\text{Cos}[2c]\,\text{Sin}[2dx]}{3d}-\frac{8(43A+9C)\,\text{Tan}\left[\frac{c}{2}\right]}{3d}+$$
$$\left.\frac{16(11A+6C)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15d}-\frac{4(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5d}\right)$$

Problem 249: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+dx]^2}{\text{Sec}[c+dx]^{5/2}\left(a+a\,\text{Sec}[c+dx]\right)^3}\,dx$$

Optimal (type 4, 290 leaves, 10 steps):

$$\frac{7(33A+7C)\sqrt{\text{Cos}[c+dx]}\;\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}}{10a^3d}-$$
$$\frac{(63A+13C)\sqrt{\text{Cos}[c+dx]}\;\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}}{6a^3d}+$$
$$\frac{7(33A+7C)\,\text{Sin}[c+dx]}{30a^3d\,\text{Sec}[c+dx]^{3/2}}-\frac{(63A+13C)\,\text{Sin}[c+dx]}{6a^3d\sqrt{\text{Sec}[c+dx]}}-\frac{(A+C)\,\text{Sin}[c+dx]}{5d\,\text{Sec}[c+dx]^{3/2}\left(a+a\,\text{Sec}[c+dx]\right)^3}-$$
$$\frac{2(6A+C)\,\text{Sin}[c+dx]}{15ad\,\text{Sec}[c+dx]^{3/2}\left(a+a\,\text{Sec}[c+dx]\right)^2}-\frac{(63A+13C)\,\text{Sin}[c+dx]}{10d\,\text{Sec}[c+dx]^{3/2}\left(a^3+a^3\,\text{Sec}[c+dx]\right)}$$

Result (type 5, 1032 leaves):

$$\left(462\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2\,i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+dx)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(5\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+dx])^3\right)+$$
$$\left(98\sqrt{2}\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2\,i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+dx)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\left(A+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(5\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+dx])^3\right)-$$
$$\left(84\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+dx])^3\right)-$$
$$\left(52\,C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+dx])^3\right)+$$
$$\frac{1}{(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+dx])^3}\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Sec}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(-\frac{1}{5\,d}2\,(329\,A+78\,C+133\,A\,\text{Cos}[2\,c]+20\,C\,\text{Cos}[2\,c])\,\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]-\right.$$
$$\frac{16\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{d}+\frac{8\,A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{5\,d}+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5\,d}+$$
$$\frac{184\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(3\,A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3\,d}-$$
$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(27\,A\,\text{Sin}\left[\frac{dx}{2}\right]+17\,C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{15\,d}+\frac{8\,(133\,A+20\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{5\,d}-$$

$$\frac{16\,A\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{d}+\frac{8\,A\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{5\,d}+\frac{184\,(3\,A+C)\,\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}-$$
$$\left.\frac{8\,(27\,A+17\,C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{4\,(A+C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)$$

Problem 261: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 171 leaves, 5 steps):

$$\frac{a^{3/2}\,(8\,A+7\,C)\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{4\,d}+\frac{a^2\,(8\,A-5\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{4\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+$$
$$\frac{3\,a\,C\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{4\,d}+$$
$$\frac{C\,\sqrt{\mathrm{Sec}[c+d\,x]}\,(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{2\,d}$$

Result (type 3, 378 leaves):

$$\Big((8\,A+7\,C)\,\mathrm{Cos}[c+d\,x]^3\,\Big(-\mathrm{Log}[1+\mathrm{Sec}[c+d\,x]]+$$
$$\mathrm{Log}\left[\sqrt{\mathrm{Sec}[c+d\,x]}+\mathrm{Sec}[c+d\,x]^{3/2}+\sqrt{1+\mathrm{Sec}[c+d\,x]}\,\sqrt{-1+\mathrm{Sec}[c+d\,x]^2}\right]\Big)$$
$$(a\,(1+\mathrm{Sec}[c+d\,x]))^{3/2}\,\sqrt{-1+\mathrm{Sec}[c+d\,x]^2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sin}[c+d\,x]\Big)\Big/$$
$$\left(2\,d\,\left(1-\mathrm{Cos}[c+d\,x]^2\right)\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(1+\mathrm{Sec}[c+d\,x])^{3/2}\right)+$$
$$\Bigg(\sqrt{(1+\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]}\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{3/2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\frac{4\,A\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{d}+\frac{\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(-8\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+5\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{2\,d}+$$
$$\frac{4\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{d}+\frac{C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}[d\,x]}{d}-$$
$$\frac{(-2\,C+8\,A\,\mathrm{Cos}[c]-7\,C\,\mathrm{Cos}[c])\,\mathrm{Sec}[c]\,\mathrm{Tan}\left[\frac{c}{2}\right]}{2\,d}\Bigg)\Bigg)\Bigg/$$
$$\left((A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{3/2}\,(1+\mathrm{Sec}[c+d\,x])^{3/2}\right)$$

Problem 262: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 3, 169 leaves, 5 steps):

$$\frac{3\,a^{3/2}\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{a^2\,(8\,A-3\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{a\,(2\,A-3\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}+\frac{2\,A\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 3, 382 leaves):

$$\Bigg(6\,C\,\text{Cos}[c+d\,x]^3\,\Big(-\text{Log}[1+\text{Sec}[c+d\,x]]+\text{Log}\Big[\sqrt{\text{Sec}[c+d\,x]}+\text{Sec}[c+d\,x]^{3/2}+\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{-1+\text{Sec}[c+d\,x]^2}\Big]\Big)\,(a\,(1+\text{Sec}[c+d\,x]))^{3/2}\,\sqrt{-1+\text{Sec}[c+d\,x]^2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c+d\,x]\Bigg)\Big/\Big(d\,\left(1-\text{Cos}[c+d\,x]^2\right)\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(1+\text{Sec}[c+d\,x])^{3/2}\Big)+\Bigg(\sqrt{(1+\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]}\,(a\,(1+\text{Sec}[c+d\,x]))^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\bigg(\frac{16\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{2\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{3\,d}-\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(8\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-3\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+\frac{16\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+\frac{2\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{3\,d}-\frac{2\,(8\,A-3\,C)\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\bigg)\Bigg)\Big/\Big((A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{3/2}\,(1+\text{Sec}[c+d\,x])^{3/2}\Big)$$

Problem 263: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{5/2}}\,dx$$

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

$$\frac{2 a^{3/2} C \operatorname{ArcSinh}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right]}{d}+\frac{2 a^2 (4 A+5 C) \sqrt{\operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{5 d \sqrt{a+a \operatorname{Sec}[c+d x]}}+\frac{2 a A \sqrt{a+a \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{5 d \sqrt{\operatorname{Sec}[c+d x]}}+\frac{2 A (a+a \operatorname{Sec}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{5 d \operatorname{Sec}[c+d x]^{3/2}}$$

Result (type 3, 428 leaves) :

$$\Big(4 C \operatorname{Cos}[c+d x]^3 \Big(-\operatorname{Log}[1+\operatorname{Sec}[c+d x]]+\operatorname{Log}\Big[\sqrt{\operatorname{Sec}[c+d x]}+\operatorname{Sec}[c+d x]^{3/2}+\sqrt{1+\operatorname{Sec}[c+d x]} \sqrt{-1+\operatorname{Sec}[c+d x]^2}\Big]\Big) (a (1+\operatorname{Sec}[c+d x]))^{3/2} \sqrt{-1+\operatorname{Sec}[c+d x]^2} \left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[c+d x]\Big) \Big/ \Big(d \left(1-\operatorname{Cos}[c+d x]^2\right) (A+2 C+A \operatorname{Cos}[2 c+2 d x]) (1+\operatorname{Sec}[c+d x])^{3/2}\Big)+$$

$$\Big(\sqrt{(1+\operatorname{Cos}[c+d x]) \operatorname{Sec}[c+d x]} (a (1+\operatorname{Sec}[c+d x]))^{3/2} \left(A+C \operatorname{Sec}[c+d x]^2\right) \Big(\frac{(17 A+20 C) \operatorname{Cos}[d x] \operatorname{Sin}[c]}{5 d}+\frac{4 A \operatorname{Cos}[2 d x] \operatorname{Sin}[2 c]}{5 d}+\frac{A \operatorname{Cos}[3 d x] \operatorname{Sin}[3 c]}{5 d}-\frac{4 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(4 A \operatorname{Sin}\left[\frac{d x}{2}\right]+5 C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+\frac{(17 A+20 C) \operatorname{Cos}[c] \operatorname{Sin}[d x]}{5 d}+\frac{4 A \operatorname{Cos}[2 c] \operatorname{Sin}[2 d x]}{5 d}+\frac{A \operatorname{Cos}[3 c] \operatorname{Sin}[3 d x]}{5 d}-\frac{4 (4 A+5 C) \operatorname{Tan}\left[\frac{c}{2}\right]}{5 d}\Big)\Big) \Big/ \Big((A+2 C+A \operatorname{Cos}[2 c+2 d x]) \operatorname{Sec}[c+d x]^{3/2} (1+\operatorname{Sec}[c+d x])^{3/2}\Big)$$

Problem 272: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a \operatorname{Sec}[c+d x])^{5/2} \left(A+C \operatorname{Sec}[c+d x]^2\right)}{\operatorname{Sec}[c+d x]^{5/2}} \, dx$$

Optimal (type 3, 210 leaves, 6 steps) :

$$\frac{5 a^{5/2} C \operatorname{ArcSinh}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right]}{d}+\frac{a^3 (64 A+15 C) \sqrt{\operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{15 d \sqrt{a+a \operatorname{Sec}[c+d x]}}-\frac{a^2 (16 A-15 C) \sqrt{\operatorname{Sec}[c+d x]} \sqrt{a+a \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{15 d}+\frac{2 a A (a+a \operatorname{Sec}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{3 d \sqrt{\operatorname{Sec}[c+d x]}}+\frac{2 A (a+a \operatorname{Sec}[c+d x])^{5/2} \operatorname{Sin}[c+d x]}{5 d \operatorname{Sec}[c+d x]^{3/2}}$$

Result (type 3, 428 leaves) :

$$\left(10\,C\,\text{Cos}[c+d\,x]^3\left(-\text{Log}[1+\text{Sec}[c+d\,x]]+\text{Log}\left[\sqrt{\text{Sec}[c+d\,x]}+\text{Sec}[c+d\,x]^{3/2}+\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{-1+\text{Sec}[c+d\,x]^2}\right]\right)\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\sqrt{-1+\text{Sec}[c+d\,x]^2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c+d\,x]\right)\Big/\left(d\,\left(1-\text{Cos}[c+d\,x]^2\right)\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)(1+\text{Sec}[c+d\,x])^{5/2}\right)+$$

$$\left(\sqrt{(1+\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]}\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{(131\,A+60\,C)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{15\,d}+\frac{22\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{15\,d}+\frac{A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{5\,d}-\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(64\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+15\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+\frac{(131\,A+60\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{15\,d}+\frac{22\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{15\,d}+\frac{A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{5\,d}-\frac{2\,(64\,A+15\,C)\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d}\right)\right)\Big/\left(\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{3/2}\,(1+\text{Sec}[c+d\,x])^{5/2}\right)$$

Problem 273: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^{5/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{7/2}}\,dx$$

Optimal (type 3, 210 leaves, 6 steps):

$$\frac{2\,a^{5/2}\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a^3\,(32\,A+49\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{21\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{2\,a^2\,(8\,A+7\,C)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{21\,d\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{2\,a\,A\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{7\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{2\,A\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{7\,d\,\text{Sec}[c+d\,x]^{5/2}}$$

Result (type 3, 474 leaves):

$$\left(4\,C\,Cos[c+d\,x]^3\,\left(-Log[1+Sec[c+d\,x]]+Log\left[\sqrt{Sec[c+d\,x]}+Sec[c+d\,x]^{3/2}+\sqrt{1+Sec[c+d\,x]}\,\sqrt{-1+Sec[c+d\,x]^2}\right]\right)\left(a\,(1+Sec[c+d\,x])\right)^{5/2}\sqrt{-1+Sec[c+d\,x]^2}\,\left(A+C\,Sec[c+d\,x]^2\right)Sin[c+d\,x]\right)\Big/\left(d\,\left(1-Cos[c+d\,x]^2\right)\left(A+2\,C+A\,Cos[2\,c+2\,d\,x]\right)(1+Sec[c+d\,x])^{5/2}\right)+\frac{1}{(A+2\,C+A\,Cos[2\,c+2\,d\,x])\,Sec[c+d\,x]^{3/2}\,(1+Sec[c+d\,x])^{5/2}}\sqrt{(1+Cos[c+d\,x])\,Sec[c+d\,x]}\,\left(a\,(1+Sec[c+d\,x])\right)^{5/2}\left(A+C\,Sec[c+d\,x]^2\right)\left(\frac{(137\,A+196\,C)\,Cos[d\,x]\,Sin[c]}{21\,d}+\frac{(31\,A+14\,C)\,Cos[2\,d\,x]\,Sin[2\,c]}{21\,d}+\frac{3\,A\,Cos[3\,d\,x]\,Sin[3\,c]}{7\,d}+\frac{A\,Cos[4\,d\,x]\,Sin[4\,c]}{14\,d}-\frac{4\,Sec\left[\frac{c}{2}\right]Sec\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(32\,A\,Sin\left[\frac{d\,x}{2}\right]+49\,C\,Sin\left[\frac{d\,x}{2}\right]\right)}{21\,d}+\frac{(137\,A+196\,C)\,Cos[c]\,Sin[d\,x]}{21\,d}+\frac{(31\,A+14\,C)\,Cos[2\,c]\,Sin[2\,d\,x]}{21\,d}+\frac{3\,A\,Cos[3\,c]\,Sin[3\,d\,x]}{7\,d}+\frac{A\,Cos[4\,c]\,Sin[4\,d\,x]}{14\,d}-\frac{4\,(32\,A+49\,C)\,Tan\left[\frac{c}{2}\right]}{21\,d}\right)$$

Problem 277: Result more than twice size of optimal antiderivative.

$$\int\frac{Sec[c+d\,x]^{5/2}\left(A+C\,Sec[c+d\,x]^2\right)}{\sqrt{a+a\,Sec[c+d\,x]}}\,dx$$

Optimal (type 3, 226 leaves, 8 steps):

$$-\frac{(8\,A+9\,C)\,ArcSinh\left[\frac{\sqrt{a}\,Tan[c+d\,x]}{\sqrt{a+a\,Sec[c+d\,x]}}\right]}{8\,\sqrt{a}\,d}+\frac{\sqrt{2}\,(A+C)\,ArcTanh\left[\frac{\sqrt{a}\,\sqrt{Sec[c+d\,x]}\,Sin[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,Sec[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{(8\,A+7\,C)\,Sec[c+d\,x]^{3/2}\,Sin[c+d\,x]}{8\,d\,\sqrt{a+a\,Sec[c+d\,x]}}-\frac{C\,Sec[c+d\,x]^{5/2}\,Sin[c+d\,x]}{12\,d\,\sqrt{a+a\,Sec[c+d\,x]}}+\frac{C\,Sec[c+d\,x]^{7/2}\,Sin[c+d\,x]}{3\,d\,\sqrt{a+a\,Sec[c+d\,x]}}$$

Result (type 3, 793 leaves):

$$
\left(\sqrt{(1+\text{Cos}[c+d x])\,\text{Sec}[c+d x]}\,\sqrt{1+\text{Sec}[c+d x]}\right.
$$

$$
\left(A+C\,\text{Sec}[c+d x]^2\right)\left(\frac{\left(-10\,C+24\,A\,\text{Cos}[c]+21\,C\,\text{Cos}[c]\right)\text{Sin}\left[\frac{c}{2}\right]}{6\,d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Cos}\left[\frac{3 c}{2}\right]\right)}+\right.
$$

$$
\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(24\,A\,\text{Sin}\left[\frac{d x}{2}\right]+31\,C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{12\,d}+
$$

$$
\left.\left.\frac{2\,C\,\text{Sec}[c]\,\text{Sec}[c+d x]^2\,\text{Sin}[d x]}{3\,d}+\frac{\text{Sec}[c]\,\text{Sec}[c+d x]\left(4\,C\,\text{Sin}[c]-5\,C\,\text{Sin}[d x]\right)}{6\,d}\right)\right)\Big/
$$

$$
\left(\left(A+2\,C+A\,\text{Cos}[2 c+2 d x]\right)\text{Sec}[c+d x]^{3/2}\sqrt{a\,(1+\text{Sec}[c+d x])}\right)+
$$

$$
\frac{1}{8\left(A+2\,C+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{a\,(1+\text{Sec}[c+d x])}}
$$

$$
\text{Cos}[c+d x]^2\sqrt{1+\text{Sec}[c+d x]}\left(A+C\,\text{Sec}[c+d x]^2\right)
$$

$$
\left(\frac{1}{2\,d\,(1+\text{Cos}[c+d x])\sqrt{2-2\,\text{Cos}[c+d x]^2}\,\sqrt{1-\text{Cos}[c+d x]^2}}\right.
$$

$$
(8\,A+7\,C)\,\text{Cos}[c+d x]^2\left(\text{Log}\left[1-2\,\text{Sec}[c+d x]-3\,\text{Sec}[c+d x]^2-\right.\right.
$$

$$
\left.2\sqrt{2}\,\sqrt{\text{Sec}[c+d x]}\,\sqrt{1+\text{Sec}[c+d x]}\,\sqrt{-1+\text{Sec}[c+d x]^2}\right]-\text{Log}\left[1-2\,\text{Sec}[c+d x]-\right.
$$

$$
\left.\left.3\,\text{Sec}[c+d x]^2+2\sqrt{2}\,\sqrt{\text{Sec}[c+d x]}\,\sqrt{1+\text{Sec}[c+d x]}\,\sqrt{-1+\text{Sec}[c+d x]^2}\right]\right)
$$

$$
(1+\text{Sec}[c+d x])\sqrt{-1+\text{Sec}[c+d x]^2}\,\text{Sin}[c+d x]+
$$

$$
\frac{1}{4\,d\,(1+\text{Cos}[c+d x])\left(1-\text{Cos}[c+d x]^2\right)}\,(-8\,A-9\,C)\,\text{Cos}[c+d x]^2\left(-8\,\text{Log}[1+\text{Sec}[c+d x]]+\right.
$$

$$
8\,\text{Log}\left[\sqrt{\text{Sec}[c+d x]}+\text{Sec}[c+d x]^{3/2}+\sqrt{1+\text{Sec}[c+d x]}\,\sqrt{-1+\text{Sec}[c+d x]^2}\right]+
$$

$$
\sqrt{2}\left(-\text{Log}\left[1-2\,\text{Sec}[c+d x]-3\,\text{Sec}[c+d x]^2-2\sqrt{2}\,\sqrt{\text{Sec}[c+d x]}\,\sqrt{1+\text{Sec}[c+d x]}\right.\right.
$$

$$
\left.\sqrt{-1+\text{Sec}[c+d x]^2}\right]+\text{Log}\left[1-2\,\text{Sec}[c+d x]-3\,\text{Sec}[c+d x]^2+\right.
$$

$$
\left.\left.\left.2\sqrt{2}\,\sqrt{\text{Sec}[c+d x]}\,\sqrt{1+\text{Sec}[c+d x]}\,\sqrt{-1+\text{Sec}[c+d x]^2}\right]\right)\right)
$$

$$
\left.(1+\text{Sec}[c+d x])\sqrt{-1+\text{Sec}[c+d x]^2}\,\text{Sin}[c+d x]\right)
$$

Problem 278: Result more than twice size of optimal antiderivative.

$$
\int\frac{\text{Sec}[c+d x]^{3/2}\left(A+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+a\,\text{Sec}[c+d x]}}\,dx
$$

Optimal (type 3, 183 leaves, 7 steps):

$$\frac{(8A+7C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{4\sqrt{a}\,d}-\frac{\sqrt{2}\,(A+C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{\sqrt{a}\,d}-\frac{C\,\text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{4d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{C\,\text{Sec}[c+d x]^{5/2}\,\text{Sin}[c+d x]}{2d\sqrt{a+a\,\text{Sec}[c+d x]}}$$

Result (type 3, 730 leaves):

$$\left(\sqrt{(1+\text{Cos}[c+d x])\,\text{Sec}[c+d x]}\,\sqrt{1+\text{Sec}[c+d x]}\,\left(A+C\,\text{Sec}[c+d x]^2\right)\left(-\frac{C\,(-2+\text{Cos}[c])\,\text{Sin}\left[\frac{c}{2}\right]}{d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Cos}\left[\frac{3c}{2}\right]\right)}-\frac{3C\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\text{Sin}\left[\frac{d x}{2}\right]}{2d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d x]\,\text{Sin}[d x]}{d}\right)\right)\Bigg/\left((A+2C+A\,\text{Cos}[2c+2d x])\,\text{Sec}[c+d x]^{3/2}\sqrt{a\,(1+\text{Sec}[c+d x])}\right)+$$

$$\frac{1}{4\,(A+2C+A\,\text{Cos}[2c+2d x])\sqrt{a\,(1+\text{Sec}[c+d x])}}\,\text{Cos}[c+d x]^2\sqrt{1+\text{Sec}[c+d x]}\,\left(A+C\,\text{Sec}[c+d x]^2\right)$$

$$\left(-\left(\left(C\,\text{Cos}[c+d x]^2\left(\text{Log}\left[1-2\,\text{Sec}[c+d x]-3\,\text{Sec}[c+d x]^2-2\sqrt{2}\sqrt{\text{Sec}[c+d x]}\sqrt{1+\text{Sec}[c+d x]}\sqrt{-1+\text{Sec}[c+d x]^2}\right]-\text{Log}\left[1-2\,\text{Sec}[c+d x]-3\,\text{Sec}[c+d x]^2+2\sqrt{2}\sqrt{\text{Sec}[c+d x]}\sqrt{1+\text{Sec}[c+d x]}\sqrt{-1+\text{Sec}[c+d x]^2}\right]\right)(1+\text{Sec}[c+d x])\sqrt{-1+\text{Sec}[c+d x]^2}\,\text{Sin}[c+d x]\right)\Bigg/\left(2d\,(1+\text{Cos}[c+d x])\sqrt{2-2\,\text{Cos}[c+d x]^2}\sqrt{1-\text{Cos}[c+d x]^2}\right)\right)-$$

$$\frac{1}{4d\,(1+\text{Cos}[c+d x])\left(1-\text{Cos}[c+d x]^2\right)}\,(-8A-7C)\,\text{Cos}[c+d x]^2\left(-8\,\text{Log}[1+\text{Sec}[c+d x]]+8\,\text{Log}\left[\sqrt{\text{Sec}[c+d x]}+\text{Sec}[c+d x]^{3/2}+\sqrt{1+\text{Sec}[c+d x]}\sqrt{-1+\text{Sec}[c+d x]^2}\right]+\sqrt{2}\left(-\text{Log}\left[1-2\,\text{Sec}[c+d x]-3\,\text{Sec}[c+d x]^2-2\sqrt{2}\sqrt{\text{Sec}[c+d x]}\sqrt{1+\text{Sec}[c+d x]}\sqrt{-1+\text{Sec}[c+d x]^2}\right]+\text{Log}\left[1-2\,\text{Sec}[c+d x]-3\,\text{Sec}[c+d x]^2+2\sqrt{2}\sqrt{\text{Sec}[c+d x]}\sqrt{1+\text{Sec}[c+d x]}\sqrt{-1+\text{Sec}[c+d x]^2}\right]\right)\right)$$

$$(1+\text{Sec}[c+d x])\sqrt{-1+\text{Sec}[c+d x]^2}\,\text{Sin}[c+d x]\Bigg)$$

Problem 279: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{\text{Sec}[c+d x]}\ \left(A+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+a\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 3, 133 leaves, 6 steps):

$$-\frac{C\,\text{ArcSinh}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{\sqrt{a}\ d}+\frac{\sqrt{2}\ (A+C)\ \text{ArcTanh}\left[\frac{\sqrt{a}\ \sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{\sqrt{2}\ \sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{\sqrt{a}\ d}+\frac{C\,\text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{d\,\sqrt{a+a\,\text{Sec}[c+d x]}}$$

Result (type 3, 717 leaves):

$$\Big((2A+C)\operatorname{Cos}[c+dx]^4\Big(\operatorname{Log}\Big[1-2\operatorname{Sec}[c+dx]-3\operatorname{Sec}[c+dx]^2-2\sqrt{2}\sqrt{\operatorname{Sec}[c+dx]}\sqrt{1+\operatorname{Sec}[c+dx]}\sqrt{-1+\operatorname{Sec}[c+dx]^2}\Big]-\operatorname{Log}\Big[1-2\operatorname{Sec}[c+dx]-3\operatorname{Sec}[c+dx]^2+2\sqrt{2}\sqrt{\operatorname{Sec}[c+dx]}\sqrt{1+\operatorname{Sec}[c+dx]}\sqrt{-1+\operatorname{Sec}[c+dx]^2}\Big]\Big)(1+\operatorname{Sec}[c+dx])^{3/2}\sqrt{-1+\operatorname{Sec}[c+dx]^2}\left(A+C\operatorname{Sec}[c+dx]^2\right)\operatorname{Sin}[c+dx]\Big)\Big/\Big(2d\,(1+\operatorname{Cos}[c+dx])\sqrt{2-2\operatorname{Cos}[c+dx]^2}\sqrt{1-\operatorname{Cos}[c+dx]^2}\,(A+2C+A\operatorname{Cos}[2c+2dx])\sqrt{a\,(1+\operatorname{Sec}[c+dx])}\Big)-$$

$$\Big(C\operatorname{Cos}[c+dx]^4\Big(-8\operatorname{Log}[1+\operatorname{Sec}[c+dx]]+8\operatorname{Log}\Big[\sqrt{\operatorname{Sec}[c+dx]}+\operatorname{Sec}[c+dx]^{3/2}+\sqrt{1+\operatorname{Sec}[c+dx]}\sqrt{-1+\operatorname{Sec}[c+dx]^2}\Big]+\sqrt{2}\Big(-\operatorname{Log}\Big[1-2\operatorname{Sec}[c+dx]-3\operatorname{Sec}[c+dx]^2-2\sqrt{2}\sqrt{\operatorname{Sec}[c+dx]}\sqrt{1+\operatorname{Sec}[c+dx]}\sqrt{-1+\operatorname{Sec}[c+dx]^2}\Big]+\operatorname{Log}\Big[1-2\operatorname{Sec}[c+dx]-3\operatorname{Sec}[c+dx]^2+2\sqrt{2}\sqrt{\operatorname{Sec}[c+dx]}\sqrt{1+\operatorname{Sec}[c+dx]}\sqrt{-1+\operatorname{Sec}[c+dx]^2}\Big]\Big)\Big)(1+\operatorname{Sec}[c+dx])^{3/2}\sqrt{-1+\operatorname{Sec}[c+dx]^2}\left(A+C\operatorname{Sec}[c+dx]^2\right)\operatorname{Sin}[c+dx]\Big)\Big/\Big(4d\,(1+\operatorname{Cos}[c+dx])\left(1-\operatorname{Cos}[c+dx]^2\right)(A+2C+A\operatorname{Cos}[2c+2dx])\sqrt{a\,(1+\operatorname{Sec}[c+dx])}\Big)+$$

$$\left(\sqrt{(1+\operatorname{Cos}[c+dx])\operatorname{Sec}[c+dx]}\sqrt{1+\operatorname{Sec}[c+dx]}\left(A+C\operatorname{Sec}[c+dx]^2\right)\left(\frac{2C\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\operatorname{Sin}\left[\frac{dx}{2}\right]}{d}+\frac{2C\operatorname{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Big/\left((A+2C+A\operatorname{Cos}[2c+2dx])\operatorname{Sec}[c+dx]^{3/2}\sqrt{a\,(1+\operatorname{Sec}[c+dx])}\right)$$

Problem 280: Result more than twice size of optimal antiderivative.

$$\int\frac{A+C\operatorname{Sec}[c+dx]^2}{\sqrt{\operatorname{Sec}[c+dx]}\sqrt{a+a\operatorname{Sec}[c+dx]}}\,dx$$

Optimal (type 3, 135 leaves, 6 steps):

$$\frac{2\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}-$$

$$\frac{\sqrt{2}\,(A+C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{2\,A\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 504 leaves):

$$-\frac{1}{4\,d\,(-1+\text{Sec}[c+d\,x])\,\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}}\text{Tan}[c+d\,x]$$

$$\left(\frac{8\,A}{\sqrt{\frac{1}{1+\text{Cos}[c+d\,x]}}}-8\,A\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1+\text{Sec}[c+d\,x]}+8\,C\,\text{Log}[1+\text{Sec}[c+d\,x]]\,\sqrt{\text{Tan}[c+d\,x]^2}-\right.$$

$$8\,C\,\text{Log}\left[\sqrt{\text{Sec}[c+d\,x]}+\text{Sec}[c+d\,x]^{3/2}+\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]^2}\right]\sqrt{\text{Tan}[c+d\,x]^2}+$$

$$\sqrt{2}\,A\,\text{Log}\left[1-2\,\text{Sec}[c+d\,x]-3\,\text{Sec}[c+d\,x]^2-2\,\sqrt{2}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1+\text{Sec}[c+d\,x]}\right.$$

$$\left.\sqrt{\text{Tan}[c+d\,x]^2}\right]\sqrt{\text{Tan}[c+d\,x]^2}+\sqrt{2}\,C\,\text{Log}\left[1-2\,\text{Sec}[c+d\,x]-3\,\text{Sec}[c+d\,x]^2-\right.$$

$$\left.2\,\sqrt{2}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]^2}\right]\sqrt{\text{Tan}[c+d\,x]^2}-\sqrt{2}\,A\,\text{Log}\left[\right.$$

$$\left.1-2\,\text{Sec}[c+d\,x]-3\,\text{Sec}[c+d\,x]^2+2\,\sqrt{2}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]^2}\right]$$

$$\sqrt{\text{Tan}[c+d\,x]^2}-\sqrt{2}\,C\,\text{Log}\left[1-2\,\text{Sec}[c+d\,x]-3\,\text{Sec}[c+d\,x]^2+\right.$$

$$\left.\left.2\,\sqrt{2}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]^2}\right]\sqrt{\text{Tan}[c+d\,x]^2}\right)$$

Problem 281: Result more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 136 leaves, 4 steps):

$$\frac{\sqrt{2}\,(A+C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+$$

$$\frac{2\,A\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{2\,A\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 462 leaves):

$$\Big((A+C)\operatorname{Cos}[c+d x]^4\Big(\operatorname{Log}\Big[1-2\operatorname{Sec}[c+d x]-3\operatorname{Sec}[c+d x]^2-2\sqrt{2}\sqrt{\operatorname{Sec}[c+d x]}\sqrt{1+\operatorname{Sec}[c+d x]}\sqrt{-1+\operatorname{Sec}[c+d x]^2}\Big]-\operatorname{Log}\Big[1-2\operatorname{Sec}[c+d x]-3\operatorname{Sec}[c+d x]^2+2\sqrt{2}\sqrt{\operatorname{Sec}[c+d x]}\sqrt{1+\operatorname{Sec}[c+d x]}\sqrt{-1+\operatorname{Sec}[c+d x]^2}\Big]\Big)(1+\operatorname{Sec}[c+d x])^{3/2}\sqrt{-1+\operatorname{Sec}[c+d x]^2}\left(A+C\operatorname{Sec}[c+d x]^2\right)\operatorname{Sin}[c+d x]\Big)\Big/\Big(d(1+\operatorname{Cos}[c+d x])\sqrt{2-2\operatorname{Cos}[c+d x]^2}\sqrt{1-\operatorname{Cos}[c+d x]^2}(A+2C+A\operatorname{Cos}[2c+2d x])\sqrt{a(1+\operatorname{Sec}[c+d x])}\Big)+\Big(\sqrt{(1+\operatorname{Cos}[c+d x])\operatorname{Sec}[c+d x]}\sqrt{1+\operatorname{Sec}[c+d x]}\left(A+C\operatorname{Sec}[c+d x]^2\right)\Big(-\frac{8A\operatorname{Cos}[d x]\operatorname{Sin}[c]}{3d}+\frac{2A\operatorname{Cos}[2d x]\operatorname{Sin}[2c]}{3d}+\frac{8A\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\operatorname{Sin}\left[\frac{d x}{2}\right]}{3d}-\frac{8A\operatorname{Cos}[c]\operatorname{Sin}[d x]}{3d}+\frac{2A\operatorname{Cos}[2c]\operatorname{Sin}[2d x]}{3d}+\frac{8A\operatorname{Tan}\left[\frac{c}{2}\right]}{3d}\Big)\Big)\Big/\Big((A+2C+A\operatorname{Cos}[2c+2d x])\operatorname{Sec}[c+d x]^{3/2}\sqrt{a(1+\operatorname{Sec}[c+d x])}\Big)$$

Problem 282: Result more than twice size of optimal antiderivative.

$$\int\frac{A+C\operatorname{Sec}[c+d x]^2}{\operatorname{Sec}[c+d x]^{5/2}\sqrt{a+a\operatorname{Sec}[c+d x]}}\,dx$$

Optimal (type 3, 181 leaves, 5 steps):

$$-\frac{\sqrt{2}(A+C)\operatorname{ArcTanh}\left[\frac{\sqrt{a}\sqrt{\operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{\sqrt{2}\sqrt{a+a\operatorname{Sec}[c+d x]}}\right]}{\sqrt{a}\,d}+\frac{2A\operatorname{Sin}[c+d x]}{5d\operatorname{Sec}[c+d x]^{3/2}\sqrt{a+a\operatorname{Sec}[c+d x]}}-\frac{2A\operatorname{Sin}[c+d x]}{15d\sqrt{\operatorname{Sec}[c+d x]}\sqrt{a+a\operatorname{Sec}[c+d x]}}+\frac{2(13A+15C)\sqrt{\operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{15d\sqrt{a+a\operatorname{Sec}[c+d x]}}$$

Result (type 3, 528 leaves):

$$-\left(\left(\left((A+C)\,\text{Cos}[c+d\,x]^4\left(\text{Log}\left[1-2\,\text{Sec}[c+d\,x]-3\,\text{Sec}[c+d\,x]^2-2\sqrt{2}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{-1+\text{Sec}[c+d\,x]^2}\,\right]-\text{Log}\left[1-2\,\text{Sec}[c+d\,x]-3\,\text{Sec}[c+d\,x]^2+2\sqrt{2}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{-1+\text{Sec}[c+d\,x]^2}\,\right]\right)\left(1+\text{Sec}[c+d\,x]\right)^{3/2}\sqrt{-1+\text{Sec}[c+d\,x]^2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c+d\,x]\right)\Big/\left(d\,\left(1+\text{Cos}[c+d\,x]\right)\sqrt{2-2\,\text{Cos}[c+d\,x]^2}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\right)\right)+$$

$$\left(\sqrt{\left(1+\text{Cos}[c+d\,x]\right)\text{Sec}[c+d\,x]}\,\sqrt{1+\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{(71\,A+60\,C)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{15\,d}-\frac{8\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{15\,d}+\frac{A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{5\,d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(17\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+15\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+\frac{(71\,A+60\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{15\,d}-\frac{8\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{15\,d}+\frac{A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{5\,d}-\frac{4\,(17\,A+15\,C)\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d}\right)\right)\Big/\left(\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{3/2}\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\right)$$

Problem 283: Result more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{\text{Sec}[c+d\,x]^{7/2}\sqrt{a+a\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 224 leaves, 6 steps):

$$\frac{\sqrt{2}\,(A+C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{2\,A\,\text{Sin}[c+d\,x]}{7\,d\,\text{Sec}[c+d\,x]^{5/2}\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{2\,A\,\text{Sin}[c+d\,x]}{35\,d\,\text{Sec}[c+d\,x]^{3/2}\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{2\,(31\,A+35\,C)\,\text{Sin}[c+d\,x]}{105\,d\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{2\,(43\,A+35\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{105\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 573 leaves):

$$\left((A+C)\operatorname{Cos}[c+d x]^4\left(\operatorname{Log}\left[1-2\operatorname{Sec}[c+d x]-3\operatorname{Sec}[c+d x]^2-2\sqrt{2}\sqrt{\operatorname{Sec}[c+d x]}\sqrt{1+\operatorname{Sec}[c+d x]}\sqrt{-1+\operatorname{Sec}[c+d x]^2}\right]-\operatorname{Log}\left[1-2\operatorname{Sec}[c+d x]-3\operatorname{Sec}[c+d x]^2+2\sqrt{2}\sqrt{\operatorname{Sec}[c+d x]}\sqrt{1+\operatorname{Sec}[c+d x]}\sqrt{-1+\operatorname{Sec}[c+d x]^2}\right]\right)(1+\operatorname{Sec}[c+d x])^{3/2}\sqrt{-1+\operatorname{Sec}[c+d x]^2}\left(A+C\operatorname{Sec}[c+d x]^2\right)\operatorname{Sin}[c+d x]\right)\Big/\left(d\,(1+\operatorname{Cos}[c+d x])\sqrt{2-2\operatorname{Cos}[c+d x]^2}\sqrt{1-\operatorname{Cos}[c+d x]^2}\,(A+2C+A\operatorname{Cos}[2c+2d x])\sqrt{a\,(1+\operatorname{Sec}[c+d x])}\right)+$$

$$\frac{1}{(A+2C+A\operatorname{Cos}[2c+2d x])\operatorname{Sec}[c+d x]^{3/2}\sqrt{a\,(1+\operatorname{Sec}[c+d x])}}\sqrt{(1+\operatorname{Cos}[c+d x])\operatorname{Sec}[c+d x]}\sqrt{1+\operatorname{Sec}[c+d x]}\left(A+C\operatorname{Sec}[c+d x]^2\right)\left(-\frac{2(193A+140C)\operatorname{Cos}[d x]\operatorname{Sin}[c]}{105 d}+\frac{(113A+70C)\operatorname{Cos}[2d x]\operatorname{Sin}[2c]}{105 d}-\frac{6A\operatorname{Cos}[3d x]\operatorname{Sin}[3c]}{35 d}+\frac{A\operatorname{Cos}[4d x]\operatorname{Sin}[4c]}{14 d}+\frac{8\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(46A\operatorname{Sin}\left[\frac{d x}{2}\right]+35C\operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{105 d}-\frac{2(193A+140C)\operatorname{Cos}[c]\operatorname{Sin}[d x]}{105 d}+\frac{(113A+70C)\operatorname{Cos}[2c]\operatorname{Sin}[2d x]}{105 d}-\frac{6A\operatorname{Cos}[3c]\operatorname{Sin}[3d x]}{35 d}+\frac{A\operatorname{Cos}[4c]\operatorname{Sin}[4d x]}{14 d}+\frac{8(46A+35C)\operatorname{Tan}\left[\frac{c}{2}\right]}{105 d}\right)$$

Problem 284: Result more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{Sec}[c+d x]^{3/2}\left(A+C\operatorname{Sec}[c+d x]^2\right)}{(a+a\operatorname{Sec}[c+d x])^{3/2}}\,dx$$

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

$$-\frac{3C\operatorname{ArcSinh}\left[\frac{\sqrt{a}\operatorname{Tan}[c+d x]}{\sqrt{a+a\operatorname{Sec}[c+d x]}}\right]}{a^{3/2} d}+\frac{(A+9C)\operatorname{ArcTanh}\left[\frac{\sqrt{a}\sqrt{\operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{\sqrt{2}\sqrt{a+a\operatorname{Sec}[c+d x]}}\right]}{2\sqrt{2}\,a^{3/2} d}-\frac{(A+C)\operatorname{Sec}[c+d x]^{5/2}\operatorname{Sin}[c+d x]}{2d\,(a+a\operatorname{Sec}[c+d x])^{3/2}}+\frac{(A+3C)\operatorname{Sec}[c+d x]^{3/2}\operatorname{Sin}[c+d x]}{2a d\sqrt{a+a\operatorname{Sec}[c+d x]}}$$

Result (type 3, 800 leaves):

$$\frac{1}{2\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\left(a\left(1+\operatorname{Sec}[c+dx]\right)\right)^{3/2}}\operatorname{Cos}[c+dx]^2\left(1+\operatorname{Sec}[c+dx]\right)^{3/2}\left(A+C\operatorname{Sec}[c+dx]^2\right)$$
$$\left(\frac{1}{2d\left(1+\operatorname{Cos}[c+dx]\right)\sqrt{2-2\operatorname{Cos}[c+dx]^2}\sqrt{1-\operatorname{Cos}[c+dx]^2}}\left(A+3C\right)\operatorname{Cos}[c+dx]^2\right.$$
$$\left(\operatorname{Log}\left[1-2\operatorname{Sec}[c+dx]-3\operatorname{Sec}[c+dx]^2-2\sqrt{2}\sqrt{\operatorname{Sec}[c+dx]}\sqrt{1+\operatorname{Sec}[c+dx]}\right.\right.$$
$$\left.\sqrt{-1+\operatorname{Sec}[c+dx]^2}\right]-\operatorname{Log}\left[1-2\operatorname{Sec}[c+dx]-3\operatorname{Sec}[c+dx]^2+\right.$$
$$\left.\left.2\sqrt{2}\sqrt{\operatorname{Sec}[c+dx]}\sqrt{1+\operatorname{Sec}[c+dx]}\sqrt{-1+\operatorname{Sec}[c+dx]^2}\right]\right)$$
$$\left(1+\operatorname{Sec}[c+dx]\right)\sqrt{-1+\operatorname{Sec}[c+dx]^2}\operatorname{Sin}[c+dx]-$$
$$\frac{1}{2d\left(1+\operatorname{Cos}[c+dx]\right)\left(1-\operatorname{Cos}[c+dx]^2\right)}3C\operatorname{Cos}[c+dx]^2\left(-8\operatorname{Log}[1+\operatorname{Sec}[c+dx]]+\right.$$
$$8\operatorname{Log}\left[\sqrt{\operatorname{Sec}[c+dx]}+\operatorname{Sec}[c+dx]^{3/2}+\sqrt{1+\operatorname{Sec}[c+dx]}\sqrt{-1+\operatorname{Sec}[c+dx]^2}\right]+$$
$$\sqrt{2}\left(-\operatorname{Log}\left[1-2\operatorname{Sec}[c+dx]-3\operatorname{Sec}[c+dx]^2-2\sqrt{2}\sqrt{\operatorname{Sec}[c+dx]}\sqrt{1+\operatorname{Sec}[c+dx]}\right.\right.$$
$$\left.\sqrt{-1+\operatorname{Sec}[c+dx]^2}\right]+\operatorname{Log}\left[1-2\operatorname{Sec}[c+dx]-3\operatorname{Sec}[c+dx]^2+\right.$$
$$\left.\left.\left.2\sqrt{2}\sqrt{\operatorname{Sec}[c+dx]}\sqrt{1+\operatorname{Sec}[c+dx]}\sqrt{-1+\operatorname{Sec}[c+dx]^2}\right]\right)\right)$$
$$\left.\left(1+\operatorname{Sec}[c+dx]\right)\sqrt{-1+\operatorname{Sec}[c+dx]^2}\operatorname{Sin}[c+dx]\right)+$$
$$\left(\sqrt{\left(1+\operatorname{Cos}[c+dx]\right)\operatorname{Sec}[c+dx]}\left(1+\operatorname{Sec}[c+dx]\right)^{3/2}\right.$$
$$\left(A+C\operatorname{Sec}[c+dx]^2\right)$$
$$\left(\frac{\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(-A\operatorname{Sin}\left[\frac{c}{2}\right]-C\operatorname{Sin}\left[\frac{c}{2}\right]\right)}{2d}+\right.$$
$$\frac{\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-A\operatorname{Sin}\left[\frac{dx}{2}\right]-C\operatorname{Sin}\left[\frac{dx}{2}\right]\right)}{2d}+$$
$$\left.\left.\frac{\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\operatorname{Sin}\left[\frac{dx}{2}\right]+3C\operatorname{Sin}\left[\frac{dx}{2}\right]\right)}{d}+\frac{\left(A+3C\right)\operatorname{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Big/$$
$$\left(\left(A+2C+A\operatorname{Cos}[2c+2dx]\right)\operatorname{Sec}[c+dx]^{3/2}\left(a\left(1+\operatorname{Sec}[c+dx]\right)\right)^{3/2}\right)$$

Problem 285: Result more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\operatorname{Sec}[c+dx]}\left(A+C\operatorname{Sec}[c+dx]^2\right)}{\left(a+a\operatorname{Sec}[c+dx]\right)^{3/2}}\,dx$$

Optimal (type 3, 145 leaves, 6 steps):

$$\frac{2\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{a^{3/2}\,d}+\frac{(3\,A-5\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}-\frac{(A+C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{2\,d\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}$$

Result (type 3, 795 leaves):

$$\frac{1}{2\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{3/2}}$$

$$\text{Cos}[c+dx]^2\left(1+\text{Sec}[c+dx]\right)^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)$$

$$\left(\frac{1}{2d\left(1+\text{Cos}[c+dx]\right)\sqrt{2-2\,\text{Cos}[c+dx]^2}\,\sqrt{1-\text{Cos}[c+dx]^2}}\left(3A-C\right)\text{Cos}[c+dx]^2\right.$$

$$\left(\text{Log}\left[1-2\,\text{Sec}[c+dx]-3\,\text{Sec}[c+dx]^2-2\sqrt{2}\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{1+\text{Sec}[c+dx]}\right.\right.$$

$$\left.\sqrt{-1+\text{Sec}[c+dx]^2}\,\right]-\text{Log}\left[1-2\,\text{Sec}[c+dx]-3\,\text{Sec}[c+dx]^2+\right.$$

$$\left.\left.2\sqrt{2}\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{1+\text{Sec}[c+dx]}\,\sqrt{-1+\text{Sec}[c+dx]^2}\,\right]\right)$$

$$\left(1+\text{Sec}[c+dx]\right)\sqrt{-1+\text{Sec}[c+dx]^2}\,\text{Sin}[c+dx]+$$

$$\frac{1}{d\left(1+\text{Cos}[c+dx]\right)\left(1-\text{Cos}[c+dx]^2\right)}C\,\text{Cos}[c+dx]^2\left(-8\,\text{Log}\left[1+\text{Sec}[c+dx]\right]+\right.$$

$$8\,\text{Log}\left[\sqrt{\text{Sec}[c+dx]}+\text{Sec}[c+dx]^{3/2}+\sqrt{1+\text{Sec}[c+dx]}\,\sqrt{-1+\text{Sec}[c+dx]^2}\,\right]+$$

$$\sqrt{2}\,\left(-\text{Log}\left[1-2\,\text{Sec}[c+dx]-3\,\text{Sec}[c+dx]^2-2\sqrt{2}\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{1+\text{Sec}[c+dx]}\right.\right.$$

$$\left.\sqrt{-1+\text{Sec}[c+dx]^2}\,\right]+\text{Log}\left[1-2\,\text{Sec}[c+dx]-3\,\text{Sec}[c+dx]^2+\right.$$

$$\left.\left.\left.2\sqrt{2}\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{1+\text{Sec}[c+dx]}\,\sqrt{-1+\text{Sec}[c+dx]^2}\,\right]\right)\right)$$

$$\left.\left(1+\text{Sec}[c+dx]\right)\sqrt{-1+\text{Sec}[c+dx]^2}\,\text{Sin}[c+dx]\right)+$$

$$\left(\sqrt{\left(1+\text{Cos}[c+dx]\right)\text{Sec}[c+dx]}\,\left(1+\text{Sec}[c+dx]\right)^{3/2}\right.$$

$$\left(A+C\,\text{Sec}[c+dx]^2\right)$$

$$\left(\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(A\,\text{Sin}\left[\frac{c}{2}\right]+C\,\text{Sin}\left[\frac{c}{2}\right]\right)}{2d}+\right.$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]-C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{d}+$$

$$\left.\left.\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{2d}-\frac{\left(A+C\right)\text{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Big/$$

$$\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{3/2}\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{3/2}\right)$$

Problem 288: Result more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+dx]^2}{\text{Sec}[c+dx]^{5/2}\left(a+a\,\text{Sec}[c+dx]\right)^{3/2}}\,dx$$

Optimal (type 3, 248 leaves, 6 steps):

$$-\frac{(15A+7C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{2\sqrt{2}\,a^{3/2}\,d}-\frac{(A+C)\,\text{Sin}[c+dx]}{2\,d\,\text{Sec}[c+dx]^{3/2}\,(a+a\,\text{Sec}[c+dx])^{3/2}}+\frac{(9A+5C)\,\text{Sin}[c+dx]}{10\,a\,d\,\text{Sec}[c+dx]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+dx]}}-\frac{(13A+5C)\,\text{Sin}[c+dx]}{10\,a\,d\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{(49A+25C)\,\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{10\,a\,d\,\sqrt{a+a\,\text{Sec}[c+dx]}}$$

Result (type 3, 630 leaves):

$$-\Bigg(\Bigg(\Big((15A+7C)\,\text{Cos}[c+dx]^4\,\Big(\text{Log}\Big[1-2\,\text{Sec}[c+dx]-3\,\text{Sec}[c+dx]^2-2\sqrt{2}\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{1+\text{Sec}[c+dx]}\,\sqrt{-1+\text{Sec}[c+dx]^2}\Big]-\text{Log}\Big[1-2\,\text{Sec}[c+dx]-3\,\text{Sec}[c+dx]^2+2\sqrt{2}\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{1+\text{Sec}[c+dx]}\,\sqrt{-1+\text{Sec}[c+dx]^2}\Big]\Big)\,(1+\text{Sec}[c+dx])^{5/2}\,\sqrt{-1+\text{Sec}[c+dx]^2}\,\big(A+C\,\text{Sec}[c+dx]^2\big)\,\text{Sin}[c+dx]\Big)\Big/\Big(4\,d\,(1+\text{Cos}[c+dx])\,\sqrt{2-2\,\text{Cos}[c+dx]^2}\,\sqrt{1-\text{Cos}[c+dx]^2}\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a\,(1+\text{Sec}[c+dx]))^{3/2}\Big)\Bigg)+$$

$$\frac{1}{(A+2C+A\,\text{Cos}[2c+2dx])\,\text{Sec}[c+dx]^{3/2}\,(a\,(1+\text{Sec}[c+dx]))^{3/2}}\sqrt{(1+\text{Cos}[c+dx])\,\text{Sec}[c+dx]}\,(1+\text{Sec}[c+dx])^{3/2}\,\big(A+C\,\text{Sec}[c+dx]^2\big)\Bigg(\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(-A\,\text{Sin}\left[\frac{c}{2}\right]-C\,\text{Sin}\left[\frac{c}{2}\right]\right)}{2d}+\frac{(57A+20C)\,\text{Cos}[dx]\,\text{Sin}[c]}{5d}-\frac{6A\,\text{Cos}[2dx]\,\text{Sin}[2c]}{5d}+\frac{A\,\text{Cos}[3dx]\,\text{Sin}[3c]}{5d}+\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]-C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{2d}-\frac{3\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(17A\,\text{Sin}\left[\frac{dx}{2}\right]+5C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5d}+\frac{(57A+20C)\,\text{Cos}[c]\,\text{Sin}[dx]}{5d}-\frac{6A\,\text{Cos}[2c]\,\text{Sin}[2dx]}{5d}+\frac{A\,\text{Cos}[3c]\,\text{Sin}[3dx]}{5d}-\frac{3\,(17A+5C)\,\text{Tan}\left[\frac{c}{2}\right]}{5d}\Bigg)$$

Problem 289: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+dx]^{5/2}\,\big(A+C\,\text{Sec}[c+dx]^2\big)}{(a+a\,\text{Sec}[c+dx])^{5/2}}\,dx$$

Optimal (type 3, 237 leaves, 8 steps):

$$-\frac{5\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{a^{5/2}\,d}+\frac{(3\,A+115\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}-\frac{(A+C)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{4\,d\,(a+a\,\text{Sec}[c+d\,x])^{5/2}}+\frac{(A-15\,C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{16\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}+\frac{(3\,A+35\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{16\,a^2\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 903 leaves):

$$\frac{1}{16\left(A+2C+A\cos[2c+2dx]\right)\left(a\left(1+\sec[c+dx]\right)\right)^{5/2}}\cos[c+dx]^2\left(1+\sec[c+dx]\right)^{5/2}\left(A+C\sec[c+dx]^2\right)$$

$$\left(\frac{1}{2d\left(1+\cos[c+dx]\right)\sqrt{2-2\cos[c+dx]^2}\sqrt{1-\cos[c+dx]^2}}\left(3A+35C\right)\cos[c+dx]^2\right.$$

$$\left(\log\left[1-2\sec[c+dx]-3\sec[c+dx]^2-2\sqrt{2}\sqrt{\sec[c+dx]}\sqrt{1+\sec[c+dx]}\sqrt{-1+\sec[c+dx]^2}\right]-\log\left[1-2\sec[c+dx]-3\sec[c+dx]^2+2\sqrt{2}\sqrt{\sec[c+dx]}\sqrt{1+\sec[c+dx]}\sqrt{-1+\sec[c+dx]^2}\right]\right)$$

$$\left(1+\sec[c+dx]\right)\sqrt{-1+\sec[c+dx]^2}\sin[c+dx]-$$

$$\frac{1}{d\left(1+\cos[c+dx]\right)\left(1-\cos[c+dx]^2\right)}20C\cos[c+dx]^2\left(-8\log[1+\sec[c+dx]]+\right.$$

$$8\log\left[\sqrt{\sec[c+dx]}+\sec[c+dx]^{3/2}+\sqrt{1+\sec[c+dx]}\sqrt{-1+\sec[c+dx]^2}\right]+$$

$$\sqrt{2}\left(-\log\left[1-2\sec[c+dx]-3\sec[c+dx]^2-2\sqrt{2}\sqrt{\sec[c+dx]}\sqrt{1+\sec[c+dx]}\sqrt{-1+\sec[c+dx]^2}\right]+\log\left[1-2\sec[c+dx]-3\sec[c+dx]^2+2\sqrt{2}\sqrt{\sec[c+dx]}\sqrt{1+\sec[c+dx]}\sqrt{-1+\sec[c+dx]^2}\right]\right)\Big)$$

$$\left.\left(1+\sec[c+dx]\right)\sqrt{-1+\sec[c+dx]^2}\sin[c+dx]\right)+$$

$$\left(\sqrt{\left(1+\cos[c+dx]\right)\sec[c+dx]}\left(1+\sec[c+dx]\right)^{5/2}\right.$$

$$\left(A+C\sec[c+dx]^2\right)$$

$$\left(\frac{\sec\left[\frac{c}{2}\right]\sec\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(A\sin\left[\frac{c}{2}\right]-15C\sin\left[\frac{c}{2}\right]\right)}{16d}+\right.$$

$$\frac{\sec\left[\frac{c}{2}\right]\sec\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(-A\sin\left[\frac{c}{2}\right]-C\sin\left[\frac{c}{2}\right]\right)}{8d}+$$

$$\frac{\sec\left[\frac{c}{2}\right]\sec\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(A\sin\left[\frac{dx}{2}\right]-15C\sin\left[\frac{dx}{2}\right]\right)}{16d}+$$

$$\frac{\sec\left[\frac{c}{2}\right]\sec\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(-A\sin\left[\frac{dx}{2}\right]-C\sin\left[\frac{dx}{2}\right]\right)}{8d}+$$

$$\left.\left.\frac{\sec\left[\frac{c}{2}\right]\sec\left[\frac{c}{2}+\frac{dx}{2}\right]\left(3A\sin\left[\frac{dx}{2}\right]+35C\sin\left[\frac{dx}{2}\right]\right)}{8d}+\frac{\left(3A+35C\right)\tan\left[\frac{c}{2}\right]}{8d}\right)\right)\Big/$$

$$\left(\left(A+2C+A\cos[2c+2dx]\right)\sec[c+dx]^{3/2}\left(a\left(1+\sec[c+dx]\right)\right)^{5/2}\right)$$

Problem 290: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{3/2} \left(A+C \text{Sec}[c+d x]^2\right)}{\left(a+a \text{Sec}[c+d x]\right)^{5/2}} \, dx$$

Optimal (type 3, 192 leaves, 7 steps):

$$\frac{2 C \text{ArcSinh}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{a^{5/2} d}+\frac{(5 A-43 C) \text{ArcTanh}\left[\frac{\sqrt{a} \sqrt{\text{Sec}[c+d x]} \text{Sin}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sec}[c+d x]}}\right]}{16 \sqrt{2} a^{5/2} d}-\frac{(A+C) \text{Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{4 d (a+a \text{Sec}[c+d x])^{5/2}}+\frac{(5 A-11 C) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{16 a d (a+a \text{Sec}[c+d x])^{3/2}}$$

Result (type 3, 901 leaves):

$$\frac{1}{16\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}}$$

$$\text{Cos}[c+dx]^2\left(1+\text{Sec}[c+dx]\right)^{5/2}\left(A+C\,\text{Sec}[c+dx]^2\right)$$

$$\left(\frac{1}{2d\left(1+\text{Cos}[c+dx]\right)\sqrt{2-2\,\text{Cos}[c+dx]^2}\,\sqrt{1-\text{Cos}[c+dx]^2}}\left(5A-11C\right)\text{Cos}[c+dx]^2\right.$$

$$\left(\text{Log}\left[1-2\,\text{Sec}[c+dx]-3\,\text{Sec}[c+dx]^2-2\sqrt{2}\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{1+\text{Sec}[c+dx]}\right.\right.$$

$$\left.\sqrt{-1+\text{Sec}[c+dx]^2}\,\right]-\text{Log}\left[1-2\,\text{Sec}[c+dx]-3\,\text{Sec}[c+dx]^2+\right.$$

$$\left.\left.2\sqrt{2}\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{1+\text{Sec}[c+dx]}\,\sqrt{-1+\text{Sec}[c+dx]^2}\,\right]\right)$$

$$\left(1+\text{Sec}[c+dx]\right)\sqrt{-1+\text{Sec}[c+dx]^2}\,\text{Sin}[c+dx]+$$

$$\frac{1}{d\left(1+\text{Cos}[c+dx]\right)\left(1-\text{Cos}[c+dx]^2\right)}8\,C\,\text{Cos}[c+dx]^2\left(-8\,\text{Log}[1+\text{Sec}[c+dx]]+\right.$$

$$8\,\text{Log}\left[\sqrt{\text{Sec}[c+dx]}+\text{Sec}[c+dx]^{3/2}+\sqrt{1+\text{Sec}[c+dx]}\,\sqrt{-1+\text{Sec}[c+dx]^2}\,\right]+$$

$$\sqrt{2}\left(-\text{Log}\left[1-2\,\text{Sec}[c+dx]-3\,\text{Sec}[c+dx]^2-2\sqrt{2}\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{1+\text{Sec}[c+dx]}\right.\right.$$

$$\left.\sqrt{-1+\text{Sec}[c+dx]^2}\,\right]+\text{Log}\left[1-2\,\text{Sec}[c+dx]-3\,\text{Sec}[c+dx]^2+\right.$$

$$\left.\left.\left.2\sqrt{2}\,\sqrt{\text{Sec}[c+dx]}\,\sqrt{1+\text{Sec}[c+dx]}\,\sqrt{-1+\text{Sec}[c+dx]^2}\,\right]\right)\right)$$

$$\left.\left(1+\text{Sec}[c+dx]\right)\sqrt{-1+\text{Sec}[c+dx]^2}\,\text{Sin}[c+dx]\right)+$$

$$\left(\sqrt{\left(1+\text{Cos}[c+dx]\right)\text{Sec}[c+dx]}\,\left(1+\text{Sec}[c+dx]\right)^{5/2}\right.$$

$$\left(A+C\,\text{Sec}[c+dx]^2\right)$$

$$\left(\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(A\,\text{Sin}\left[\frac{c}{2}\right]+C\,\text{Sin}\left[\frac{c}{2}\right]\right)}{8d}+\right.$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(-9A\,\text{Sin}\left[\frac{c}{2}\right]+7C\,\text{Sin}\left[\frac{c}{2}\right]\right)}{16d}+$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(5A\,\text{Sin}\left[\frac{dx}{2}\right]-11C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{8d}+$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{8d}+$$

$$\left.\left.\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-9A\,\text{Sin}\left[\frac{dx}{2}\right]+7C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{16d}+\frac{\left(5A-11C\right)\text{Tan}\left[\frac{c}{2}\right]}{8d}\right)\right)\Big/$$

$$\left(\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{3/2}\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)$$

Problem 294: Result more than twice size of optimal antiderivative.

$$\int \frac{A+C\,\text{Sec}[c+d\,x]^2}{\text{Sec}[c+d\,x]^{5/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 295 leaves, 7 steps):

$$-\frac{(283\,A+75\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}-\frac{(A+C)\,\text{Sin}[c+d\,x]}{4\,d\,\text{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}-\frac{(21\,A+5\,C)\,\text{Sin}[c+d\,x]}{16\,a\,d\,\text{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}+\frac{(157\,A+45\,C)\,\text{Sin}[c+d\,x]}{80\,a^2\,d\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{(787\,A+195\,C)\,\text{Sin}[c+d\,x]}{240\,a^2\,d\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{(2671\,A+735\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{240\,a^2\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 722 leaves):

$$-\Bigg(\Bigg(\Big((283 A+75 C) \operatorname{Cos}[c+d x]^4 \Big(\operatorname{Log}\Big[1-2 \operatorname{Sec}[c+d x]-3 \operatorname{Sec}[c+d x]^2-2 \sqrt{2} \sqrt{\operatorname{Sec}[c+d x]} \sqrt{1+\operatorname{Sec}[c+d x]} \sqrt{-1+\operatorname{Sec}[c+d x]^2}\Big]-\operatorname{Log}\Big[1-2 \operatorname{Sec}[c+d x]-3 \operatorname{Sec}[c+d x]^2+2 \sqrt{2} \sqrt{\operatorname{Sec}[c+d x]} \sqrt{1+\operatorname{Sec}[c+d x]} \sqrt{-1+\operatorname{Sec}[c+d x]^2}\Big]\Big)(1+\operatorname{Sec}[c+d x])^{7/2} \sqrt{-1+\operatorname{Sec}[c+d x]^2}\left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[c+d x]\Big) \Big/ \Big(32 d (1+\operatorname{Cos}[c+d x]) \sqrt{2-2 \operatorname{Cos}[c+d x]^2} \sqrt{1-\operatorname{Cos}[c+d x]^2}(A+2 C+A \operatorname{Cos}[2 c+2 d x])(a(1+\operatorname{Sec}[c+d x]))^{5/2}\Big)\Bigg)+$$

$$\frac{1}{(A+2 C+A \operatorname{Cos}[2 c+2 d x]) \operatorname{Sec}[c+d x]^{3/2}(a(1+\operatorname{Sec}[c+d x]))^{5/2}} \sqrt{(1+\operatorname{Cos}[c+d x]) \operatorname{Sec}[c+d x]}(1+\operatorname{Sec}[c+d x])^{5/2}\left(A+C \operatorname{Sec}[c+d x]^2\right)$$

$$\Bigg(\frac{\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\left(-41 A \operatorname{Sin}\left[\frac{c}{2}\right]-25 C \operatorname{Sin}\left[\frac{c}{2}\right]\right)}{16 d}+\frac{\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\left(A \operatorname{Sin}\left[\frac{c}{2}\right]+C \operatorname{Sin}\left[\frac{c}{2}\right]\right)}{8 d}+\frac{(331 A+60 C) \operatorname{Cos}[d x] \operatorname{Sin}[c]}{15 d}-\frac{28 A \operatorname{Cos}[2 d x] \operatorname{Sin}[2 c]}{15 d}+\frac{A \operatorname{Cos}[3 d x] \operatorname{Sin}[3 c]}{5 d}+\frac{\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(-2069 A \operatorname{Sin}\left[\frac{d x}{2}\right]-165 C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{120 d}+\frac{\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(-41 A \operatorname{Sin}\left[\frac{d x}{2}\right]-25 C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{16 d}+\frac{\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5\left(A \operatorname{Sin}\left[\frac{d x}{2}\right]+C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{8 d}+\frac{(331 A+60 C) \operatorname{Cos}[c] \operatorname{Sin}[d x]}{15 d}-\frac{28 A \operatorname{Cos}[2 c] \operatorname{Sin}[2 d x]}{15 d}+\frac{A \operatorname{Cos}[3 c] \operatorname{Sin}[3 d x]}{5 d}-\frac{(2069 A+165 C) \operatorname{Tan}\left[\frac{c}{2}\right]}{120 d}\Bigg)$$

Problem 295: Unable to integrate problem.

$$\int(a+a \operatorname{Sec}[c+d x])^{2/3}\left(A+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 6, 434 leaves, 10 steps):

$$\frac{3\,C\,(a+a\,\mathrm{Sec}[c+d\,x])^{2/3}\,\mathrm{Tan}[c+d\,x]}{5\,d}+$$

$$\left(3\sqrt{2}\;A\,\mathrm{AppellF1}\left[\frac{7}{6},\frac{1}{2},1,\frac{13}{6},\frac{1}{2}\,(1+\mathrm{Sec}[c+d\,x]),1+\mathrm{Sec}[c+d\,x]\right]\,(a+a\,\mathrm{Sec}[c+d\,x])^{2/3}\right.$$
$$\left.\mathrm{Tan}[c+d\,x]\right)\Big/\left(7\,d\sqrt{1-\mathrm{Sec}[c+d\,x]}\right)+\frac{3\,C\,(a+a\,\mathrm{Sec}[c+d\,x])^{2/3}\,\mathrm{Tan}[c+d\,x]}{5\,d\,(1+\mathrm{Sec}[c+d\,x])}-$$
$$\left(3^{3/4}\,C\,\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$(a+a\,\mathrm{Sec}[c+d\,x])^{2/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\mathrm{Sec}[c+d\,x])^{1/3}+(1+\mathrm{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\;\mathrm{Tan}[c+d\,x]\right)\Big/\left(5\times 2^{1/3}\,d\right.$$
$$\left.(1-\mathrm{Sec}[c+d\,x])\,(1+\mathrm{Sec}[c+d\,x])\sqrt{-\frac{(1+\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\right)$$

Result (type 8, 29 leaves):

$$\int (a+a\,\mathrm{Sec}[c+d\,x])^{2/3}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Problem 296: Unable to integrate problem.

$$\int \frac{A+C\,\mathrm{Sec}[c+d\,x]^2}{(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}}\,dx$$

Optimal (type 6, 384 leaves, 9 steps):

$$\frac{3\,C\,\mathrm{Tan}[c+d\,x]}{2\,d\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{1/3}}+\left(3\,\sqrt{2}\,A\,\mathrm{AppellF1}\left[\frac{1}{6},\,\frac{1}{2},\,1,\,\frac{7}{6},\,\frac{1}{2}\,\left(1+\mathrm{Sec}[c+d\,x]\right),\,1+\mathrm{Sec}[c+d\,x]\right]\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(d\,\sqrt{1-\mathrm{Sec}[c+d\,x]}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)+$$

$$\left(3^{3/4}\,C\,\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}}\right],\,\frac{1}{4}\,\left(2+\sqrt{3}\right)\right]\right.$$

$$\left(2^{1/3}-\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)\,\sqrt{\frac{2^{2/3}+2^{1/3}\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}+\left(1+\mathrm{Sec}[c+d\,x]\right)^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)^{2}}}$$

$$\left.\mathrm{Tan}[c+d\,x]\right)\Big/\left(2\times 2^{1/3}\,d\,\left(1-\mathrm{Sec}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{1/3}\right.$$

$$\left.\sqrt{-\frac{\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\,\left(2^{1/3}-\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)^{2}}}\right)$$

Result (type 8, 29 leaves):

$$\int\frac{A+C\,\mathrm{Sec}[c+d\,x]^{2}}{\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{1/3}}\,dx$$

Problem 297: Unable to integrate problem.

$$\int\frac{A+C\,\mathrm{Sec}[c+d\,x]^{2}}{\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{4/3}}\,dx$$

Optimal (type 6, 396 leaves, 9 steps):

$$-\frac{3\,(A+C)\,\mathrm{Tan}[c+d\,x]}{5\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{4/3}}+\left(3\sqrt{2}\,A\,\mathrm{AppellF1}\left[\frac{1}{6},\frac{1}{2},1,\frac{7}{6},\frac{1}{2}\,(1+\mathrm{Sec}[c+d\,x]),1+\mathrm{Sec}[c+d\,x]\right]\mathrm{Tan}[c+d\,x]\right)\Big/\left(a\,d\,\sqrt{1-\mathrm{Sec}[c+d\,x]}\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\right)+$$
$$\left(3^{3/4}\,(A-4\,C)\,\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\mathrm{Sec}[c+d\,x])^{1/3}+(1+\mathrm{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}$$
$$\left.\mathrm{Tan}[c+d\,x]\right)\Big/\left(5\times 2^{1/3}\,a\,d\,(1-\mathrm{Sec}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\right.$$
$$\left.\sqrt{-\frac{(1+\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\right)$$

Result (type 8, 29 leaves):

$$\int\frac{A+C\,\mathrm{Sec}[c+d\,x]^2}{(a+a\,\mathrm{Sec}[c+d\,x])^{4/3}}\,dx$$

Problem 298: Unable to integrate problem.

$$\int\frac{A+C\,\mathrm{Sec}[c+d\,x]^2}{(a+a\,\mathrm{Sec}[c+d\,x])^{7/3}}\,dx$$

Optimal (type 6, 457 leaves, 10 steps):

$$-\frac{3\,(A+C)\,\text{Tan}[c+d\,x]}{11\,d\,(a+a\,\text{Sec}[c+d\,x])^{7/3}}-\frac{3\,(4\,A-7\,C)\,\text{Tan}[c+d\,x]}{55\,a^2\,d\,(1+\text{Sec}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^{1/3}}-$$

$$\left(3\,\sqrt{2}\,A\,\text{AppellF1}\left[-\frac{5}{6},\frac{1}{2},1,\frac{1}{6},\frac{1}{2}\,(1+\text{Sec}[c+d\,x]),1+\text{Sec}[c+d\,x]\right]\text{Tan}[c+d\,x]\right)\Big/$$

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

$$\left(3^{3/4}\,(4\,A-7\,C)\,\text{EllipticF}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)(1+\text{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)(1+\text{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$

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

$$\left.\text{Tan}[c+d\,x]\right)\Big/\left(55\times 2^{1/3}\,a^2\,d\,(1-\text{Sec}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^{1/3}\right.$$

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

Result (type 8, 29 leaves):

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{(a+a\,\text{Sec}[c+d\,x])^{7/3}}\,dx$$

Problem 299: Unable to integrate problem.

$$\int(a+a\,\text{Sec}[c+d\,x])^{4/3}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 6, 815 leaves, 12 steps):

$$\frac{3\,a\,C\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\,\text{Tan}[c+d\,x]}{7\,d}+$$
$$\left(3\,\sqrt{2}\,a\,A\,\text{AppellF1}\left[\frac{11}{6},\frac{1}{2},1,\frac{17}{6},\frac{1}{2}\,(1+\text{Sec}[c+d\,x]),1+\text{Sec}[c+d\,x]\right]\right.$$
$$\left.(1+\text{Sec}[c+d\,x])\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\,\text{Tan}[c+d\,x]\right)\Big/$$
$$\left(11\,d\,\sqrt{1-\text{Sec}[c+d\,x]}\right)+\frac{3\,C\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{4/3}\,\text{Tan}[c+d\,x]}{7\,d}-$$
$$\frac{15\,\left(1+\sqrt{3}\right)\,a\,C\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\,\text{Tan}[c+d\,x]}{7\,d\,(1+\text{Sec}[c+d\,x])^{2/3}\,\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}\right)}+$$
$$\left(15\times 2^{1/3}\times 3^{1/4}\,a\,C\,\text{EllipticE}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\,\left(2+\sqrt{3}\right)\right]\right.$$
$$\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\,\left(2^{1/3}-(1+\text{Sec}[c+d\,x])^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\text{Sec}[c+d\,x])^{1/3}+(1+\text{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}\right)^2}}\,\text{Tan}[c+d\,x]\right)\Big/\left(7\,d\,(1-\text{Sec}[c+d\,x])\right.$$
$$\left.(1+\text{Sec}[c+d\,x])^{2/3}\,\sqrt{-\frac{(1+\text{Sec}[c+d\,x])^{1/3}\,\left(2^{1/3}-(1+\text{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}\right)^2}}\right)+$$
$$\left(5\times 3^{3/4}\,\left(1-\sqrt{3}\right)\,a\,C\,\text{EllipticF}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\,\left(2+\sqrt{3}\right)\right]\right.$$
$$\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\,\left(2^{1/3}-(1+\text{Sec}[c+d\,x])^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\text{Sec}[c+d\,x])^{1/3}+(1+\text{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}\right)^2}}\,\text{Tan}[c+d\,x]\right)\Big/\left(7\times 2^{2/3}\,d\right.$$
$$\left.(1-\text{Sec}[c+d\,x])\,(1+\text{Sec}[c+d\,x])^{2/3}\,\sqrt{-\frac{(1+\text{Sec}[c+d\,x])^{1/3}\,\left(2^{1/3}-(1+\text{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}\right)^2}}\right)$$

Result (type 8, 29 leaves):

$$\int\left(a+a\,\text{Sec}[c+d\,x]\right)^{4/3}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Problem 300: Unable to integrate problem.

$$\int\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 6, 774 leaves, 11 steps):

$$\frac{3\,C\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\,\mathrm{Tan}[c+d\,x]}{4\,d}+$$
$$\left(3\sqrt{2}\,A\,\mathrm{AppellF1}\left[\frac{5}{6},\frac{1}{2},1,\frac{11}{6},\frac{1}{2}\,(1+\mathrm{Sec}[c+d\,x]),1+\mathrm{Sec}[c+d\,x]\right]\right.$$
$$\left.(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(5\,d\sqrt{1-\mathrm{Sec}[c+d\,x]}\right)-$$
$$\frac{3\left(1+\sqrt{3}\right)C\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\,\mathrm{Tan}[c+d\,x]}{4\,d\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}+$$
$$\left(3\times 3^{1/4}\,C\,\mathrm{EllipticE}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}(1+\mathrm{Sec}[c+d\,x])^{1/3}+(1+\mathrm{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(2\times 2^{2/3}\,d\right.$$
$$\left.(1-\mathrm{Sec}[c+d\,x])\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\sqrt{-\frac{(1+\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\right)+$$
$$\left(3^{3/4}\left(1-\sqrt{3}\right)C\,\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}(1+\mathrm{Sec}[c+d\,x])^{1/3}+(1+\mathrm{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(4\times 2^{2/3}\,d\right.$$
$$\left.(1-\mathrm{Sec}[c+d\,x])\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\sqrt{-\frac{(1+\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\right)$$

Result (type 8, 29 leaves):

$$\int (a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)dx$$

Problem 301: Unable to integrate problem.

$$\int\frac{A+C\,\mathrm{Sec}[c+d\,x]^2}{(a+a\,\mathrm{Sec}[c+d\,x])^{2/3}}\,dx$$

Optimal (type 6, 791 leaves, 11 steps):

$$-\frac{3\,(A+C)\,\mathrm{Tan}[c+d\,x]}{d\,(a+a\,\mathrm{Sec}[c+d\,x])^{2/3}}+\left(3\sqrt{2}\,A\,\mathrm{AppellF1}\left[\frac{5}{6},\frac{1}{2},1,\frac{11}{6},\frac{1}{2}\,(1+\mathrm{Sec}[c+d\,x]),1+\mathrm{Sec}[c+d\,x]\right]\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(5\,a\,d\,\sqrt{1-\mathrm{Sec}[c+d\,x]}\right)-\frac{3\,\left(1+\sqrt{3}\right)\,(A+2\,C)\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\,\mathrm{Tan}[c+d\,x]}{a\,d\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\,\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}+$$

$$\left(3\times 2^{1/3}\times 3^{1/4}\,(A+2\,C)\,\mathrm{EllipticE}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\,\left(2+\sqrt{3}\right)\right]\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\,\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\mathrm{Sec}[c+d\,x])^{1/3}+(1+\mathrm{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(a\,d\,(1-\mathrm{Sec}[c+d\,x])\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\sqrt{-\frac{(1+\mathrm{Sec}[c+d\,x])^{1/3}\,\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\right)+$$

$$\left(3^{3/4}\,\left(1-\sqrt{3}\right)\,(A+2\,C)\,\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\,\left(2+\sqrt{3}\right)\right]\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\,\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\mathrm{Sec}[c+d\,x])^{1/3}+(1+\mathrm{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(2^{2/3}\,a\,d\,(1-\mathrm{Sec}[c+d\,x])\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\sqrt{-\frac{(1+\mathrm{Sec}[c+d\,x])^{1/3}\,\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\right)$$

Result (type 8, 29 leaves):

$$\int \frac{A+C\,\mathrm{Sec}[c+d\,x]^2}{(a+a\,\mathrm{Sec}[c+d\,x])^{2/3}}\,dx$$

Problem 302: Unable to integrate problem.

$$\int \frac{A+C\,\mathrm{Sec}[c+d\,x]^2}{(a+a\,\mathrm{Sec}[c+d\,x])^{5/3}}\,dx$$

Optimal (type 6, 841 leaves, 12 steps):

$$-\frac{3\,(A+C)\,\text{Tan}[c+d\,x]}{7\,d\,(a+a\,\text{Sec}[c+d\,x])^{5/3}}-\frac{3\,(2\,A-5\,C)\,\text{Tan}[c+d\,x]}{7\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^{2/3}}-$$

$$\left(3\sqrt{2}\,A\,\text{AppellF1}\left[-\frac{1}{6},\frac{1}{2},1,\frac{5}{6},\frac{1}{2}\,(1+\text{Sec}[c+d\,x]),1+\text{Sec}[c+d\,x]\right]\text{Tan}[c+d\,x]\right)\Big/$$

$$\left(a\,d\,\sqrt{1-\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^{2/3}\right)-$$

$$\frac{3\,\left(1+\sqrt{3}\right)\,(2\,A-5\,C)\,(1+\text{Sec}[c+d\,x])^{1/3}\,\text{Tan}[c+d\,x]}{7\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^{2/3}\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\text{Sec}[c+d\,x])^{1/3}\right)}+$$

$$\left(3\times 2^{1/3}\times 3^{1/4}\,(2\,A-5\,C)\,\text{EllipticE}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)(1+\text{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)(1+\text{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$

$$(1+\text{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\text{Sec}[c+d\,x])^{1/3}\right)$$

$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\text{Sec}[c+d\,x])^{1/3}+(1+\text{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\text{Sec}[c+d\,x])^{1/3}\right)^2}}\;\text{Tan}[c+d\,x]\right)\Big/\left(7\,a\,d\,(1-\text{Sec}[c+d\,x])\right.$$

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

$$\left(3^{3/4}\left(1-\sqrt{3}\right)(2\,A-5\,C)\,\text{EllipticF}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)(1+\text{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)(1+\text{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$

$$(1+\text{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\text{Sec}[c+d\,x])^{1/3}\right)$$

$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\text{Sec}[c+d\,x])^{1/3}+(1+\text{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\text{Sec}[c+d\,x])^{1/3}\right)^2}}\;\text{Tan}[c+d\,x]\right)\Big/\left(7\times 2^{2/3}\,a\,d\right.$$

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

Result (type 8, 29 leaves):

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{(a+a\,\text{Sec}[c+d\,x])^{5/3}}\,dx$$

Problem 303: Unable to integrate problem.

$$\int\text{Sec}[c+d\,x]^m\,(a+a\,\text{Sec}[c+d\,x])^n\left(A+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 6, 244 leaves, 8 steps):

$$\frac{C\,\mathrm{Sec}[c+d\,x]^{1+m}\,(a+a\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]}{d\,(1+m+n)}+\frac{1}{d\,(1+m+n)}$$
$$2^{\frac{3}{2}+n}\,C\,n\,\mathrm{AppellF1}\left[\frac{1}{2},1-m,-\frac{1}{2}-n,\frac{3}{2},1-\mathrm{Sec}[c+d\,x],\frac{1}{2}\,(1-\mathrm{Sec}[c+d\,x])\right]$$
$$(1+\mathrm{Sec}[c+d\,x])^{-\frac{1}{2}-n}\,(a+a\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Tan}[c+d\,x]+\frac{1}{d\,(1+m+n)}$$
$$2^{\frac{1}{2}+n}\,(C\,(m-n)+A\,(1+m+n))\,\mathrm{AppellF1}\left[\frac{1}{2},1-m,\frac{1}{2}-n,\frac{3}{2},1-\mathrm{Sec}[c+d\,x],\frac{1}{2}\,(1-\mathrm{Sec}[c+d\,x])\right]$$
$$(1+\mathrm{Sec}[c+d\,x])^{-\frac{1}{2}-n}\,(a+a\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Tan}[c+d\,x]$$

Result (type 8, 35 leaves):

$$\int \mathrm{Sec}[c+d\,x]^m\,(a+a\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Problem 304: Unable to integrate problem.

$$\int \mathrm{Sec}[c+d\,x]^{-1-n}\,(a+a\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 6, 253 leaves, 8 steps):

$$\frac{A\,\mathrm{Sec}[c+d\,x]^{-n}\,(a+a\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]}{d\,(1+n)}-$$
$$\left((C-A\,n+C\,n)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}-n,-n,1-n,-\frac{2\,\mathrm{Sec}[c+d\,x]}{1-\mathrm{Sec}[c+d\,x]}\right]\,\mathrm{Sec}[c+d\,x]^{1-n}\right.$$
$$\left.\left(\frac{1+\mathrm{Sec}[c+d\,x]}{1-\mathrm{Sec}[c+d\,x]}\right)^{\frac{1}{2}-n}\,(a+a\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(d\,n\,(1+n)\,(1+\mathrm{Sec}[c+d\,x])\right)+$$
$$\frac{1}{d}2^{\frac{3}{2}+n}\,C\,\mathrm{AppellF1}\left[\frac{1}{2},1+n,-\frac{1}{2}-n,\frac{3}{2},1-\mathrm{Sec}[c+d\,x],\frac{1}{2}\,(1-\mathrm{Sec}[c+d\,x])\right]$$
$$(1+\mathrm{Sec}[c+d\,x])^{-\frac{1}{2}-n}\,(a+a\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Tan}[c+d\,x]$$

Result (type 8, 39 leaves):

$$\int \mathrm{Sec}[c+d\,x]^{-1-n}\,(a+a\,\mathrm{Sec}[c+d\,x])^n\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Problem 306: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^2\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 106 leaves, 7 steps):

$$\frac{a\,(4\,B+3\,C)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{8\,d}+\frac{a\,(B+C)\,\mathrm{Tan}[c+d\,x]}{d}+$$
$$\frac{a\,(4\,B+3\,C)\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{8\,d}+\frac{a\,C\,\mathrm{Sec}[c+d\,x]^3\,\mathrm{Tan}[c+d\,x]}{4\,d}+\frac{a\,(B+C)\,\mathrm{Tan}[c+d\,x]^3}{3\,d}$$

Result (type 3, 337 leaves):

$$-\frac{1}{192\,d} a\,\mathrm{Sec}[c+d\,x]^4 \left(36\,B\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+27\,C\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+12\,(4\,B+3\,C)\,\mathrm{Cos}[2\,(c+d\,x)]\left(\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)+3\,(4\,B+3\,C)\,\mathrm{Cos}[4\,(c+d\,x)]\left(\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)-36\,B\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-27\,C\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-24\,B\,\mathrm{Sin}[c+d\,x]-66\,C\,\mathrm{Sin}[c+d\,x]-64\,B\,\mathrm{Sin}[2\,(c+d\,x)]-64\,C\,\mathrm{Sin}[2\,(c+d\,x)]-24\,B\,\mathrm{Sin}[3\,(c+d\,x)]-18\,C\,\mathrm{Sin}[3\,(c+d\,x)]-16\,B\,\mathrm{Sin}[4\,(c+d\,x)]-16\,C\,\mathrm{Sin}[4\,(c+d\,x)]\right)$$

Problem 307: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 86 leaves, 7 steps):

$$\frac{a\,(B+C)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,d}+\frac{a\,(3\,B+2\,C)\,\mathrm{Tan}[c+d\,x]}{3\,d}+\frac{a\,(B+C)\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{2\,d}+\frac{a\,C\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]}{3\,d}$$

Result (type 3, 181 leaves):

$$-\frac{1}{24\,d} a\,\mathrm{Sec}[c+d\,x]^3 \left(9\,(B+C)\,\mathrm{Cos}[c+d\,x]\left(\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)+3\,(B+C)\,\mathrm{Cos}[3\,(c+d\,x)]\left(\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)-4\,(3\,B+4\,C+3\,(B+C)\,\mathrm{Cos}[c+d\,x]+(3\,B+2\,C)\,\mathrm{Cos}[2\,(c+d\,x)])\,\mathrm{Sin}[c+d\,x]\right)$$

Problem 308: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\mathrm{Sec}[c+d\,x])\,\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 56 leaves, 5 steps):

$$\frac{a\,(2\,B+C)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,d}+\frac{a\,(B+C)\,\mathrm{Tan}[c+d\,x]}{d}+\frac{a\,C\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{2\,d}$$

Result (type 3, 154 leaves):

$$\frac{1}{4 d} a \left(-2 (2 B + C) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] + 4 B \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] + 2 C \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] + \frac{C}{\left(\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} - \frac{C}{\left(\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} + 4 (B + C) \text{Tan}[c + d x]\right)$$

Problem 309: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c + d x] (a + a \text{Sec}[c + d x]) \left(B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 32 leaves, 5 steps):

$$a B x + \frac{a (B + C) \text{ArcTanh}[\text{Sin}[c + d x]]}{d} + \frac{a C \text{Tan}[c + d x]}{d}$$

Result (type 3, 159 leaves):

$$a B x - \frac{a B \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} - \frac{a C \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{a B \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{a C \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{a C \text{Tan}[c + d x]}{d}$$

Problem 310: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c + d x]^2 (a + a \text{Sec}[c + d x]) \left(B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 32 leaves, 4 steps):

$$a (B + C) x + \frac{a C \text{ArcTanh}[\text{Sin}[c + d x]]}{d} + \frac{a B \text{Sin}[c + d x]}{d}$$

Result (type 3, 104 leaves):

$$a B x + a C x - \frac{a C \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{a C \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{a B \text{Cos}[d x] \text{Sin}[c]}{d} + \frac{a B \text{Cos}[c] \text{Sin}[d x]}{d}$$

Problem 314: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x]^2 (a+a \operatorname{Sec}[c+d x])^2 \left(B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 169 leaves, 8 steps):

$$\frac{a^2 (7 B+6 C) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}+\frac{a^2 (10 B+9 C) \operatorname{Tan}[c+d x]}{5 d}+\frac{a^2 (7 B+6 C) \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{8 d}+\frac{a^2 (5 B+6 C) \operatorname{Sec}[c+d x]^3 \operatorname{Tan}[c+d x]}{20 d}+\frac{C \operatorname{Sec}[c+d x]^3 \left(a^2+a^2 \operatorname{Sec}[c+d x]\right) \operatorname{Tan}[c+d x]}{5 d}+\frac{a^2 (10 B+9 C) \operatorname{Tan}[c+d x]^3}{15 d}$$

Result (type 3, 391 leaves):

$$-\frac{1}{1920 d} a^2 \operatorname{Sec}[c+d x]^5 \Big(105 B \operatorname{Cos}[5 (c+d x)] \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+ 90 C \operatorname{Cos}[5 (c+d x)] \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+ 150 (7 B+6 C) \operatorname{Cos}[c+d x] \left(\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]- \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+75 (7 B+6 C) \operatorname{Cos}[3 (c+d x)] \left(\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)- 105 B \operatorname{Cos}[5 (c+d x)] \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]- 90 C \operatorname{Cos}[5 (c+d x)] \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-640 B \operatorname{Sin}[c+d x]- 960 C \operatorname{Sin}[c+d x]-660 B \operatorname{Sin}[2 (c+d x)]-840 C \operatorname{Sin}[2 (c+d x)]- 800 B \operatorname{Sin}[3 (c+d x)]-720 C \operatorname{Sin}[3 (c+d x)]-210 B \operatorname{Sin}[4 (c+d x)]- 180 C \operatorname{Sin}[4 (c+d x)]-160 B \operatorname{Sin}[5 (c+d x)]-144 C \operatorname{Sin}[5 (c+d x)]\Big)$$

Problem 315: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x] (a+a \operatorname{Sec}[c+d x])^2 \left(B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 138 leaves, 8 steps):

$$\frac{a^2 (8 B+7 C) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}+\frac{a^2 (8 B+7 C) \operatorname{Tan}[c+d x]}{6 d}+\frac{a^2 (8 B+7 C) \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{24 d}+\frac{(4 B-C) (a+a \operatorname{Sec}[c+d x])^2 \operatorname{Tan}[c+d x]}{12 d}+\frac{C (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Tan}[c+d x]}{4 a d}$$

Result (type 3, 339 leaves):

$$-\frac{1}{192\,d}a^2\,\text{Sec}[c+d\,x]^4\Big(72\,B\,\text{Log}\big[\text{Cos}\big[\tfrac{1}{2}(c+d\,x)\big]-\text{Sin}\big[\tfrac{1}{2}(c+d\,x)\big]\big]+63\,C\,\text{Log}\big[\text{Cos}\big[\tfrac{1}{2}(c+d\,x)\big]-\text{Sin}\big[\tfrac{1}{2}(c+d\,x)\big]\big]+12\,(8\,B+7\,C)\,\text{Cos}[2\,(c+d\,x)]\Big(\text{Log}\big[\text{Cos}\big[\tfrac{1}{2}(c+d\,x)\big]-\text{Sin}\big[\tfrac{1}{2}(c+d\,x)\big]\big]-\text{Log}\big[\text{Cos}\big[\tfrac{1}{2}(c+d\,x)\big]+\text{Sin}\big[\tfrac{1}{2}(c+d\,x)\big]\big]\Big)+3\,(8\,B+7\,C)\,\text{Cos}[4\,(c+d\,x)]\Big(\text{Log}\big[\text{Cos}\big[\tfrac{1}{2}(c+d\,x)\big]-\text{Sin}\big[\tfrac{1}{2}(c+d\,x)\big]\big]-\text{Log}\big[\text{Cos}\big[\tfrac{1}{2}(c+d\,x)\big]+\text{Sin}\big[\tfrac{1}{2}(c+d\,x)\big]\big]\Big)-72\,B\,\text{Log}\big[\text{Cos}\big[\tfrac{1}{2}(c+d\,x)\big]+\text{Sin}\big[\tfrac{1}{2}(c+d\,x)\big]\big]-63\,C\,\text{Log}\big[\text{Cos}\big[\tfrac{1}{2}(c+d\,x)\big]+\text{Sin}\big[\tfrac{1}{2}(c+d\,x)\big]\big]-48\,B\,\text{Sin}[c+d\,x]-90\,C\,\text{Sin}[c+d\,x]-112\,B\,\text{Sin}[2\,(c+d\,x)]-128\,C\,\text{Sin}[2\,(c+d\,x)]-48\,B\,\text{Sin}[3\,(c+d\,x)]-42\,C\,\text{Sin}[3\,(c+d\,x)]-40\,B\,\text{Sin}[4\,(c+d\,x)]-32\,C\,\text{Sin}[4\,(c+d\,x)]\Big)$$

Problem 317: Result more than twice size of optimal antiderivative.

$$\int\text{Cos}[c+d\,x]\,(a+a\,\text{Sec}[c+d\,x])^2\,\big(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\,dx$$

Optimal (type 3, 82 leaves, 6 steps):

$$a^2\,B\,x+\frac{a^2\,(4\,B+3\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+\frac{a^2\,(2\,B+3\,C)\,\text{Tan}[c+d\,x]}{2\,d}+\frac{C\,\big(a^2+a^2\,\text{Sec}[c+d\,x]\big)\,\text{Tan}[c+d\,x]}{2\,d}$$

Result (type 3, 277 leaves):

$$\frac{1}{16}a^2\,(1+\text{Cos}[c+d\,x])^2\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^4\Bigg(4\,B\,x-\frac{2\,(4\,B+3\,C)\,\text{Log}\big[\text{Cos}\big[\frac{1}{2}(c+d\,x)\big]-\text{Sin}\big[\frac{1}{2}(c+d\,x)\big]\big]}{d}+\frac{2\,(4\,B+3\,C)\,\text{Log}\big[\text{Cos}\big[\frac{1}{2}(c+d\,x)\big]+\text{Sin}\big[\frac{1}{2}(c+d\,x)\big]\big]}{d}+\frac{C}{d\,\big(\text{Cos}\big[\frac{1}{2}(c+d\,x)\big]-\text{Sin}\big[\frac{1}{2}(c+d\,x)\big]\big)^2}+\frac{4\,(B+2\,C)\,\text{Sin}\big[\frac{d\,x}{2}\big]}{d\,\big(\text{Cos}\big[\frac{c}{2}\big]-\text{Sin}\big[\frac{c}{2}\big]\big)\big(\text{Cos}\big[\frac{1}{2}(c+d\,x)\big]-\text{Sin}\big[\frac{1}{2}(c+d\,x)\big]\big)}-\frac{C}{d\,\big(\text{Cos}\big[\frac{1}{2}(c+d\,x)\big]+\text{Sin}\big[\frac{1}{2}(c+d\,x)\big]\big)^2}+\frac{4\,(B+2\,C)\,\text{Sin}\big[\frac{d\,x}{2}\big]}{d\,\big(\text{Cos}\big[\frac{c}{2}\big]+\text{Sin}\big[\frac{c}{2}\big]\big)\big(\text{Cos}\big[\frac{1}{2}(c+d\,x)\big]+\text{Sin}\big[\frac{1}{2}(c+d\,x)\big]\big)}\Bigg)$$

Problem 323: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x] (a+a \text{Sec}[c+d x])^3 \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 163 leaves, 12 steps):

$$\frac{a^3 (15 B+13 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{a^3 (15 B+13 C) \text{Tan}[c+d x]}{5 d}+\frac{3 a^3 (15 B+13 C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{40 d}+\frac{(5 B-C) (a+a \text{Sec}[c+d x])^3 \text{Tan}[c+d x]}{20 d}+\frac{C (a+a \text{Sec}[c+d x])^4 \text{Tan}[c+d x]}{5 a d}+\frac{a^3 (15 B+13 C) \text{Tan}[c+d x]^3}{60 d}$$

Result (type 3, 391 leaves):

$$-\frac{1}{1920 d} a^3 \text{Sec}[c+d x]^5 \Big(225 B \text{Cos}[5 (c+d x)] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+195 C \text{Cos}[5 (c+d x)] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+150 (15 B+13 C) \text{Cos}[c+d x] \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+75 (15 B+13 C) \text{Cos}[3 (c+d x)] \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)-225 B \text{Cos}[5 (c+d x)] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-195 C \text{Cos}[5 (c+d x)] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-1200 B \text{Sin}[c+d x]-1600 C \text{Sin}[c+d x]-1140 B \text{Sin}[2 (c+d x)]-1500 C \text{Sin}[2 (c+d x)]-1560 B \text{Sin}[3 (c+d x)]-1520 C \text{Sin}[3 (c+d x)]-450 B \text{Sin}[4 (c+d x)]-390 C \text{Sin}[4 (c+d x)]-360 B \text{Sin}[5 (c+d x)]-304 C \text{Sin}[5 (c+d x)]\Big)$$

Problem 324: Result more than twice size of optimal antiderivative.

$$\int (a+a \text{Sec}[c+d x])^3 \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 125 leaves, 11 steps):

$$\frac{5 a^3 (4 B+3 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{a^3 (4 B+3 C) \text{Tan}[c+d x]}{d}+\frac{3 a^3 (4 B+3 C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{8 d}+\frac{C (a+a \text{Sec}[c+d x])^3 \text{Tan}[c+d x]}{4 d}+\frac{a^3 (4 B+3 C) \text{Tan}[c+d x]^3}{12 d}$$

Result (type 3, 339 leaves):

$$\frac{1}{192\,d}\,a^3\,\mathrm{Sec}[c+d\,x]^4\,\Big(-180\,B\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]-$$
$$135\,C\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]-60\,(4\,B+3\,C)\,\mathrm{Cos}[2\,(c+d\,x)]$$
$$\Big(\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]-\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\Big)-$$
$$15\,(4\,B+3\,C)\,\mathrm{Cos}[4\,(c+d\,x)]$$
$$\Big(\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]-\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\Big)+$$
$$180\,B\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]+$$
$$135\,C\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]+72\,B\,\mathrm{Sin}[c+d\,x]+138\,C\,\mathrm{Sin}[c+d\,x]+$$
$$208\,B\,\mathrm{Sin}[2\,(c+d\,x)]+240\,C\,\mathrm{Sin}[2\,(c+d\,x)]+72\,B\,\mathrm{Sin}[3\,(c+d\,x)]+$$
$$90\,C\,\mathrm{Sin}[3\,(c+d\,x)]+88\,B\,\mathrm{Sin}[4\,(c+d\,x)]+72\,C\,\mathrm{Sin}[4\,(c+d\,x)]\Big)$$

Problem 325: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 111 leaves, 7 steps):

$$a^3\,B\,x+\frac{a^3\,(7\,B+5\,C)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,d}+\frac{5\,a^3\,(B+C)\,\mathrm{Tan}[c+d\,x]}{2\,d}+$$
$$\frac{a\,C\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\mathrm{Tan}[c+d\,x]}{3\,d}+\frac{(3\,B+5\,C)\,\left(a^3+a^3\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Tan}[c+d\,x]}{6\,d}$$

Result (type 3, 772 leaves):

$$a^3 \left(\frac{1}{8} B x (1+\text{Cos}[c+d x])^3 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6+\frac{1}{16 d} (-7 B-5 C) (1+\text{Cos}[c+d x])^3 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6+\frac{1}{16 d} (7 B+5 C) (1+\text{Cos}[c+d x])^3 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6+\frac{C (1+\text{Cos}[c+d x])^3 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Sin}\left[\frac{d x}{2}\right]}{48 d \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3}+\left((1+\text{Cos}[c+d x])^3 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(3 B \text{Cos}\left[\frac{c}{2}\right]+10 C \text{Cos}\left[\frac{c}{2}\right]-3 B \text{Sin}\left[\frac{c}{2}\right]-8 C \text{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(96 d \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+\frac{(1+\text{Cos}[c+d x])^3 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(9 B \text{Sin}\left[\frac{d x}{2}\right]+11 C \text{Sin}\left[\frac{d x}{2}\right]\right)}{24 d \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+\frac{C (1+\text{Cos}[c+d x])^3 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Sin}\left[\frac{d x}{2}\right]}{48 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3}+\left((1+\text{Cos}[c+d x])^3 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(-3 B \text{Cos}\left[\frac{c}{2}\right]-10 C \text{Cos}\left[\frac{c}{2}\right]-3 B \text{Sin}\left[\frac{c}{2}\right]-8 C \text{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(96 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+\frac{(1+\text{Cos}[c+d x])^3 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(9 B \text{Sin}\left[\frac{d x}{2}\right]+11 C \text{Sin}\left[\frac{d x}{2}\right]\right)}{24 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}\right)$$

Problem 327: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3 (a+a \text{Sec}[c+d x])^3 \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 3, 117 leaves, 6 steps):

$$\frac{1}{2} a^3 (7 B+6 C) x+\frac{a^3 (B+3 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{d}+\frac{5 a^3 B \text{Sin}[c+d x]}{2 d}+\frac{a B \text{Cos}[c+d x] (a+a \text{Sec}[c+d x])^2 \text{Sin}[c+d x]}{2 d}-\frac{(B-2 C) \left(a^3+a^3 \text{Sec}[c+d x]\right) \text{Sin}[c+d x]}{2 d}$$

Result (type 3, 272 leaves):

$$\frac{1}{32} a^3 \left(1 + \text{Cos}[c + d\,x]\right)^3 \text{Sec}\left[\frac{1}{2}\left(c + d\,x\right)\right]^6 \left(2\left(7\,B + 6\,C\right)x - \frac{4\left(B + 3\,C\right)\text{Log}\left[\text{Cos}\left[\frac{1}{2}\left(c + d\,x\right)\right] - \text{Sin}\left[\frac{1}{2}\left(c + d\,x\right)\right]\right]}{d} + \frac{4\left(B + 3\,C\right)\text{Log}\left[\text{Cos}\left[\frac{1}{2}\left(c + d\,x\right)\right] + \text{Sin}\left[\frac{1}{2}\left(c + d\,x\right)\right]\right]}{d} + \frac{4\left(3\,B + C\right)\text{Cos}[d\,x]\,\text{Sin}[c]}{d} + \frac{B\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{d} + \frac{4\left(3\,B + C\right)\text{Cos}[c]\,\text{Sin}[d\,x]}{d} + \frac{B\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{d} + \frac{4\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]}{d\left(\text{Cos}\left[\frac{c}{2}\right] - \text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}\left(c + d\,x\right)\right] - \text{Sin}\left[\frac{1}{2}\left(c + d\,x\right)\right]\right)} + \frac{4\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]}{d\left(\text{Cos}\left[\frac{c}{2}\right] + \text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}\left(c + d\,x\right)\right] + \text{Sin}\left[\frac{1}{2}\left(c + d\,x\right)\right]\right)}\right)$$

Problem 332: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c + d\,x]^3 \left(B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)}{a + a\,\text{Sec}[c + d\,x]}\,dx$$

Optimal (type 3, 131 leaves, 7 steps):

$$\frac{3\left(B - C\right)\text{ArcTanh}[\text{Sin}[c + d\,x]]}{2\,a\,d} - \frac{\left(3\,B - 4\,C\right)\text{Tan}[c + d\,x]}{a\,d} + \frac{3\left(B - C\right)\text{Sec}[c + d\,x]\,\text{Tan}[c + d\,x]}{2\,a\,d} + \frac{\left(B - C\right)\text{Sec}[c + d\,x]^3\,\text{Tan}[c + d\,x]}{d\left(a + a\,\text{Sec}[c + d\,x]\right)} - \frac{\left(3\,B - 4\,C\right)\text{Tan}[c + d\,x]^3}{3\,a\,d}$$

Result (type 3, 550 leaves):

$$-\frac{1}{24\,a\,d\,\left(1+\text{Cos}[c+d\,x]\right)}\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}[c+d\,x]^3\,\left(9\,B\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\right.$$
$$9\,C\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$9\,B\,\text{Cos}\left[\frac{7}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$
$$9\,C\,\text{Cos}\left[\frac{7}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$27\,(B-C)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\right.$$
$$\left.\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)+27\,(B-C)\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]$$
$$\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)-$$
$$9\,B\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$9\,C\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$
$$9\,B\,\text{Cos}\left[\frac{7}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$9\,C\,\text{Cos}\left[\frac{7}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-12\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$18\,B\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]-30\,C\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]-6\,B\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+$$
$$\left.2\,C\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+12\,B\,\text{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]-16\,C\,\text{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]\right)$$

Problem 333: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^2\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 108 leaves, 7 steps):

$$-\frac{(2\,B-3\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,a\,d}+\frac{2\,(B-C)\,\text{Tan}[c+d\,x]}{a\,d}-$$
$$\frac{(2\,B-3\,C)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,a\,d}+\frac{(B-C)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{d\,\left(a+a\,\text{Sec}[c+d\,x]\right)}$$

Result (type 3, 383 leaves):

$$\frac{1}{4\,a\,d\,\left(1+\text{Cos}[c+d\,x]\right)}\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}[c+d\,x]^2\,\left(2\,B\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-3\,C\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+2\,(2\,B-3\,C)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)+(2\,B-3\,C)\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]\,\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)-2\,B\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+3\,C\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+4\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-2\,C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,C\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+4\,B\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]-4\,C\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]\right)$$

Problem 334: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 62 leaves, 6 steps):

$$\frac{(B-C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a\,d}+\frac{C\,\text{Tan}[c+d\,x]}{a\,d}-\frac{(B-C)\,\text{Tan}[c+d\,x]}{d\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 3, 234 leaves):

$$-\left(\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left((B-C)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)+(B-C)\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]\,\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)-2\,(C-(B-2\,C)\,\text{Cos}[c+d\,x])\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/\left(a\,d\,(1+\text{Cos}[c+d\,x])\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\right)$$

Problem 335: Result more than twice size of optimal antiderivative.

$$\int\frac{B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 44 leaves, 4 steps):

$$\frac{C\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a\,d}+\frac{(B-C)\,\text{Tan}[c+d\,x]}{a\,d\,(1+\text{Sec}[c+d\,x])}$$

Result (type 3, 106 leaves):

$$\left(2\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(C\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)+(B-C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/\left(a\,d\,(1+\text{Cos}[c+d\,x])\right)$$

Problem 336: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 35 leaves, 3 steps):

$$\frac{B\,x}{a}-\frac{(B-C)\,\text{Tan}[c+d\,x]}{d\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 3, 72 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(B\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+B\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+2\,(-B+C)\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/\left(a\,d\,(1+\text{Cos}[c+d\,x])\right)$$

Problem 338: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^3\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 98 leaves, 6 steps):

$$\frac{(3\,B-2\,C)\,x}{2\,a}-\frac{2\,(B-C)\,\text{Sin}[c+d\,x]}{a\,d}+\frac{(3\,B-2\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a\,d}-\frac{(B-C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 3, 197 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]\text{Sec}\left[\frac{c}{2}\right]\left(4(3B-2C)\,d x\,\text{Cos}\left[\frac{d x}{2}\right]+4(3B-2C)\,d x\,\text{Cos}\left[c+\frac{d x}{2}\right]-20B\,\text{Sin}\left[\frac{d x}{2}\right]+20C\,\text{Sin}\left[\frac{d x}{2}\right]-4B\,\text{Sin}\left[c+\frac{d x}{2}\right]+4C\,\text{Sin}\left[c+\frac{d x}{2}\right]-3B\,\text{Sin}\left[c+\frac{3 d x}{2}\right]+4C\,\text{Sin}\left[c+\frac{3 d x}{2}\right]-3B\,\text{Sin}\left[2c+\frac{3 d x}{2}\right]+4C\,\text{Sin}\left[2c+\frac{3 d x}{2}\right]+B\,\text{Sin}\left[2c+\frac{5 d x}{2}\right]+B\,\text{Sin}\left[3c+\frac{5 d x}{2}\right]\right)\right)\Big/\left(8 a d\,(1+\text{Cos}[c+d x])\right)$$

Problem 339: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d x]^4\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{a+a\,\text{Sec}[c+d x]}\,dx$$

Optimal (type 3, 122 leaves, 7 steps):

$$-\frac{3(B-C)x}{2a}+\frac{(4B-3C)\,\text{Sin}[c+d x]}{a d}-\frac{3(B-C)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{2 a d}-\frac{(B-C)\,\text{Cos}[c+d x]^2\,\text{Sin}[c+d x]}{d\,(a+a\,\text{Sec}[c+d x])}-\frac{(4B-3C)\,\text{Sin}[c+d x]^3}{3 a d}$$

Result (type 3, 249 leaves):

$$\frac{1}{24 a d\,(1+\text{Cos}[c+d x])}\text{Cos}\left[\frac{1}{2}(c+d x)\right]\text{Sec}\left[\frac{c}{2}\right]\left(-36(B-C)\,d x\,\text{Cos}\left[\frac{d x}{2}\right]-36(B-C)\,d x\,\text{Cos}\left[c+\frac{d x}{2}\right]+69B\,\text{Sin}\left[\frac{d x}{2}\right]-60C\,\text{Sin}\left[\frac{d x}{2}\right]+21B\,\text{Sin}\left[c+\frac{d x}{2}\right]-12C\,\text{Sin}\left[c+\frac{d x}{2}\right]+18B\,\text{Sin}\left[c+\frac{3 d x}{2}\right]-9C\,\text{Sin}\left[c+\frac{3 d x}{2}\right]+18B\,\text{Sin}\left[2c+\frac{3 d x}{2}\right]-9C\,\text{Sin}\left[2c+\frac{3 d x}{2}\right]-2B\,\text{Sin}\left[2c+\frac{5 d x}{2}\right]+3C\,\text{Sin}\left[2c+\frac{5 d x}{2}\right]-2B\,\text{Sin}\left[3c+\frac{5 d x}{2}\right]+3C\,\text{Sin}\left[3c+\frac{5 d x}{2}\right]+B\,\text{Sin}\left[3c+\frac{7 d x}{2}\right]+B\,\text{Sin}\left[4c+\frac{7 d x}{2}\right]\right)$$

Problem 340: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d x]^3\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{(a+a\,\text{Sec}[c+d x])^2}\,dx$$

Optimal (type 3, 156 leaves, 8 steps):

$$-\frac{(4B-7C)\,\text{ArcTanh}[\text{Sin}[c+d x]]}{2a^2 d}+\frac{2(5B-8C)\,\text{Tan}[c+d x]}{3a^2 d}-\frac{(4B-7C)\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{2a^2 d}+\frac{(5B-8C)\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]}{3a^2 d\,(1+\text{Sec}[c+d x])}+\frac{(B-C)\,\text{Sec}[c+d x]^3\,\text{Tan}[c+d x]}{3d\,(a+a\,\text{Sec}[c+d x])^2}$$

Result (type 3, 379 leaves):

$$\frac{1}{6 a^2 d} \text{Cos}\left[\frac{1}{2} (c+d x)\right]^4 \text{Sec}[c+d x]^2 \left(3 (4 B-7 C) \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+8 (B+5 C) \text{Csc}[c+d x]^3 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^4-64 (B-C) \text{Csc}[c+d x]^5 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^8-128 C \text{Csc}[c+d x]^7 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^{12}+(26 B-44 C) \text{Tan}\left[\frac{1}{2} (c+d x)\right]-6 (4 B-7 C) \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2-8 (5 B-8 C) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3+3 (4 B-7 C) \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^4+\left(14 B-20 C+B \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^5\right)$$

Problem 341: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^2 \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 108 leaves, 7 steps):

$$\frac{(B-2 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{a^2 d}-\frac{(B-4 C) \text{Tan}[c+d x]}{3 a^2 d}-\frac{(B-2 C) \text{Tan}[c+d x]}{a^2 d (1+\text{Sec}[c+d x])}+\frac{(B-C) \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{3 d (a+a \text{Sec}[c+d x])^2}$$

Result (type 3, 245 leaves):

$$\frac{1}{3 a^2 d} \text{Cos}\left[\frac{1}{2} (c+d x)\right]^2 \text{Sec}[c+d x] \left(-3 (B-2 C) \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)-4 (B-C) \text{Csc}[c+d x]^3 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^4+16 (B-C) \text{Csc}[c+d x]^5 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^8+(-4 B+13 C) \text{Tan}\left[\frac{1}{2} (c+d x)\right]+3 (B-2 C) \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2+(4 B-7 C) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3\right)$$

Problem 344: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x] \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 70 leaves, 4 steps):

$$\frac{B x}{a^2}-\frac{(4 B-C) \text{Tan}[c+d x]}{3 a^2 d (1+\text{Sec}[c+d x])}-\frac{(B-C) \text{Tan}[c+d x]}{3 d (a+a \text{Sec}[c+d x])^2}$$

Result (type 3, 153 leaves):

$$\frac{1}{24 a^2 d}\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{1}{2} (c+d x)\right]^3 \left(9 B d x \text{Cos}\left[\frac{d x}{2}\right]+9 B d x \text{Cos}\left[c+\frac{d x}{2}\right]+3 B d x \text{Cos}\left[c+\frac{3 d x}{2}\right]+3 B d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]-18 B \text{Sin}\left[\frac{d x}{2}\right]+6 C \text{Sin}\left[\frac{d x}{2}\right]+12 B \text{Sin}\left[c+\frac{d x}{2}\right]-6 C \text{Sin}\left[c+\frac{d x}{2}\right]-10 B \text{Sin}\left[c+\frac{3 d x}{2}\right]+4 C \text{Sin}\left[c+\frac{3 d x}{2}\right]\right)$$

Problem 345: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2 \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 98 leaves, 6 steps):

$$-\frac{(2 B-C) x}{a^2}+\frac{2 (5 B-2 C) \text{Sin}[c+d x]}{3 a^2 d}-\frac{(2 B-C) \text{Sin}[c+d x]}{a^2 d (1+\text{Sec}[c+d x])}-\frac{(B-C) \text{Sin}[c+d x]}{3 d (a+a \text{Sec}[c+d x])^2}$$

Result (type 3, 245 leaves):

$$\frac{1}{12 a^2 d (1+\text{Cos}[c+d x])^2}\text{Cos}\left[\frac{1}{2} (c+d x)\right] \text{Sec}\left[\frac{c}{2}\right] \left(-18 (2 B-C) d x \text{Cos}\left[\frac{d x}{2}\right]-18 (2 B-C) d x \text{Cos}\left[c+\frac{d x}{2}\right]-12 B d x \text{Cos}\left[c+\frac{3 d x}{2}\right]+6 C d x \text{Cos}\left[c+\frac{3 d x}{2}\right]-12 B d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]+6 C d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]+66 B \text{Sin}\left[\frac{d x}{2}\right]-36 C \text{Sin}\left[\frac{d x}{2}\right]-30 B \text{Sin}\left[c+\frac{d x}{2}\right]+24 C \text{Sin}\left[c+\frac{d x}{2}\right]+41 B \text{Sin}\left[c+\frac{3 d x}{2}\right]-20 C \text{Sin}\left[c+\frac{3 d x}{2}\right]+9 B \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+3 B \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+3 B \text{Sin}\left[3 c+\frac{5 d x}{2}\right]\right)$$

Problem 346: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^3 \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 143 leaves, 7 steps):

$$\frac{(7B-4C)\,x}{2a^2}-\frac{2\,(8B-5C)\,\text{Sin}[c+dx]}{3a^2d}+\frac{(7B-4C)\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{2a^2d}-\frac{(8B-5C)\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{3a^2d\,(1+\text{Sec}[c+dx])}-\frac{(B-C)\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{3d\,(a+a\,\text{Sec}[c+dx])^2}$$

Result (type 3, 315 leaves):

$$\frac{1}{48a^2d\,(1+\text{Cos}[c+dx])^2}\text{Cos}\left[\frac{1}{2}(c+dx)\right]\text{Sec}\left[\frac{c}{2}\right]\left(36\,(7B-4C)\,d\,x\,\text{Cos}\left[\frac{dx}{2}\right]+36\,(7B-4C)\,d\,x\,\text{Cos}\left[c+\frac{dx}{2}\right]+84\,B\,d\,x\,\text{Cos}\left[c+\frac{3dx}{2}\right]-48\,C\,d\,x\,\text{Cos}\left[c+\frac{3dx}{2}\right]+84\,B\,d\,x\,\text{Cos}\left[2c+\frac{3dx}{2}\right]-48\,C\,d\,x\,\text{Cos}\left[2c+\frac{3dx}{2}\right]-381\,B\,\text{Sin}\left[\frac{dx}{2}\right]+264\,C\,\text{Sin}\left[\frac{dx}{2}\right]+147\,B\,\text{Sin}\left[c+\frac{dx}{2}\right]-120\,C\,\text{Sin}\left[c+\frac{dx}{2}\right]-239\,B\,\text{Sin}\left[c+\frac{3dx}{2}\right]+164\,C\,\text{Sin}\left[c+\frac{3dx}{2}\right]-63\,B\,\text{Sin}\left[2c+\frac{3dx}{2}\right]+36\,C\,\text{Sin}\left[2c+\frac{3dx}{2}\right]-15\,B\,\text{Sin}\left[2c+\frac{5dx}{2}\right]+12\,C\,\text{Sin}\left[2c+\frac{5dx}{2}\right]-15\,B\,\text{Sin}\left[3c+\frac{5dx}{2}\right]+12\,C\,\text{Sin}\left[3c+\frac{5dx}{2}\right]+3\,B\,\text{Sin}\left[3c+\frac{7dx}{2}\right]+3\,B\,\text{Sin}\left[4c+\frac{7dx}{2}\right]\right)$$

Problem 347: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+dx]^4\,(B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2)}{(a+a\,\text{Sec}[c+dx])^2}\,dx$$

Optimal (type 3, 170 leaves, 8 steps):

$$-\frac{(10B-7C)\,x}{2a^2}+\frac{4\,(3B-2C)\,\text{Sin}[c+dx]}{a^2d}-\frac{(10B-7C)\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{2a^2d}-\frac{(10B-7C)\,\text{Cos}[c+dx]^2\,\text{Sin}[c+dx]}{3a^2d\,(1+\text{Sec}[c+dx])}-\frac{(B-C)\,\text{Cos}[c+dx]^2\,\text{Sin}[c+dx]}{3d\,(a+a\,\text{Sec}[c+dx])^2}-\frac{4\,(3B-2C)\,\text{Sin}[c+dx]^3}{3a^2d}$$

Result (type 3, 369 leaves):

$$\frac{1}{48\,a^2\,d\,\left(1+\text{Cos}[c+d\,x]\right)^2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(-36\,(10\,B-7\,C)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-36\,(10\,B-7\,C)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-120\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+84\,C\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-120\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+84\,C\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+516\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-381\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]-156\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+147\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+342\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-239\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+118\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-63\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+30\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-15\,C\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+30\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-15\,C\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-3\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+3\,C\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-3\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+3\,C\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+B\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+B\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

Problem 348: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^4\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 3, 202 leaves, 9 steps):

$$-\frac{(6\,B-13\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,a^3\,d}+\frac{8\,(9\,B-19\,C)\,\text{Tan}[c+d\,x]}{15\,a^3\,d}-\frac{(6\,B-13\,C)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,a^3\,d}+\frac{(B-C)\,\text{Sec}[c+d\,x]^4\,\text{Tan}[c+d\,x]}{5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}+\frac{(6\,B-11\,C)\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{15\,a\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+\frac{4\,(9\,B-19\,C)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{15\,d\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}$$

Result (type 3, 428 leaves):

$$\frac{1}{60 a^3 d} \text{Cos}\left[\frac{1}{2} (c+d x)\right]^4 \text{Sec}[c+d x]^2 \Bigg(30 (6 B-13 C) \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+ 16 (12 B+13 C) \text{Csc}[c+d x]^3 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^4+4 (87 B-197 C) \text{Tan}\left[\frac{1}{2} (c+d x)\right]+ (-21 B+31 C+(24 B-34 C) \text{Cos}[c+d x]) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4 \text{Tan}\left[\frac{1}{2} (c+d x)\right]-60 (6 B-13 C) \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2-64 (9 B-19 C) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3- (-6 B+11 C+(12 B-17 C) \text{Cos}[c+d x]) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4 \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3+30 (6 B-13 C) \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^4+\left(228 B-428 C+3 (B-C) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^5\Bigg)$$

Problem 353: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x] \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 108 leaves, 5 steps):

$$\frac{B x}{a^3}-\frac{(B-C) \text{Tan}[c+d x]}{5 d (a+a \text{Sec}[c+d x])^3}-\frac{(7 B-2 C) \text{Tan}[c+d x]}{15 a d (a+a \text{Sec}[c+d x])^2}-\frac{2 (11 B-C) \text{Tan}[c+d x]}{15 d \left(a^3+a^3 \text{Sec}[c+d x]\right)}$$

Result (type 3, 241 leaves):

$$\frac{1}{480 a^3 d} \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \Bigg(150 B d x \text{Cos}\left[\frac{d x}{2}\right]+150 B d x \text{Cos}\left[c+\frac{d x}{2}\right]+75 B d x \text{Cos}\left[c+\frac{3 d x}{2}\right]+75 B d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]+ 15 B d x \text{Cos}\left[2 c+\frac{5 d x}{2}\right]+15 B d x \text{Cos}\left[3 c+\frac{5 d x}{2}\right]-370 B \text{Sin}\left[\frac{d x}{2}\right]+80 C \text{Sin}\left[\frac{d x}{2}\right]+ 270 B \text{Sin}\left[c+\frac{d x}{2}\right]-60 C \text{Sin}\left[c+\frac{d x}{2}\right]-230 B \text{Sin}\left[c+\frac{3 d x}{2}\right]+40 C \text{Sin}\left[c+\frac{3 d x}{2}\right]+ 90 B \text{Sin}\left[2 c+\frac{3 d x}{2}\right]-30 C \text{Sin}\left[2 c+\frac{3 d x}{2}\right]-64 B \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+14 C \text{Sin}\left[2 c+\frac{5 d x}{2}\right]\Bigg)$$

Problem 354: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2 \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 136 leaves, 7 steps):

$$-\frac{(3B-C)x}{a^3}+\frac{2(36B-11C)\,\mathrm{Sin}[c+dx]}{15a^3d}-\frac{(B-C)\,\mathrm{Sin}[c+dx]}{5d\,(a+a\,\mathrm{Sec}[c+dx])^3}-\frac{(9B-4C)\,\mathrm{Sin}[c+dx]}{15ad\,(a+a\,\mathrm{Sec}[c+dx])^2}-\frac{(3B-C)\,\mathrm{Sin}[c+dx]}{d\,(a^3+a^3\,\mathrm{Sec}[c+dx])}$$

Result (type 3, 365 leaves):

$$\frac{1}{120a^3d\,(1+\mathrm{Cos}[c+dx])^3}\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(-300(3B-C)\,dx\,\mathrm{Cos}\left[\frac{dx}{2}\right]-300(3B-C)\,dx\,\mathrm{Cos}\left[c+\frac{dx}{2}\right]-450B\,dx\,\mathrm{Cos}\left[c+\frac{3dx}{2}\right]+150C\,dx\,\mathrm{Cos}\left[c+\frac{3dx}{2}\right]-450B\,dx\,\mathrm{Cos}\left[2c+\frac{3dx}{2}\right]+150C\,dx\,\mathrm{Cos}\left[2c+\frac{3dx}{2}\right]-90B\,dx\,\mathrm{Cos}\left[2c+\frac{5dx}{2}\right]+30C\,dx\,\mathrm{Cos}\left[2c+\frac{5dx}{2}\right]-90B\,dx\,\mathrm{Cos}\left[3c+\frac{5dx}{2}\right]+30C\,dx\,\mathrm{Cos}\left[3c+\frac{5dx}{2}\right]+1755B\,\mathrm{Sin}\left[\frac{dx}{2}\right]-740C\,\mathrm{Sin}\left[\frac{dx}{2}\right]-1125B\,\mathrm{Sin}\left[c+\frac{dx}{2}\right]+540C\,\mathrm{Sin}\left[c+\frac{dx}{2}\right]+1215B\,\mathrm{Sin}\left[c+\frac{3dx}{2}\right]-460C\,\mathrm{Sin}\left[c+\frac{3dx}{2}\right]-225B\,\mathrm{Sin}\left[2c+\frac{3dx}{2}\right]+180C\,\mathrm{Sin}\left[2c+\frac{3dx}{2}\right]+363B\,\mathrm{Sin}\left[2c+\frac{5dx}{2}\right]-128C\,\mathrm{Sin}\left[2c+\frac{5dx}{2}\right]+75B\,\mathrm{Sin}\left[3c+\frac{5dx}{2}\right]+15B\,\mathrm{Sin}\left[3c+\frac{7dx}{2}\right]+15B\,\mathrm{Sin}\left[4c+\frac{7dx}{2}\right]\right)$$

Problem 355: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[c+dx]^3\,(B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2)}{(a+a\,\mathrm{Sec}[c+dx])^3}\,dx$$

Optimal (type 3, 187 leaves, 8 steps):

$$\frac{(13B-6C)x}{2a^3}-\frac{8(19B-9C)\,\mathrm{Sin}[c+dx]}{15a^3d}+\frac{(13B-6C)\,\mathrm{Cos}[c+dx]\,\mathrm{Sin}[c+dx]}{2a^3d}-\frac{(B-C)\,\mathrm{Cos}[c+dx]\,\mathrm{Sin}[c+dx]}{5d\,(a+a\,\mathrm{Sec}[c+dx])^3}-\frac{(11B-6C)\,\mathrm{Cos}[c+dx]\,\mathrm{Sin}[c+dx]}{15ad\,(a+a\,\mathrm{Sec}[c+dx])^2}-\frac{4(19B-9C)\,\mathrm{Cos}[c+dx]\,\mathrm{Sin}[c+dx]}{15d\,(a^3+a^3\,\mathrm{Sec}[c+dx])}$$

Result (type 3, 435 leaves):

$$\frac{1}{480\, a^3\, d\, (1+\text{Cos}[c+d\,x])^3}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\left(600\,(13\,B-6\,C)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+600\,(13\,B-6\,C)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+\right.$$
$$3900\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-1800\,C\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+3900\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$1800\,C\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+780\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]-360\,C\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$780\,B\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-360\,C\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-12\,760\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+7020\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]+$$
$$7560\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-4500\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-9230\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+4860\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$930\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-900\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-2782\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+1452\,C\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$750\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+300\,C\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-105\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+60\,C\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-$$
$$\left.105\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+60\,C\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+15\,B\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+15\,B\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

Problem 361: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 66 leaves, 5 steps):

$$\frac{2\,\sqrt{a}\,B\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a\,C\,\text{Tan}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 363 leaves):

$$-\frac{1}{d}8\left(-3-2\sqrt{2}\right)B\,\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\left(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\mathrm{EllipticPi}\left[-3+2\sqrt{2},-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]}$$

$$\mathrm{Sec}[c+d\,x]\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+$$

$$\frac{2\,C\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{d}$$

Problem 362: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^2\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 3, 68 leaves, 4 steps):

$$\frac{\sqrt{a}\,(B+2\,C)\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{d}+\frac{a\,B\,\mathrm{Sin}[c+d\,x]}{d\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 4, 396 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\left(1+\text{Sec}[c+d x]\right)}\left(-\frac{1}{2}B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{2}B\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)-$$

$$\frac{1}{d}4\left(-3-2\sqrt{2}\right)(B+2C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Sec}\left[\frac{1}{2}(c+d x)\right]}$$

$$\text{Sec}[c+d x]\sqrt{a\left(1+\text{Sec}[c+d x]\right)}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 363: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3\sqrt{a+a\,\text{Sec}[c+d x]}\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

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

$$\frac{\sqrt{a}\,(3B+4C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{4d}+\frac{a\,(3B+4C)\,\text{Sin}[c+d x]}{4d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a\,B\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{2d\sqrt{a+a\,\text{Sec}[c+d x]}}$$

Result (type 4, 418 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a(1+\text{Sec}[c+d x])}$$
$$\left(-\frac{1}{8}(B+4C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{4}(B+2C)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{8}B\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)+$$
$$\frac{1}{d}\left(2+\frac{3}{\sqrt{2}}\right)(3B+4C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]$$
$$\text{Sec}[c+d x]\sqrt{a(1+\text{Sec}[c+d x])}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 364: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^4\sqrt{a+a\,\text{Sec}[c+d x]}\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 160 leaves, 6 steps):

$$\frac{\sqrt{a}\,(5B+6C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{8d}+\frac{a(5B+6C)\,\text{Sin}[c+d x]}{8d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$
$$\frac{a(5B+6C)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{12d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a B\,\text{Cos}[c+d x]^2\,\text{Sin}[c+d x]}{3d\sqrt{a+a\,\text{Sec}[c+d x]}}$$

Result (type 4, 443 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{a\,(1+\text{Sec}[c+d\,x])}\,\left(-\frac{1}{48}(11\,B+6\,C)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{12}(4\,B+3\,C)\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+\frac{1}{16}(B+2\,C)\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+\frac{1}{24}B\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]\right)+$$

$$\frac{1}{d}\left(1+\frac{3}{2\sqrt{2}}\right)(5\,B+6\,C)\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}\;\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\text{Sec}[c+d\,x]\sqrt{a\,(1+\text{Sec}[c+d\,x])}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

Problem 369: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 3, 105 leaves, 6 steps):

$$\frac{2\,a^{3/2}\,B\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a^2\,(3\,B+4\,C)\,\text{Tan}[c+d\,x]}{3\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{2\,a\,C\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{3\,d}$$

Result (type 4, 408 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 \left(a\,(1+\text{Sec}[c+d x])\right)^{3/2} \left(\frac{1}{3}(3 B+5 C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3} C\,\text{Sec}[c+d x]\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)-$$

$$\frac{1}{d} 4 \left(-3-2\sqrt{2}\right) B\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4 \sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3$$

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

Problem 370: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2 \left(a+a\,\text{Sec}[c+d x]\right)^{3/2} \left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 103 leaves, 5 steps):

$$\frac{a^{3/2}(3 B+2 C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{d}+\frac{a^2 (B-2 C)\,\text{Sin}[c+d x]}{d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{2 a C\sqrt{a+a\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{d}$$

Result (type 4, 408 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}$$
$$\left(\frac{1}{4}(-B+4 C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{4}B\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)-$$
$$\frac{1}{d}2\left(-3-2\sqrt{2}\right)(3 B+2 C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\;\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3$$
$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 372: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\text{Cos}[c+d x]^4\left(a+a\,\text{Sec}[c+d x]\right)^{3/2}\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 164 leaves, 6 steps):

$$\frac{a^{3/2}(11 B+14 C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{8 d}+\frac{a^2(11 B+14 C)\,\text{Sin}[c+d x]}{8 d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$
$$\frac{a^2(7 B+6 C)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{12 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a B\,\text{Cos}[c+d x]^2\sqrt{a+a\,\text{Sec}[c+d x]}\;\text{Sin}[c+d x]}{3 d}$$

Result (type 4, 3073 leaves):

$$a\left(-\frac{1}{d}2\left(-3-2\sqrt{2}\right)C\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\right.$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}\;\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)$$

$$\left(1+\operatorname{Cos}[c+d\,x]\right)\left(\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\operatorname{EllipticPi}\left[-3+2\sqrt{2},-\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\operatorname{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\operatorname{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}$$

$$\operatorname{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]\operatorname{Sec}[c+d\,x]\sqrt{a\left(1+\operatorname{Sec}[c+d\,x]\right)}\;\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}\;+$$

$$\frac{1}{4\sqrt{1+\operatorname{Sec}[c+d\,x]}}\,B\left(1+\operatorname{Cos}[c+d\,x]\right)\operatorname{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{a\left(1+\operatorname{Sec}[c+d\,x]\right)}$$

$$\left(\frac{1}{d}\operatorname{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]\sqrt{1+\operatorname{Sec}[c+d\,x]}\;\left(-\frac{1}{2}\operatorname{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{2}\operatorname{Sin}\left[\frac{3}{2}\left(c+d\,x\right)\right]\right)-\right.$$

$$\frac{1}{d}\,4\left(-3-2\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}\;\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)$$

$$\left(\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\operatorname{EllipticPi}\left[-3+2\sqrt{2},-\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\operatorname{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2\right)}\operatorname{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]$$

$$\left.\operatorname{Sec}[c+d\,x]\sqrt{1+\operatorname{Sec}[c+d\,x]}\;\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}\right)+$$

$$\frac{1}{2\sqrt{1+\operatorname{Sec}[c+d\,x]}}\,C\left(1+\operatorname{Cos}[c+d\,x]\right)\operatorname{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{a\left(1+\operatorname{Sec}[c+d\,x]\right)}$$

$$\left(\frac{1}{d}\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\sqrt{1+\text{Sec}[c+d\,x]}\,\left(-\frac{1}{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{2}\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]\right)-\right.$$

$$\frac{1}{d}4\,\left(-3-2\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]}$$

$$\left.\text{Sec}[c+d\,x]\,\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\right)+$$

$$\frac{1}{2\,\sqrt{1+\text{Sec}[c+d\,x]}}\,B\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}$$

$$\left(\frac{1}{d}\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\sqrt{1+\text{Sec}[c+d\,x]}\right.$$

$$\left(-\frac{1}{8}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{4}\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+\frac{1}{8}\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]\right)+$$

$$\frac{1}{d}3\,\left(2+\frac{3}{\sqrt{2}}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\right.\right.$$

$$\left.17-12\,\sqrt{2}\right]+2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\Bigg)$$

$$\sqrt{\left(\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)}$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\mathrm{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2\right)}\ \mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]$$

$$\left.\mathrm{Sec}[c+d\,x]\,\sqrt{1+\mathrm{Sec}[c+d\,x]}\,\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}\right)+$$

$$\frac{1}{4\sqrt{1+\mathrm{Sec}[c+d\,x]}}\,C\left(1+\mathrm{Cos}[c+d\,x]\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{a\left(1+\mathrm{Sec}[c+d\,x]\right)}$$

$$\left(\frac{1}{2\,d}\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]\sqrt{1+\mathrm{Sec}[c+d\,x]}\left(-\mathrm{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\mathrm{Sin}\left[\frac{3}{2}\left(c+d\,x\right)\right]\right)+\right.$$

$$\frac{1}{2\,d\sqrt{\mathrm{Sec}[c+d\,x]}}\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]\sqrt{1+\mathrm{Sec}[c+d\,x]}\left(\frac{1}{2}\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$

$$\left(\mathrm{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\mathrm{Sin}\left[\frac{5}{2}\left(c+d\,x\right)\right]\right)+4\left(-3-2\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]^4$$

$$\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\left(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-\right.\right.$$

$$\left.12\sqrt{2}\right]+2\,\mathrm{EllipticPi}\left[-3+2\sqrt{2},-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\mathrm{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2\right)}$$

$$\left.\left.\mathrm{Sec}[c+d\,x]^{3/2}\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}\right)\right)+$$

$$\frac{1}{4\sqrt{1+\mathrm{Sec}[c+d\,x]}}\,B\left(1+\mathrm{Cos}[c+d\,x]\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{a\left(1+\mathrm{Sec}[c+d\,x]\right)}$$

$$\left(\frac{1}{2}\left(\frac{1}{d}\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]\sqrt{1+\mathrm{Sec}[c+d\,x]}\left(-\frac{1}{2}\mathrm{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{2}\mathrm{Sin}\left[\frac{3}{2}\left(c+d\,x\right)\right]\right)-\right.\right.$$

$$\frac{1}{d}4\left(-3-2\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]$$

$$\left.\text{Sec}[c+d\,x]\,\sqrt{1+\text{Sec}[c+d\,x]}\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\right)+$$

$$\frac{1}{2}\left(\frac{1}{6\,d}\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\sqrt{1+\text{Sec}[c+d\,x]}\,\left(2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+\right.\right.$$

$$\left.\text{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]\right)+\frac{1}{2\,d\,\sqrt{\text{Sec}[c+d\,x]}}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]$$

$$\sqrt{1+\text{Sec}[c+d\,x]}\,\left(\frac{1}{2}\,\sqrt{\text{Sec}[c+d\,x]}\,\left(\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]\right)+\right.$$

$$4\,\left(-3-2\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)}$$

$$\left.\left.\left.\left.\left.\text{Sec}[c+d x]^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right)\right)\right)\right)$$

Problem 373: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^5 (a+a\,\text{Sec}[c+d x])^{3/2} \left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 209 leaves, 7 steps):

$$\frac{a^{3/2} (75 B+88 C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{64 d}+\frac{a^2 (75 B+88 C)\,\text{Sin}[c+d x]}{64 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a^2 (75 B+88 C)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{96 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a^2 (9 B+8 C)\,\text{Cos}[c+d x]^2\,\text{Sin}[c+d x]}{24 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a B\,\text{Cos}[c+d x]^3\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{4 d}$$

Result (type 4, 4534 leaves):

$$a\left(-\frac{1}{d}2\left(-3-2\sqrt{2}\right) C\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\right.$$

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

$$(1+\text{Cos}[c+d x])\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]\text{Sec}[c+d x]\sqrt{a(1+\text{Sec}[c+d x])}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}+$$

$$\frac{1}{4\sqrt{1+\text{Sec}[c+d x]}}B(1+\text{Cos}[c+d x])\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{a(1+\text{Sec}[c+d x])}$$

$$\left(\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{1+\text{Sec}[c+d x]}\left(-\frac{1}{2}\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{2}\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)-\right.$$

$$\frac{1}{d}4\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right)}\;\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$

$$\left.\text{Sec}[c+d x]\sqrt{1+\text{Sec}[c+d x]}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)+$$

$$\frac{1}{8\sqrt{1+\text{Sec}[c+d x]}}3\,C\left(1+\text{Cos}[c+d x]\right)\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{a\left(1+\text{Sec}[c+d x]\right)}$$

$$\left(\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{1+\text{Sec}[c+d x]}\left(-\frac{1}{2}\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{2}\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)-\right.$$

$$\frac{1}{d}4\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\operatorname{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2\right)\operatorname{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]}$$

$$\left.\operatorname{Sec}[c+d\,x]\,\sqrt{1+\operatorname{Sec}[c+d\,x]}\,\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}\right)+$$

$$\frac{1}{8\sqrt{1+\operatorname{Sec}[c+d\,x]}}\,3\,B\left(1+\operatorname{Cos}[c+d\,x]\right)\operatorname{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{a\left(1+\operatorname{Sec}[c+d\,x]\right)}$$

$$\left(\frac{1}{d}\operatorname{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]\sqrt{1+\operatorname{Sec}[c+d\,x]}\right.$$

$$\left(-\frac{1}{8}\operatorname{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{4}\operatorname{Sin}\left[\frac{3}{2}\left(c+d\,x\right)\right]+\frac{1}{8}\operatorname{Sin}\left[\frac{5}{2}\left(c+d\,x\right)\right]\right)+$$

$$\frac{1}{d}\,3\left(2+\frac{3}{\sqrt{2}}\right)\operatorname{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\left(\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],\right.\right.$$

$$\left.17-12\sqrt{2}\right]+2\,\operatorname{EllipticPi}\left[-3+2\sqrt{2},-\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\operatorname{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2\right)}$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\operatorname{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2\right)\operatorname{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]}$$

$$\left.\operatorname{Sec}[c+d\,x]\,\sqrt{1+\operatorname{Sec}[c+d\,x]}\,\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}\right)+$$

$$\frac{1}{4\sqrt{1+\operatorname{Sec}[c+d\,x]}}\,C\left(1+\operatorname{Cos}[c+d\,x]\right)\operatorname{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{a\left(1+\operatorname{Sec}[c+d\,x]\right)}$$

$$\left(\frac{1}{2\,d}\operatorname{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]\sqrt{1+\operatorname{Sec}[c+d\,x]}\left(-\operatorname{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\operatorname{Sin}\left[\frac{3}{2}\left(c+d\,x\right)\right]\right)+\right.$$

$$\frac{1}{2\,d\sqrt{\operatorname{Sec}[c+d\,x]}}\operatorname{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]\sqrt{1+\operatorname{Sec}[c+d\,x]}\left(\frac{1}{2}\sqrt{\operatorname{Sec}[c+d\,x]}\right.$$

$$\left(\operatorname{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\operatorname{Sin}\left[\frac{5}{2}\left(c+d\,x\right)\right]\right)+4\left(-3-2\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]^4$$

$$\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}\ \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-\right.\right.$$

$$\left.12\sqrt{2}\right]+2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\Bigg)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\text{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2\right)}$$

$$\left.\left.\text{Sec}[c+d\,x]^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}\right)\right)+$$

$$\frac{1}{8\sqrt{1+\text{Sec}[c+d\,x]}}\,C\left(1+\text{Cos}[c+d\,x]\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{a\left(1+\text{Sec}[c+d\,x]\right)}$$

$$\left(\frac{1}{6\,d}\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]\sqrt{1+\text{Sec}[c+d\,x]}\right.$$

$$\left(2\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{3}{2}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{7}{2}\left(c+d\,x\right)\right]\right)+$$

$$\frac{1}{2\,d\sqrt{\text{Sec}[c+d\,x]}}\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]\sqrt{1+\text{Sec}[c+d\,x]}\left(\frac{1}{2}\sqrt{\text{Sec}[c+d\,x]}\right.$$

$$\left(\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{5}{2}\left(c+d\,x\right)\right]\right)+4\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]^4$$

$$\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}\ \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-\right.\right.$$

$$\left.12\sqrt{2}\right]+2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\Bigg)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\text{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2\right)}$$

$$\left.\left.\text{Sec}[c+d x]^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right)+$$

$$\frac{1}{4\sqrt{1+\text{Sec}[c+d x]}}B\left(1+\text{Cos}[c+d x]\right)\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{a\left(1+\text{Sec}[c+d x]\right)}$$

$$\left(\frac{1}{2}\left(\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{1+\text{Sec}[c+d x]}\left(-\frac{1}{2}\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{2}\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)-\right.\right.$$

$$\frac{1}{d}4\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]}$$

$$\left.\text{Sec}[c+d x]\sqrt{1+\text{Sec}[c+d x]}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)+$$

$$\frac{1}{2}\left(\frac{1}{6 d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{1+\text{Sec}[c+d x]}\left(2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\right.\right.$$

$$\left.\text{Sin}\left[\frac{7}{2}(c+d x)\right]\right)+\frac{1}{2 d\sqrt{\text{Sec}[c+d x]}}\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$

$$\sqrt{1+\text{Sec}[c+d x]}\left(\frac{1}{2}\sqrt{\text{Sec}[c+d x]}\left(\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)+\right.$$

$$4\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right)}$$

$$\left.\left.\left.\text{Sec}[c+d x]^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right)\right)+$$

$$\frac{1}{8\sqrt{1+\text{Sec}[c+d x]}}B\left(1+\text{Cos}[c+d x]\right)\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{a\left(1+\text{Sec}[c+d x]\right)}$$

$$\left(\frac{1}{2}\left(\frac{1}{2 d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{1+\text{Sec}[c+d x]}\left(-\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)+\right.\right.$$

$$\frac{1}{2 d\sqrt{\text{Sec}[c+d x]}}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{1+\text{Sec}[c+d x]}$$

$$\left(\frac{1}{2}\sqrt{\text{Sec}[c+d x]}\left(\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)+\right.$$

$$4\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right)}$$

$$\left.\left.\operatorname{Sec}[c+d x]^{3/2}\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right)+$$

$$\frac{1}{2}\left(\frac{1}{6 d}\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{1+\operatorname{Sec}[c+d x]}\left(2\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{3}{2}(c+d x)\right]+\right.\right.$$

$$\left.\operatorname{Sin}\left[\frac{7}{2}(c+d x)\right]\right)+\frac{1}{2 d\sqrt{\operatorname{Sec}[c+d x]}}\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{1+\operatorname{Sec}[c+d x]}$$

$$\left(-\frac{1}{8}\sqrt{\operatorname{Sec}[c+d x]}\left(3\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{5}{2}(c+d x)\right]-2\operatorname{Sin}\left[\frac{9}{2}(c+d x)\right]\right)+\right.$$

$$3\left(2+\frac{3}{\sqrt{2}}\right)\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}}\left(1-\sqrt{2}+\right.$$

$$\left.\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\right.\right.$$

$$\left.\left.\sqrt{2}\right]+2\operatorname{EllipticPi}\left[-3+2\sqrt{2},-\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right)}$$

$$\sqrt{\left(\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right)}$$

$$\left.\left.\left.\left.\operatorname{Sec}[c+d x]^{3/2}\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right)\right)\right)$$

Problem 378: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\operatorname{Cos}[c+d x]\,(a+a\operatorname{Sec}[c+d x])^{5/2}\left(B\operatorname{Sec}[c+d x]+C\operatorname{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 142 leaves, 7 steps):

$$\frac{2 a^{5/2} B \operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right]}{d}+\frac{2 a^3 (35 B+32 C) \operatorname{Tan}[c+d x]}{15 d \sqrt{a+a \operatorname{Sec}[c+d x]}}+$$
$$\frac{2 a^2 (5 B+8 C) \sqrt{a+a \operatorname{Sec}[c+d x]} \operatorname{Tan}[c+d x]}{15 d}+\frac{2 a C (a+a \operatorname{Sec}[c+d x])^{3/2} \operatorname{Tan}[c+d x]}{5 d}$$

Result (type 4, 455 leaves):

$$\frac{1}{d}\operatorname{Cos}[c+d x]^2 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a (1+\operatorname{Sec}[c+d x]))^{5/2}$$
$$\left(\frac{1}{30}(40 B+43 C) \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{10} C \operatorname{Sec}[c+d x]^2 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+\right.$$
$$\left.\frac{1}{30} \operatorname{Sec}[c+d x]\left(5 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+14 C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)-$$
$$\frac{1}{d} 2\left(-3-2 \sqrt{2}\right) B \operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]^4 \sqrt{\frac{7-5 \sqrt{2}+\left(10-7 \sqrt{2}\right) \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right) \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right)$$
$$\operatorname{Cos}[c+d x]\left(\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]+\right.$$
$$\left.2 \operatorname{EllipticPi}\left[-3+2 \sqrt{2},-\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2} \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5$$
$$(a (1+\operatorname{Sec}[c+d x]))^{5/2} \sqrt{3-2 \sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 379: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c+d x]^2 (a+a \operatorname{Sec}[c+d x])^{5/2}\left(B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) d x$$

Optimal (type 3, 143 leaves, 6 steps):

$$\frac{a^{5/2}\,(5\,B+2\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}-\frac{a^{3}\,(3\,B+14\,C)\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{2\,a^{2}\,(B+2\,C)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d}+\frac{2\,a\,C\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 434 leaves):

$$\frac{1}{d}\text{Cos}[c+d\,x]^{2}\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{5}\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\left(\frac{1}{24}(9\,B+32\,C)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{6}C\,\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{8}B\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]\right)+$$

$$\frac{1}{d}\left(2+\frac{3}{\sqrt{2}}\right)(5\,B+2\,C)\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^{4}\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]+2\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^{2}}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^{2}}$$

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

Problem 380: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{3}\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^{2}\right)\,dx$$

Optimal (type 3, 154 leaves, 6 steps):

$$\frac{a^{5/2}\,(19\,B+20\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{4\,d}+\frac{a^3\,(9\,B-4\,C)\,\text{Sin}[c+d\,x]}{4\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-$$
$$\frac{a^2\,(B-4\,C)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{2\,d}+\frac{a\,B\,\text{Cos}[c+d\,x]\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 437 leaves):

$$\frac{1}{d}\text{Cos}[c+d\,x]^2\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}$$
$$\left(\frac{3}{32}\,(-3\,B+4\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{16}\,(5\,B+2\,C)\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+\frac{1}{32}\,B\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]\right)+$$
$$\frac{1}{8\,d}\left(4+3\,\sqrt{2}\right)\,(19\,B+20\,C)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Cos}[c+d\,x]$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$

Problem 382: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^5\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 209 leaves, 7 steps):

$$\frac{a^{5/2}\left(163 B+200 C\right) \text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{64 d}+\frac{a^3\left(163 B+200 C\right) \text{Sin}[c+d x]}{64 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{a^3\left(95 B+104 C\right) \text{Cos}[c+d x] \text{Sin}[c+d x]}{96 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{a^2\left(11 B+8 C\right) \text{Cos}[c+d x]^2 \sqrt{a+a \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{24 d}+\frac{a B \text{Cos}[c+d x]^3\left(a+a \text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]}{4 d}$$

Result (type 4, 479 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]^2 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(-\frac{\left(265 B+376 C\right) \text{Sin}\left[\frac{1}{2}(c+d x)\right]}{1536}+\frac{1}{192}\left(55 B+64 C\right) \text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{512}\left(47 B+40 C\right) \text{Sin}\left[\frac{5}{2}(c+d x)\right]+\frac{1}{192}\left(5 B+2 C\right) \text{Sin}\left[\frac{7}{2}(c+d x)\right]+\frac{1}{256} B \text{Sin}\left[\frac{9}{2}(c+d x)\right]\right)+$$

$$\frac{1}{64 d}\left(2+\frac{3}{\sqrt{2}}\right)\left(163 B+200 C\right) \text{Cos}\left[\frac{1}{4}(c+d x)\right]^4 \sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Cos}[c+d x]$$

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]+2 \text{EllipticPi}\left[-3+2\sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\ \sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

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

Problem 383: Result unnecessarily involves higher level functions.

$$\int \operatorname{Cos}[c+d x]^6 \left(a+a \operatorname{Sec}[c+d x]\right)^{5/2} \left(B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 254 leaves, 8 steps):

$$\frac{a^{5/2} (283 B+326 C) \operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right]}{128 d}+\frac{a^3 (283 B+326 C) \operatorname{Sin}[c+d x]}{128 d \sqrt{a+a \operatorname{Sec}[c+d x]}}+\frac{a^3 (283 B+326 C) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{192 d \sqrt{a+a \operatorname{Sec}[c+d x]}}+\frac{a^3 (157 B+170 C) \operatorname{Cos}[c+d x]^2 \operatorname{Sin}[c+d x]}{240 d \sqrt{a+a \operatorname{Sec}[c+d x]}}+\frac{a^2 (13 B+10 C) \operatorname{Cos}[c+d x]^3 \sqrt{a+a \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{40 d}+\frac{a B \operatorname{Cos}[c+d x]^4 (a+a \operatorname{Sec}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{5 d}$$

Result (type 4, 500 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]^2\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a (1+\text{Sec}[c+d x]))^{5/2} \left(-\frac{(2309 B+2650 C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{15360}+\frac{(509 B+550 C)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]}{1920}+\frac{(95 B+94 C)\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]}{1024}+\frac{1}{960}(32 B+25 C)\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]+\frac{1}{512}(5 B+2 C)\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]+\frac{1}{640} B\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]\right)+$$

$$\frac{1}{256 d}\left(4+3\sqrt{2}\right)(283 B+326 C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Cos}[c+d x]\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a (1+\text{Sec}[c+d x]))^{5/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 404: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d x]\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{(a+a\,\text{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 126 leaves, 5 steps):

$$\frac{(5 B+19 C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{2}\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{16\sqrt{2}\,a^{5/2} d}-\frac{(B-C)\,\text{Tan}[c+d x]}{4 d (a+a\,\text{Sec}[c+d x])^{5/2}}+\frac{(5 B-13 C)\,\text{Tan}[c+d x]}{16 a d (a+a\,\text{Sec}[c+d x])^{3/2}}$$

Result (type 3, 256 leaves):

$$\left((5 B+19 C) \operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right] \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^4 \sqrt{\frac{\operatorname{Cos}[c+d x]}{1+\operatorname{Cos}[c+d x]}} \operatorname{Sec}[c+d x]^{5/2} \sqrt{1+\operatorname{Sec}[c+d x]}\right) \Big/ \left(4 d \sqrt{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2} (a(1+\operatorname{Sec}[c+d x]))^{5/2}\right)+$$
$$\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^5 \operatorname{Sec}[c+d x]^3\left(-\frac{1}{2}(-B+9 C) \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{2} \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(-B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+\frac{1}{4} \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(3 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+5 C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right) \Big/ \left(d(a(1+\operatorname{Sec}[c+d x]))^{5/2}\right)$$

Problem 405: Result more than twice size of optimal antiderivative.

$$\int \frac{B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2}{(a+a \operatorname{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 126 leaves, 5 steps):

$$\frac{(3 B+5 C) \operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{2} \sqrt{a+a \operatorname{Sec}[c+d x]}}\right]}{16 \sqrt{2} a^{5/2} d}+\frac{(B-C) \operatorname{Tan}[c+d x]}{4 d (a+a \operatorname{Sec}[c+d x])^{5/2}}+\frac{(3 B+5 C) \operatorname{Tan}[c+d x]}{16 a d (a+a \operatorname{Sec}[c+d x])^{3/2}}$$

Result (type 3, 298 leaves):

$$\left((3 B+5 C) \operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right] \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^4 \sqrt{\frac{\operatorname{Cos}[c+d x]}{1+\operatorname{Cos}[c+d x]}} \operatorname{Sec}[c+d x]^{3/2} \sqrt{1+\operatorname{Sec}[c+d x]} (B+C \operatorname{Sec}[c+d x])\right) \Big/$$
$$\left(4 d (C+B \operatorname{Cos}[c+d x]) \sqrt{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2} (a(1+\operatorname{Sec}[c+d x]))^{5/2}\right)+$$
$$\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^5 \operatorname{Sec}[c+d x]^2 (B+C \operatorname{Sec}[c+d x])\left(\frac{1}{2}(7 B+C) \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{2} \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+\frac{1}{4} \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-11 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+3 C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right) \Big/$$
$$\left(d (C+B \operatorname{Cos}[c+d x]) (a(1+\operatorname{Sec}[c+d x]))^{5/2}\right)$$

Problem 408: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d x]^3\,(a+a\,\mathrm{Sec}[c+d x])\,\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)\,dx$$

Optimal (type 3, 152 leaves, 7 steps):

$$\frac{a\,(4A+3\,(B+C))\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d x]]}{8d}+\frac{a\,(5A+5B+4C)\,\mathrm{Tan}[c+d x]}{5d}+\frac{a\,(4A+3\,(B+C))\,\mathrm{Sec}[c+d x]\,\mathrm{Tan}[c+d x]}{8d}+\frac{a\,(B+C)\,\mathrm{Sec}[c+d x]^3\,\mathrm{Tan}[c+d x]}{4d}+\frac{a\,C\,\mathrm{Sec}[c+d x]^4\,\mathrm{Tan}[c+d x]}{5d}+\frac{a\,(5A+5B+4C)\,\mathrm{Tan}[c+d x]^3}{15d}$$

Result (type 3, 660 leaves):

$$-\frac{a\,A\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2d}-\frac{3\,a\,B\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8d}-\frac{3\,a\,C\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8d}+\frac{a\,A\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2d}+\frac{3\,a\,B\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8d}+\frac{3\,a\,C\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8d}+\frac{a\,B}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{a\,C}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{a\,A}{4\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{3\,a\,B}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{3\,a\,C}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{a\,B}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{a\,C}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{a\,A}{4\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{3\,a\,B}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{3\,a\,C}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{2\,a\,A\,\mathrm{Tan}[c+d x]}{3d}+\frac{2\,a\,B\,\mathrm{Tan}[c+d x]}{3d}+\frac{8\,a\,C\,\mathrm{Tan}[c+d x]}{15d}+\frac{a\,A\,\mathrm{Sec}[c+d x]^2\,\mathrm{Tan}[c+d x]}{3d}+\frac{a\,B\,\mathrm{Sec}[c+d x]^2\,\mathrm{Tan}[c+d x]}{3d}+\frac{4\,a\,C\,\mathrm{Sec}[c+d x]^2\,\mathrm{Tan}[c+d x]}{15d}+\frac{a\,C\,\mathrm{Sec}[c+d x]^4\,\mathrm{Tan}[c+d x]}{5d}$$

Problem 409: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d x]^2\,(a+a\,\mathrm{Sec}[c+d x])\,\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)\,dx$$

Optimal (type 3, 127 leaves, 7 steps):

$$\frac{a (4A+4B+3C) \operatorname{ArcTanh}[\operatorname{Sin}[c+dx]]}{8d}+\frac{a (3A+2(B+C)) \operatorname{Tan}[c+dx]}{3d}+\frac{a (4A+4B+3C) \operatorname{Sec}[c+dx] \operatorname{Tan}[c+dx]}{8d}+\frac{a (B+C) \operatorname{Sec}[c+dx]^2 \operatorname{Tan}[c+dx]}{3d}+\frac{a C \operatorname{Sec}[c+dx]^3 \operatorname{Tan}[c+dx]}{4d}$$

Result (type 3, 545 leaves):

$$-\frac{a A \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{2d}-\frac{a B \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{2d}-\frac{3 a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{8d}+\frac{a A \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{2d}+\frac{a B \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{2d}+\frac{3 a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{8d}+\frac{a C}{16 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+\frac{a A}{4 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+\frac{a B}{4 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+\frac{3 a C}{16 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}-\frac{a C}{16 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}-\frac{a A}{4 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}-\frac{a B}{4 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}-\frac{3 a C}{16 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+\frac{a A \operatorname{Tan}[c+dx]}{d}+\frac{2 a B \operatorname{Tan}[c+dx]}{3d}+\frac{2 a C \operatorname{Tan}[c+dx]}{3d}+\frac{a B \operatorname{Sec}[c+dx]^2 \operatorname{Tan}[c+dx]}{3d}+\frac{a C \operatorname{Sec}[c+dx]^2 \operatorname{Tan}[c+dx]}{3d}$$

Problem 410: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+dx] \, (a+a \operatorname{Sec}[c+dx]) \left(A+B \operatorname{Sec}[c+dx]+C \operatorname{Sec}[c+dx]^2\right) dx$$

Optimal (type 3, 92 leaves, 6 steps):

$$\frac{a (2A+B+C) \operatorname{ArcTanh}[\operatorname{Sin}[c+dx]]}{2d}+\frac{a (3A+3B+2C) \operatorname{Tan}[c+dx]}{3d}+\frac{a (B+C) \operatorname{Sec}[c+dx] \operatorname{Tan}[c+dx]}{2d}+\frac{a C \operatorname{Sec}[c+dx]^2 \operatorname{Tan}[c+dx]}{3d}$$

Result (type 3, 995 leaves):

$$a\left(\left(\left((-2A-B-C)\,\text{Cos}[c+d\,x]^2\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.\right.\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\right)+$$
$$\left((2A+B+C)\,\text{Cos}[c+d\,x]^2\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\right)+$$
$$\left(C\,\text{Cos}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(3d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\right.$$
$$\left.\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+\left(\text{Cos}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(3B\,\text{Cos}\left[\frac{c}{2}\right]+4C\,\text{Cos}\left[\frac{c}{2}\right]-3B\,\text{Sin}\left[\frac{c}{2}\right]-2C\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(6d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\right.$$
$$\left.\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+\left(2\,\text{Cos}[c+d\,x]^2\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(3A\,\text{Sin}\left[\frac{d\,x}{2}\right]+3B\,\text{Sin}\left[\frac{d\,x}{2}\right]+2C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(3d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\right.$$
$$\left.\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)+$$
$$\left(C\,\text{Cos}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(3d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\right.$$
$$\left.\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+\left(\text{Cos}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(-3B\,\text{Cos}\left[\frac{c}{2}\right]-4C\,\text{Cos}\left[\frac{c}{2}\right]-3B\,\text{Sin}\left[\frac{c}{2}\right]-2C\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(6d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\right.$$
$$\left.\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+\left(2\,\text{Cos}[c+d\,x]^2\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(3A\,\text{Sin}\left[\frac{d\,x}{2}\right]+3B\,\text{Sin}\left[\frac{d\,x}{2}\right]+2C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(3d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\right.$$
$$\left.\left.\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)\right)$$

Problem 411: Result more than twice size of optimal antiderivative.

$$\int (a + a \operatorname{Sec}[c + d x]) \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) \, dx$$

Optimal (type 3, 63 leaves, 5 steps):

$$a A x + \frac{a (2 A + 2 B + C) \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{2 d} + \frac{a (B + C) \operatorname{Tan}[c + d x]}{d} + \frac{a C \operatorname{Sec}[c + d x] \operatorname{Tan}[c + d x]}{2 d}$$

Result (type 3, 305 leaves):

$$\left(a \operatorname{Cos}[c + d x]^2 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) \left(4 A x - \frac{2 (2 A + 2 B + C) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{d} + \frac{2 (2 A + 2 B + C) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{d} + \frac{C}{d \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} + \frac{4 (B + C) \operatorname{Sin}\left[\frac{d x}{2}\right]}{d \left(\operatorname{Cos}\left[\frac{c}{2}\right] - \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)} - \frac{C}{d \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} + \frac{4 (B + C) \operatorname{Sin}\left[\frac{d x}{2}\right]}{d \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)}\right)\right) \Big/ \left(2 \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 (c + d x)]\right)\right)$$

Problem 412: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c + d x] (a + a \operatorname{Sec}[c + d x]) \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) \, dx$$

Optimal (type 3, 46 leaves, 5 steps):

$$a (A + B) x + \frac{a (B + C) \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{d} + \frac{a A \operatorname{Sin}[c + d x]}{d} + \frac{a C \operatorname{Tan}[c + d x]}{d}$$

Result (type 3, 187 leaves):

$$a A x + a B x - \frac{a B \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d} - \frac{a C \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d} + \frac{a B \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d} + \frac{a C \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d} + \frac{a A \text{Cos}[d x] \text{Sin}[c]}{d} + \frac{a A \text{Cos}[c] \text{Sin}[d x]}{d} + \frac{a C \text{Tan}[c+d x]}{d}$$

Problem 417: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^3 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 222 leaves, 8 steps):

$$\frac{a^2 (14 A+12 B+11 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{16 d} + \frac{a^2 (10 A+9 B+8 C) \text{Tan}[c+d x]}{5 d} + \frac{a^2 (14 A+12 B+11 C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{16 d} + \frac{a^2 (10 A+12 B+9 C) \text{Sec}[c+d x]^3 \text{Tan}[c+d x]}{40 d} + \frac{C \text{Sec}[c+d x]^3 \left(a+a \text{Sec}[c+d x]\right)^2 \text{Tan}[c+d x]}{6 d} + \frac{(3 B+C) \text{Sec}[c+d x]^3 \left(a^2+a^2 \text{Sec}[c+d x]\right) \text{Tan}[c+d x]}{15 d} + \frac{a^2 (10 A+9 B+8 C) \text{Tan}[c+d x]^3}{15 d}$$

Result (type 3, 959 leaves):

$$\left(\left(-14\,A-12\,B-11\,C\right)\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(32\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\left(14\,A+12\,B+11\,C\right)\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(32\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(C\,\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Sec}[c+d\,x]^2\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\mathrm{Sin}[d\,x]\right)\Big/\left(12\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Sec}[c+d\,x]\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(5\,C\,\mathrm{Sin}[c]+6\,B\,\mathrm{Sin}[d\,x]+12\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(60\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(24\,B\,\mathrm{Sin}[c]+48\,C\,\mathrm{Sin}[c]+30\,A\,\mathrm{Sin}[d\,x]+60\,B\,\mathrm{Sin}[d\,x]+55\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(240\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(30\,A\,\mathrm{Sin}[c]+60\,B\,\mathrm{Sin}[c]+55\,C\,\mathrm{Sin}[c]+80\,A\,\mathrm{Sin}[d\,x]+72\,B\,\mathrm{Sin}[d\,x]+64\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(240\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^2\,\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(160\,A\,\mathrm{Sin}[c]+144\,B\,\mathrm{Sin}[c]+128\,C\,\mathrm{Sin}[c]+210\,A\,\mathrm{Sin}[d\,x]+180\,B\,\mathrm{Sin}[d\,x]+165\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(480\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^3\,\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(210\,A\,\mathrm{Sin}[c]+180\,B\,\mathrm{Sin}[c]+165\,C\,\mathrm{Sin}[c]+320\,A\,\mathrm{Sin}[d\,x]+288\,B\,\mathrm{Sin}[d\,x]+256\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(480\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 418: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^2\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 190 leaves, 8 steps):

$$\frac{a^2 (8A+7B+6C)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{8d}+\frac{a^2 (8A+7B+6C)\,\text{Tan}[c+dx]}{6d}+\frac{a^2 (8A+7B+6C)\,\text{Sec}[c+dx]\,\text{Tan}[c+dx]}{24d}+\frac{(20A-5B+6C)\,(a+a\,\text{Sec}[c+dx])^2\,\text{Tan}[c+dx]}{60d}+\frac{C\,\text{Sec}[c+dx]^2\,(a+a\,\text{Sec}[c+dx])^2\,\text{Tan}[c+dx]}{5d}+\frac{(5B+2C)\,(a+a\,\text{Sec}[c+dx])^3\,\text{Tan}[c+dx]}{20ad}$$

Result (type 3, 417 leaves):

$$-\frac{1}{3840\,d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2(c+dx)])}a^2 (1+\text{Cos}[c+dx])^2 (C+B\,\text{Cos}[c+dx]+A\,\text{Cos}[c+dx]^2)\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^4 \text{Sec}[c+dx]^5 \Bigg(240\,(8A+7B+6C)\,\text{Cos}[c+dx]^5 \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)-\text{Sec}[c]\,(80\,(16A+14B+15C)\,\text{Sin}[dx]-240\,(3A+2B+C)\,\text{Sin}[2c+dx]+240\,A\,\text{Sin}[c+2dx]+330\,B\,\text{Sin}[c+2dx]+420\,C\,\text{Sin}[c+2dx]+240\,A\,\text{Sin}[3c+2dx]+330\,B\,\text{Sin}[3c+2dx]+420\,C\,\text{Sin}[3c+2dx]+880\,A\,\text{Sin}[2c+3dx]+800\,B\,\text{Sin}[2c+3dx]+720\,C\,\text{Sin}[2c+3dx]-120\,A\,\text{Sin}[4c+3dx]+120\,A\,\text{Sin}[3c+4dx]+105\,B\,\text{Sin}[3c+4dx]+90\,C\,\text{Sin}[3c+4dx]+120\,A\,\text{Sin}[5c+4dx]+105\,B\,\text{Sin}[5c+4dx]+90\,C\,\text{Sin}[5c+4dx]+200\,A\,\text{Sin}[4c+5dx]+160\,B\,\text{Sin}[4c+5dx]+144\,C\,\text{Sin}[4c+5dx])\Bigg)$$

Problem 419: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+dx]\,(a+a\,\text{Sec}[c+dx])^2\,(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2)\,dx$$

Optimal (type 3, 147 leaves, 7 steps):

$$\frac{a^2 (12A+8B+7C)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{8d}+\frac{a^2 (12A+8B+7C)\,\text{Tan}[c+dx]}{6d}+\frac{a^2 (12A+8B+7C)\,\text{Sec}[c+dx]\,\text{Tan}[c+dx]}{24d}+\frac{(4B-C)\,(a+a\,\text{Sec}[c+dx])^2\,\text{Tan}[c+dx]}{12d}+\frac{C\,(a+a\,\text{Sec}[c+dx])^3\,\text{Tan}[c+dx]}{4ad}$$

Result (type 3, 386 leaves):

$$-\frac{1}{384\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}\left[2\,\left(c+d\,x\right)\right]\right)}\,a^2\,\left(1+\mathrm{Cos}[c+d\,x]\right)^2\,\left(C+B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[c+d\,x]^2\right)\,\mathrm{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^4\,\mathrm{Sec}[c+d\,x]^4\,\Bigg(24\,\left(12\,A+8\,B+7\,C\right)\,\mathrm{Cos}[c+d\,x]^4\,\left(\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]\right)-\mathrm{Sec}[c]\,\big(-24\,\left(6\,A+5\,B+4\,C\right)\,\mathrm{Sin}[c]+3\,\left(4\,A+8\,B+15\,C\right)\,\mathrm{Sin}[d\,x]+12\,A\,\mathrm{Sin}[2\,c+d\,x]+24\,B\,\mathrm{Sin}[2\,c+d\,x]+45\,C\,\mathrm{Sin}[2\,c+d\,x]+144\,A\,\mathrm{Sin}[c+2\,d\,x]+136\,B\,\mathrm{Sin}[c+2\,d\,x]+128\,C\,\mathrm{Sin}[c+2\,d\,x]-48\,A\,\mathrm{Sin}[3\,c+2\,d\,x]-24\,B\,\mathrm{Sin}[3\,c+2\,d\,x]+12\,A\,\mathrm{Sin}[2\,c+3\,d\,x]+24\,B\,\mathrm{Sin}[2\,c+3\,d\,x]+21\,C\,\mathrm{Sin}[2\,c+3\,d\,x]+12\,A\,\mathrm{Sin}[4\,c+3\,d\,x]+24\,B\,\mathrm{Sin}[4\,c+3\,d\,x]+21\,C\,\mathrm{Sin}[4\,c+3\,d\,x]+48\,A\,\mathrm{Sin}[3\,c+4\,d\,x]+40\,B\,\mathrm{Sin}[3\,c+4\,d\,x]+32\,C\,\mathrm{Sin}[3\,c+4\,d\,x]\big)\Bigg)$$

Problem 420: Result more than twice size of optimal antiderivative.

$$\int\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 120 leaves, 6 steps):

$$a^2\,A\,x+\frac{a^2\,\left(4\,A+3\,B+2\,C\right)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,d}+\frac{a^2\,\left(2\,A+3\,B+2\,C\right)\,\mathrm{Tan}[c+d\,x]}{2\,d}+\frac{C\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\mathrm{Tan}[c+d\,x]}{3\,d}+\frac{\left(3\,B+2\,C\right)\,\left(a^2+a^2\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Tan}[c+d\,x]}{6\,d}$$

Result (type 3, 1307 leaves):

$$\left(A\,x\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(2\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+\left(\left(-4\,A-3\,B-2\,C\right)\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(4\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+\left(\left(4\,A+3\,B+2\,C\right)\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(4\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+\left(C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/\left(12\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+\left(\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(3\,B\,\mathrm{Cos}\left[\frac{c}{2}\right]+7\,C\,\mathrm{Cos}\left[\frac{c}{2}\right]-3\,B\,\mathrm{Sin}\left[\frac{c}{2}\right]-5\,C\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\Big)\Big/$$
$$\Big(24\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\Big)+$$
$$\Big(\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(3\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+6\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+5\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big)\Big/$$
$$\Big(6\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\Big)+$$
$$\Big(C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sin}\left[\frac{d\,x}{2}\right]\Big)\Big/$$
$$\Big(12\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\Big)+$$
$$\Big(\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(-3\,B\,\mathrm{Cos}\left[\frac{c}{2}\right]-7\,C\,\mathrm{Cos}\left[\frac{c}{2}\right]-3\,B\,\mathrm{Sin}\left[\frac{c}{2}\right]-5\,C\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\Big)\Big/$$
$$\Big(24\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\Big)+$$
$$\Big(\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(3\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+6\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+5\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big)\Big/$$
$$\Big(6\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\Big)$$

Problem 421: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 3, 121 leaves, 6 steps):

$$a^2 \left(2 A+B\right) x+\frac{a^2 \left(2 A+4 B+3 C\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 d}+\frac{A \left(a+a \text{Sec}[c+d x]\right)^2 \text{Sin}[c+d x]}{d}-\frac{a^2 \left(2 A-2 B-3 C\right) \text{Tan}[c+d x]}{2 d}-\frac{\left(2 A-C\right) \left(a^2+a^2 \text{Sec}[c+d x]\right) \text{Tan}[c+d x]}{2 d}$$

Result (type 3, 1091 leaves):

$$\left(\left(2 A+B\right) x \text{Cos}[c+d x]^4 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/ \left(2 \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left(\left(-2 A-4 B-3 C\right) \text{Cos}[c+d x]^4 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/ \left(4 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left(\left(2 A+4 B+3 C\right) \text{Cos}[c+d x]^4 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/ \left(4 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left(A \text{Cos}[d x] \text{Cos}[c+d x]^4 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right)\Big/ \left(2 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left(A \text{Cos}[c] \text{Cos}[c+d x]^4 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[d x]\right)\Big/ \left(2 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left(C \text{Cos}[c+d x]^4 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/ \left(8 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$
$$\left(\text{Cos}[c+d x]^4 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(B \text{Sin}\left[\frac{d x}{2}\right]+2 C \text{Sin}\left[\frac{d x}{2}\right]\right)\right)\Big/ \left(2 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)-$$
$$\left(C \text{Cos}[c+d x]^4 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/ \left(8 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$
$$\left(\text{Cos}[c+d x]^4 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(B \text{Sin}\left[\frac{d x}{2}\right]+2 C \text{Sin}\left[\frac{d x}{2}\right]\right)\right)\Big/ \left(2 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)$$

Problem 422: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2 \left(a+a \text{Sec}[c+d x]\right)^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 128 leaves, 5 steps):

$$\frac{1}{2} a^2 \left(3 A+4 B+2 C\right) x+\frac{a^2 \left(B+2 C\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{d}+\frac{a^2 \left(3 A+2 B-2 C\right) \text{Sin}[c+d x]}{2 d}+\frac{A \text{Cos}[c+d x] \left(a+a \text{Sec}[c+d x]\right)^2 \text{Sin}[c+d x]}{2 d}-\frac{\left(A-2 C\right) \left(a^2+a^2 \text{Sec}[c+d x]\right) \text{Sin}[c+d x]}{2 d}$$

Result (type 3, 1016 leaves):

$$a^2 \Bigg(\Big(\big((3A+4B+2C)\, x \operatorname{Cos}[c+dx]^2 (1+\operatorname{Cos}[c+dx])^2 \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)\big) \Big/ \left(4\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\right) +$$

$$\left((-B-2C)\operatorname{Cos}[c+dx]^2(1+\operatorname{Cos}[c+dx])^2 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)\right)\Big/\left(2d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\right)+$$

$$\left((B+2C)\operatorname{Cos}[c+dx]^2(1+\operatorname{Cos}[c+dx])^2 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)\right)\Big/\left(2d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\right)+$$

$$\left((2A+B)\operatorname{Cos}[dx]\operatorname{Cos}[c+dx]^2(1+\operatorname{Cos}[c+dx])^2\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)\operatorname{Sin}[c]\right)\Big/ \left(2d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\right)+$$

$$\left(A\operatorname{Cos}[2dx]\operatorname{Cos}[c+dx]^2(1+\operatorname{Cos}[c+dx])^2\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right) \operatorname{Sin}[2c]\right)\Big/\left(8d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\right)+$$

$$\left((2A+B)\operatorname{Cos}[c]\operatorname{Cos}[c+dx]^2(1+\operatorname{Cos}[c+dx])^2\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)\operatorname{Sin}[dx]\right)\Big/ \left(2d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\right)+$$

$$\left(A\operatorname{Cos}[2c]\operatorname{Cos}[c+dx]^2(1+\operatorname{Cos}[c+dx])^2\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right) \operatorname{Sin}[2dx]\right)\Big/\left(8d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\right)+$$

$$\left(C\operatorname{Cos}[c+dx]^2(1+\operatorname{Cos}[c+dx])^2\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right) \operatorname{Sin}\left[\frac{dx}{2}\right]\right)\Big/\Big(2d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)\Big)+$$

$$\left(C\operatorname{Cos}[c+dx]^2(1+\operatorname{Cos}[c+dx])^2\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right) \operatorname{Sin}\left[\frac{dx}{2}\right]\right)\Big/\Big(2d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)\Big)\Big)\Bigg)$$

Problem 427: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+dx]^3 \left(a+a\operatorname{Sec}[c+dx]\right)^3 \left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right) dx$$

Optimal (type 3, 274 leaves, 9 steps):

$$\frac{a^3 (26 A + 23 B + 21 C) \text{ArcTanh}[\text{Sin}[c + d x]]}{16 d} + \frac{a^3 (133 A + 119 B + 108 C) \text{Tan}[c + d x]}{35 d} + \frac{a^3 (26 A + 23 B + 21 C) \text{Sec}[c + d x] \text{Tan}[c + d x]}{16 d} + \frac{a^3 (154 A + 147 B + 129 C) \text{Sec}[c + d x]^3 \text{Tan}[c + d x]}{280 d} + \frac{C \text{Sec}[c + d x]^3 (a + a \text{Sec}[c + d x])^3 \text{Tan}[c + d x]}{7 d} + \frac{(7 B + 3 C) \text{Sec}[c + d x]^3 (a^2 + a^2 \text{Sec}[c + d x])^2 \text{Tan}[c + d x]}{42 a d} + \frac{(3 A + 4 B + 3 C) \text{Sec}[c + d x]^3 (a^3 + a^3 \text{Sec}[c + d x]) \text{Tan}[c + d x]}{15 d} + \frac{a^3 (133 A + 119 B + 108 C) \text{Tan}[c + d x]^3}{105 d}$$

Result (type 3, 1087 leaves):

$$\left(\left(-26\,A-23\,B-21\,C\right)\,\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(64\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\left(26\,A+23\,B+21\,C\right)\,\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(64\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(C\,\text{Sec}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Sec}[c+d\,x]^2\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\text{Sin}[d\,x]\right)\Big/\left(28\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\text{Sec}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Sec}[c+d\,x]\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(6\,C\,\text{Sin}[c]+7\,B\,\text{Sin}[d\,x]+21\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$
$$\left(168\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\text{Sec}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(35\,B\,\text{Sin}[c]+105\,C\,\text{Sin}[c]+42\,A\,\text{Sin}[d\,x]+126\,B\,\text{Sin}[d\,x]+162\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$
$$\left(840\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\text{Cos}[c+d\,x]\,\text{Sec}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(168\,A\,\text{Sin}[c]+504\,B\,\text{Sin}[c]+648\,C\,\text{Sin}[c]+630\,A\,\text{Sin}[d\,x]+805\,B\,\text{Sin}[d\,x]+735\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$
$$\left(3360\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\text{Cos}[c+d\,x]^2\,\text{Sec}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(630\,A\,\text{Sin}[c]+805\,B\,\text{Sin}[c]+735\,C\,\text{Sin}[c]+1064\,A\,\text{Sin}[d\,x]+952\,B\,\text{Sin}[d\,x]+\right.$$
$$\left.\left.864\,C\,\text{Sin}[d\,x]\right)\right)\Big/\left(3360\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\text{Cos}[c+d\,x]^3\,\text{Sec}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(2128\,A\,\text{Sin}[c]+1904\,B\,\text{Sin}[c]+1728\,C\,\text{Sin}[c]+2730\,A\,\text{Sin}[d\,x]+2415\,B\,\text{Sin}[d\,x]+\right.$$
$$\left.\left.2205\,C\,\text{Sin}[d\,x]\right)\right)\Big/\left(6720\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\text{Cos}[c+d\,x]^4\,\text{Sec}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(2730\,A\,\text{Sin}[c]+2415\,B\,\text{Sin}[c]+2205\,C\,\text{Sin}[c]+4256\,A\,\text{Sin}[d\,x]+3808\,B\,\text{Sin}[d\,x]+\right.$$
$$\left.\left.3456\,C\,\text{Sin}[d\,x]\right)\right)\Big/\left(6720\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 428: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^2 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

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

$$\frac{a^3 (30 A+26 B+23 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{16 d}+\frac{a^3 (30 A+26 B+23 C) \text{Tan}[c+d x]}{10 d}+\frac{3 a^3 (30 A+26 B+23 C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{80 d}+\frac{(30 A-6 B+7 C) (a+a \text{Sec}[c+d x])^3 \text{Tan}[c+d x]}{120 d}+\frac{C \text{Sec}[c+d x]^2 (a+a \text{Sec}[c+d x])^3 \text{Tan}[c+d x]}{6 d}+\frac{(2 B+C) (a+a \text{Sec}[c+d x])^4 \text{Tan}[c+d x]}{10 a d}+\frac{a^3 (30 A+26 B+23 C) \text{Tan}[c+d x]^3}{120 d}$$

Result (type 3, 959 leaves):

$$\left(\left(-30\,A-26\,B-23\,C\right)\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(64\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\left(30\,A+26\,B+23\,C\right)\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(64\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(C\,\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\mathrm{Sec}[c+d\,x]\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\mathrm{Sin}[d\,x]\right)\Big/\left(24\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(5\,C\,\mathrm{Sin}[c]+6\,B\,\mathrm{Sin}[d\,x]+18\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(120\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(24\,B\,\mathrm{Sin}[c]+72\,C\,\mathrm{Sin}[c]+30\,A\,\mathrm{Sin}[d\,x]+90\,B\,\mathrm{Sin}[d\,x]+115\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(480\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^2\,\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(30\,A\,\mathrm{Sin}[c]+90\,B\,\mathrm{Sin}[c]+115\,C\,\mathrm{Sin}[c]+120\,A\,\mathrm{Sin}[d\,x]+152\,B\,\mathrm{Sin}[d\,x]+136\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(480\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^3\,\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(240\,A\,\mathrm{Sin}[c]+304\,B\,\mathrm{Sin}[c]+272\,C\,\mathrm{Sin}[c]+450\,A\,\mathrm{Sin}[d\,x]+390\,B\,\mathrm{Sin}[d\,x]+345\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(960\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(450\,A\,\mathrm{Sin}[c]+390\,B\,\mathrm{Sin}[c]+345\,C\,\mathrm{Sin}[c]+720\,A\,\mathrm{Sin}[d\,x]+608\,B\,\mathrm{Sin}[d\,x]+544\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(960\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 429: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 175 leaves, 11 steps) :

$$\frac{a^3\,(20\,A+15\,B+13\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{a^3\,(20\,A+15\,B+13\,C)\,\text{Tan}[c+d\,x]}{5\,d}+\frac{3\,a^3\,(20\,A+15\,B+13\,C)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{40\,d}+\frac{(5\,B-C)\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Tan}[c+d\,x]}{20\,d}+\frac{C\,(a+a\,\text{Sec}[c+d\,x])^4\,\text{Tan}[c+d\,x]}{5\,a\,d}+\frac{a^3\,(20\,A+15\,B+13\,C)\,\text{Tan}[c+d\,x]^3}{60\,d}$$

Result (type 3, 629 leaves):

$$\left((-20\,A-15\,B-13\,C)\,\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right)\Big/$$
$$(32\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$
$$\left((20\,A+15\,B+13\,C)\,\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right)\Big/$$
$$(32\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$
$$\frac{1}{7680\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$\text{Sec}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)$$
$$(2720\,A\,\text{Sin}[d\,x]+2400\,B\,\text{Sin}[d\,x]+2320\,C\,\text{Sin}[d\,x]-1680\,A\,\text{Sin}[2\,c+d\,x]-$$
$$1200\,B\,\text{Sin}[2\,c+d\,x]-720\,C\,\text{Sin}[2\,c+d\,x]+360\,A\,\text{Sin}[c+2\,d\,x]+570\,B\,\text{Sin}[c+2\,d\,x]+$$
$$750\,C\,\text{Sin}[c+2\,d\,x]+360\,A\,\text{Sin}[3\,c+2\,d\,x]+570\,B\,\text{Sin}[3\,c+2\,d\,x]+750\,C\,\text{Sin}[3\,c+2\,d\,x]+$$
$$1840\,A\,\text{Sin}[2\,c+3\,d\,x]+1680\,B\,\text{Sin}[2\,c+3\,d\,x]+1520\,C\,\text{Sin}[2\,c+3\,d\,x]-$$
$$360\,A\,\text{Sin}[4\,c+3\,d\,x]-120\,B\,\text{Sin}[4\,c+3\,d\,x]+180\,A\,\text{Sin}[3\,c+4\,d\,x]+$$
$$225\,B\,\text{Sin}[3\,c+4\,d\,x]+195\,C\,\text{Sin}[3\,c+4\,d\,x]+180\,A\,\text{Sin}[5\,c+4\,d\,x]+225\,B\,\text{Sin}[5\,c+4\,d\,x]+$$
$$195\,C\,\text{Sin}[5\,c+4\,d\,x]+440\,A\,\text{Sin}[4\,c+5\,d\,x]+360\,B\,\text{Sin}[4\,c+5\,d\,x]+304\,C\,\text{Sin}[4\,c+5\,d\,x])$$

Problem 430: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 3, 162 leaves, 7 steps):

$$a^3\,A\,x+\frac{a^3\,(28\,A+20\,B+15\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{5\,a^3\,(4\,A+4\,B+3\,C)\,\text{Tan}[c+d\,x]}{8\,d}+\frac{C\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Tan}[c+d\,x]}{4\,d}+\frac{(4\,B+3\,C)\,(a^2+a^2\,\text{Sec}[c+d\,x])^2\,\text{Tan}[c+d\,x]}{12\,a\,d}+\frac{(12\,A+20\,B+15\,C)\,(a^3+a^3\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]}{24\,d}$$

Result (type 3, 464 leaves):

$$\frac{1}{768\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)])}$$
$$a^3\,(1+\text{Cos}[c+d\,x])^3\,(C+B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[c+d\,x]^2)$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^6\,\text{Sec}[c+d\,x]^4\,\Big(-24\,(28\,A+20\,B+15\,C)\,\text{Cos}[c+d\,x]^4$$
$$\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)+$$
$$\text{Sec}[c]\,(72\,A\,d\,x\,\text{Cos}[c]+48\,A\,d\,x\,\text{Cos}[c+2\,d\,x]+48\,A\,d\,x\,\text{Cos}[3\,c+2\,d\,x]+12\,A\,d\,x$$
$$\text{Cos}[3\,c+4\,d\,x]+12\,A\,d\,x\,\text{Cos}[5\,c+4\,d\,x]-216\,A\,\text{Sin}[c]-264\,B\,\text{Sin}[c]-216\,C\,\text{Sin}[c]+$$
$$12\,A\,\text{Sin}[d\,x]+36\,B\,\text{Sin}[d\,x]+69\,C\,\text{Sin}[d\,x]+12\,A\,\text{Sin}[2\,c+d\,x]+36\,B\,\text{Sin}[2\,c+d\,x]+$$
$$69\,C\,\text{Sin}[2\,c+d\,x]+216\,A\,\text{Sin}[c+2\,d\,x]+280\,B\,\text{Sin}[c+2\,d\,x]+264\,C\,\text{Sin}[c+2\,d\,x]-$$
$$72\,A\,\text{Sin}[3\,c+2\,d\,x]-72\,B\,\text{Sin}[3\,c+2\,d\,x]-24\,C\,\text{Sin}[3\,c+2\,d\,x]+12\,A\,\text{Sin}[2\,c+3\,d\,x]+$$
$$36\,B\,\text{Sin}[2\,c+3\,d\,x]+45\,C\,\text{Sin}[2\,c+3\,d\,x]+12\,A\,\text{Sin}[4\,c+3\,d\,x]+36\,B\,\text{Sin}[4\,c+3\,d\,x]+$$
$$45\,C\,\text{Sin}[4\,c+3\,d\,x]+72\,A\,\text{Sin}[3\,c+4\,d\,x]+88\,B\,\text{Sin}[3\,c+4\,d\,x]+72\,C\,\text{Sin}[3\,c+4\,d\,x])\Big)$$

Problem 431: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 3, 156 leaves, 7 steps):

$$a^3\,(3\,A+B)\,x+\frac{a^3\,(6\,A+7\,B+5\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+$$
$$\frac{A\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{d}+\frac{5\,a^3\,(B+C)\,\text{Tan}[c+d\,x]}{2\,d}-$$
$$\frac{(3\,A-C)\,(a^2+a^2\,\text{Sec}[c+d\,x])^2\,\text{Tan}[c+d\,x]}{3\,a\,d}-\frac{(6\,A-3\,B-5\,C)\,(a^3+a^3\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]}{6\,d}$$

Result (type 3, 1503 leaves):

$$\left((3\,A+B)\,x\,\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right)\Big/$$
$$(4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$
$$\left((-6\,A-7\,B-5\,C)\,\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right)\Big/$$
$$(8\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$
$$\left((6\,A+7\,B+5\,C)\,\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\right.$$
$$\left.(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right)\Big/\,(8\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$
$$\left(A\,\text{Cos}[d\,x]\,\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right.$$
$$\left.\text{Sin}[c]\right)\Big/\,(4\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$

$$\left(A \operatorname{Cos}[c] \operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}[d x]\right) \Big/ \left(4 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(C \operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}\left[\frac{d x}{2}\right]\right) \Big/ \left(24 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3\right)+$$

$$\left(\operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(3 B \operatorname{Cos}\left[\frac{c}{2}\right]+10 C \operatorname{Cos}\left[\frac{c}{2}\right]-3 B \operatorname{Sin}\left[\frac{c}{2}\right]-8 C \operatorname{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(48 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$

$$\left(\operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(3 A \operatorname{Sin}\left[\frac{d x}{2}\right]+9 B \operatorname{Sin}\left[\frac{d x}{2}\right]+11 C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)\right) \Big/ \left(12 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)+$$

$$\left(C \operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}\left[\frac{d x}{2}\right]\right) \Big/ \left(24 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3\right)+$$

$$\left(\operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(-3 B \operatorname{Cos}\left[\frac{c}{2}\right]-10 C \operatorname{Cos}\left[\frac{c}{2}\right]-3 B \operatorname{Sin}\left[\frac{c}{2}\right]-8 C \operatorname{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(48 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$

$$\left(\operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(3 A \operatorname{Sin}\left[\frac{d x}{2}\right]+9 B \operatorname{Sin}\left[\frac{d x}{2}\right]+11 C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)\right) \Big/ \left(12 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right)\right.$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\Bigg)$$

Problem 432: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2 \left(a+a \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 171 leaves, 6 steps):

$$\frac{1}{2} a^3 (7 A+6 B+2 C) x+\frac{a^3 (2 A+6 B+7 C) \,\text{ArcTanh}[\text{Sin}[c+d x]]}{2 d}+\frac{5 a^3 (A-C) \,\text{Sin}[c+d x]}{2 d}+\frac{A \,\text{Cos}[c+d x] \left(a+a \,\text{Sec}[c+d x]\right)^3 \text{Sin}[c+d x]}{2 d}-\frac{(A-C) \left(a^2+a^2 \,\text{Sec}[c+d x]\right)^2 \text{Sin}[c+d x]}{2 a d}-\frac{(A-2 B-4 C) \left(a^3+a^3 \,\text{Sec}[c+d x]\right) \text{Sin}[c+d x]}{2 d}$$

Result (type 3, 1302 leaves):

$$\left((7 A+6 B+2 C) \,x \,\text{Cos}[c+d x]^5 \,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(a+a \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)\right) \Big/ \left(8 \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left((-2 A-6 B-7 C) \,\text{Cos}[c+d x]^5 \,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(a+a \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)\right) \Big/ \left(8 d \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left((2 A+6 B+7 C) \,\text{Cos}[c+d x]^5 \,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(a+a \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)\right) \Big/ \left(8 d \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left((3 A+B) \,\text{Cos}[d x] \,\text{Cos}[c+d x]^5 \,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(a+a \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/ \left(4 d \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left(A \,\text{Cos}[2 d x] \,\text{Cos}[c+d x]^5 \,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(a+a \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \text{Sin}[2 c]\right) \Big/ \left(16 d \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left((3 A+B) \,\text{Cos}[c] \,\text{Cos}[c+d x]^5 \,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(a+a \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \text{Sin}[d x]\right) \Big/ \left(4 d \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right)\right)+$$
$$\Bigg(A \,\text{Cos}[2 c] \,\text{Cos}[c+d x]^5 \,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(a+a \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)$$

$$\text{Sin}[2\,d\,x]\Big)\Big/\Big(16\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\Big)+$$
$$\Big(C\,\text{Cos}[c+d\,x]^5\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,\big(a+a\,\text{Sec}[c+d\,x]\big)^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Big)\Big/$$
$$\Big(16\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\Big(\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]-\text{Sin}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]\Big)^2\Big)+$$
$$\Big(\text{Cos}[c+d\,x]^5\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,\big(a+a\,\text{Sec}[c+d\,x]\big)^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$
$$\Big(B\,\text{Sin}\Big[\frac{d\,x}{2}\Big]+3\,C\,\text{Sin}\Big[\frac{d\,x}{2}\Big]\Big)\Big)\Big/\Big(4\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)$$
$$\Big(\text{Cos}\Big[\frac{c}{2}\Big]-\text{Sin}\Big[\frac{c}{2}\Big]\Big)\,\Big(\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]-\text{Sin}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]\Big)\Big)-$$
$$\Big(C\,\text{Cos}[c+d\,x]^5\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,\big(a+a\,\text{Sec}[c+d\,x]\big)^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Big)\Big/$$
$$\Big(16\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\Big(\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]+\text{Sin}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]\Big)^2\Big)+$$
$$\Big(\text{Cos}[c+d\,x]^5\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,\big(a+a\,\text{Sec}[c+d\,x]\big)^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$
$$\Big(B\,\text{Sin}\Big[\frac{d\,x}{2}\Big]+3\,C\,\text{Sin}\Big[\frac{d\,x}{2}\Big]\Big)\Big)\Big/\Big(4\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)$$
$$\Big(\text{Cos}\Big[\frac{c}{2}\Big]+\text{Sin}\Big[\frac{c}{2}\Big]\Big)\,\Big(\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]+\text{Sin}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]\Big)\Big)$$

Problem 433: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^3\,\big(a+a\,\text{Sec}[c+d\,x]\big)^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\,dx$$

Optimal (type 3, 169 leaves, 6 steps):

$$\frac{1}{2}\,a^3\,(5\,A+7\,B+6\,C)\,x+\frac{a^3\,(B+3\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{d}+$$
$$\frac{5\,a^3\,(A+B)\,\text{Sin}[c+d\,x]}{2\,d}+\frac{A\,\text{Cos}[c+d\,x]^2\,\big(a+a\,\text{Sec}[c+d\,x]\big)^3\,\text{Sin}[c+d\,x]}{3\,d}+$$
$$\frac{(A+B)\,\text{Cos}[c+d\,x]\,\big(a^2+a^2\,\text{Sec}[c+d\,x]\big)^2\,\text{Sin}[c+d\,x]}{2\,a\,d}-$$
$$\frac{(5\,A+3\,B-6\,C)\,\big(a^3+a^3\,\text{Sec}[c+d\,x]\big)\,\text{Sin}[c+d\,x]}{6\,d}$$

Result (type 3, 379 leaves):

$$\frac{1}{48\left(A+2C+2B\cos[c+dx]+A\cos[2(c+dx)]\right)}a^3\cos[c+dx]^2(1+\cos[c+dx])^3\sec\left[\frac{1}{2}(c+dx)\right]^6\left(A+B\sec[c+dx]+C\sec[c+dx]^2\right)\left(6(5A+7B+6C)x-\frac{12(B+3C)\log\left[\cos\left[\frac{1}{2}(c+dx)\right]-\sin\left[\frac{1}{2}(c+dx)\right]\right]}{d}+\frac{12(B+3C)\log\left[\cos\left[\frac{1}{2}(c+dx)\right]+\sin\left[\frac{1}{2}(c+dx)\right]\right]}{d}+\frac{3(15A+4(3B+C))\cos[dx]\sin[c]}{d}+\frac{3(3A+B)\cos[2dx]\sin[2c]}{d}+\frac{A\cos[3dx]\sin[3c]}{d}+\frac{3(15A+4(3B+C))\cos[c]\sin[dx]}{d}+\frac{3(3A+B)\cos[2c]\sin[2dx]}{d}+\frac{A\cos[3c]\sin[3dx]}{d}+\frac{12C\sin\left[\frac{dx}{2}\right]}{d\left(\cos\left[\frac{c}{2}\right]-\sin\left[\frac{c}{2}\right]\right)\left(\cos\left[\frac{1}{2}(c+dx)\right]-\sin\left[\frac{1}{2}(c+dx)\right]\right)}+\frac{12C\sin\left[\frac{dx}{2}\right]}{d\left(\cos\left[\frac{c}{2}\right]+\sin\left[\frac{c}{2}\right]\right)\left(\cos\left[\frac{1}{2}(c+dx)\right]+\sin\left[\frac{1}{2}(c+dx)\right]\right)}\right)$$

Problem 438: Result more than twice size of optimal antiderivative.

$$\int \sec[c+dx]^2(a+a\sec[c+dx])^4\left(A+B\sec[c+dx]+C\sec[c+dx]^2\right)dx$$

Optimal (type 3, 252 leaves, 15 steps):

$$\frac{a^4(56A+49B+44C)\operatorname{ArcTanh}[\sin[c+dx]]}{16d}+\frac{4a^4(56A+49B+44C)\tan[c+dx]}{35d}+\frac{27a^4(56A+49B+44C)\sec[c+dx]\tan[c+dx]}{560d}+\frac{a^4(56A+49B+44C)\sec[c+dx]^3\tan[c+dx]}{280d}+\frac{(42A-7B+8C)(a+a\sec[c+dx])^4\tan[c+dx]}{210d}+\frac{C\sec[c+dx]^2(a+a\sec[c+dx])^4\tan[c+dx]}{7d}+\frac{(7B+4C)(a+a\sec[c+dx])^5\tan[c+dx]}{42ad}+\frac{2a^4(56A+49B+44C)\tan[c+dx]^3}{105d}$$

Result (type 3, 1087 leaves):

$$\left(\left(-56 A-49 B-44 C\right) \text{Cos}[c+d x]^6 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$(128 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))+$$
$$\left(\left(56 A+49 B+44 C\right) \text{Cos}[c+d x]^6 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$(128 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))+$$
$$\left(C \text{Sec}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \text{Sec}[c+d x] (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[d x]\right)\Big/ (56 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))+$$
$$\left(\text{Sec}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) (6 C \text{Sin}[c]+7 B \text{Sin}[d x]+28 C \text{Sin}[d x])\right)\Big/$$
$$(336 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))+$$
$$\left(\text{Cos}[c+d x] \text{Sec}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) (35 B \text{Sin}[c]+140 C \text{Sin}[c]+42 A \text{Sin}[d x]+168 B \text{Sin}[d x]+288 C \text{Sin}[d x])\right)\Big/$$
$$(1680 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))+$$
$$\left(\text{Cos}[c+d x]^2 \text{Sec}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) (168 A \text{Sin}[c]+672 B \text{Sin}[c]+1152 C \text{Sin}[c]+840 A \text{Sin}[d x]+1435 B \text{Sin}[d x]+1540 C \text{Sin}[d x])\right)\Big/ (6720 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))+$$
$$\left(\text{Cos}[c+d x]^3 \text{Sec}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) (840 A \text{Sin}[c]+1435 B \text{Sin}[c]+1540 C \text{Sin}[c]+1904 A \text{Sin}[d x]+2016 B \text{Sin}[d x]+1816 C \text{Sin}[d x])\right)\Big/ (6720 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))+$$
$$\left(\text{Cos}[c+d x]^4 \text{Sec}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) (3808 A \text{Sin}[c]+4032 B \text{Sin}[c]+3632 C \text{Sin}[c]+5880 A \text{Sin}[d x]+5145 B \text{Sin}[d x]+4620 C \text{Sin}[d x])\right)\Big/ (13440 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))+$$
$$\left(\text{Cos}[c+d x]^5 \text{Sec}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) (5880 A \text{Sin}[c]+5145 B \text{Sin}[c]+4620 C \text{Sin}[c]+9296 A \text{Sin}[d x]+8064 B \text{Sin}[d x]+7264 C \text{Sin}[d x])\right)\Big/ (13440 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))$$

Problem 439: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]\,(a+a\,\text{Sec}[c+d x])^4\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\,dx$$

Optimal (type 3, 209 leaves, 14 steps):

$$\frac{7 a^4 (10 A+8 B+7 C)\,\text{ArcTanh}[\text{Sin}[c+d x]]}{16 d}+\frac{4 a^4 (10 A+8 B+7 C)\,\text{Tan}[c+d x]}{5 d}+\frac{27 a^4 (10 A+8 B+7 C)\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{80 d}+\frac{a^4 (10 A+8 B+7 C)\,\text{Sec}[c+d x]^3\,\text{Tan}[c+d x]}{40 d}+\frac{(6 B-C)\,(a+a\,\text{Sec}[c+d x])^4\,\text{Tan}[c+d x]}{30 d}+\frac{C\,(a+a\,\text{Sec}[c+d x])^5\,\text{Tan}[c+d x]}{6 a d}+\frac{2 a^4 (10 A+8 B+7 C)\,\text{Tan}[c+d x]^3}{15 d}$$

Result (type 3, 961 leaves):

$$
\begin{aligned}
&-\Bigg(\bigg(7\,(10\,A+8\,B+7\,C)\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]-\mathrm{Sin}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]\Big]\\
&\qquad \mathrm{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\bigg)\Big/\\
&\quad \big(128\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\big)\Bigg)+\\
&\bigg(7\,(10\,A+8\,B+7\,C)\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]+\mathrm{Sin}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]\Big]\,\mathrm{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\\
&\quad (a+a\,\mathrm{Sec}[c+d\,x])^4\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\bigg)\Big/\\
&\big(128\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\big)+\\
&\bigg(C\,\mathrm{Sec}[c]\,\mathrm{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\,\mathrm{Sin}[d\,x]\bigg)\Big/\\
&\big(48\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\big)+\\
&\bigg(\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}[c]\,\mathrm{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\\
&\quad \big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\,(5\,C\,\mathrm{Sin}[c]+6\,B\,\mathrm{Sin}[d\,x]+24\,C\,\mathrm{Sin}[d\,x])\bigg)\Big/\\
&\big(240\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\big)+\\
&\bigg(\mathrm{Cos}[c+d\,x]^2\,\mathrm{Sec}[c]\,\mathrm{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\\
&\quad (24\,B\,\mathrm{Sin}[c]+96\,C\,\mathrm{Sin}[c]+30\,A\,\mathrm{Sin}[d\,x]+120\,B\,\mathrm{Sin}[d\,x]+205\,C\,\mathrm{Sin}[d\,x])\bigg)\Big/\\
&\big(960\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\big)+\\
&\bigg(\mathrm{Cos}[c+d\,x]^3\,\mathrm{Sec}[c]\,\mathrm{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\\
&\quad (30\,A\,\mathrm{Sin}[c]+120\,B\,\mathrm{Sin}[c]+205\,C\,\mathrm{Sin}[c]+160\,A\,\mathrm{Sin}[d\,x]+272\,B\,\mathrm{Sin}[d\,x]+288\,C\,\mathrm{Sin}[d\,x])\bigg)\Big/\\
&\big(960\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\big)+\\
&\bigg(\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}[c]\,\mathrm{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\\
&\quad (320\,A\,\mathrm{Sin}[c]+544\,B\,\mathrm{Sin}[c]+576\,C\,\mathrm{Sin}[c]+810\,A\,\mathrm{Sin}[d\,x]+840\,B\,\mathrm{Sin}[d\,x]+735\,C\,\mathrm{Sin}[d\,x])\bigg)\Big/\\
&\big(1920\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\big)+\\
&\bigg(\mathrm{Cos}[c+d\,x]^5\,\mathrm{Sec}[c]\,\mathrm{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\\
&\quad (810\,A\,\mathrm{Sin}[c]+840\,B\,\mathrm{Sin}[c]+735\,C\,\mathrm{Sin}[c]+1600\,A\,\mathrm{Sin}[d\,x]+1328\,B\,\mathrm{Sin}[d\,x]+\\
&\qquad 1152\,C\,\mathrm{Sin}[d\,x])\bigg)\Big/\ \big(1920\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\big)
\end{aligned}
$$

Problem 440: Result more than twice size of optimal antiderivative.

$$
\int (a+a\,\mathrm{Sec}[c+d\,x])^4\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\,dx
$$

Optimal (type 3, 195 leaves, 8 steps):

$$a^4 A x + \frac{a^4 (48 A + 35 B + 28 C) \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{8 d} + \frac{a^4 (40 A + 35 B + 28 C) \operatorname{Tan}[c + d x]}{8 d} + \frac{a (5 B + 4 C) (a + a \operatorname{Sec}[c + d x])^3 \operatorname{Tan}[c + d x]}{20 d} + \frac{C (a + a \operatorname{Sec}[c + d x])^4 \operatorname{Tan}[c + d x]}{5 d} + \frac{(20 A + 35 B + 28 C) (a^2 + a^2 \operatorname{Sec}[c + d x])^2 \operatorname{Tan}[c + d x]}{60 d} + \frac{(32 A + 35 B + 28 C) (a^4 + a^4 \operatorname{Sec}[c + d x]) \operatorname{Tan}[c + d x]}{24 d}$$

Result (type 3, 725 leaves):

$$\left((-48 A - 35 B - 28 C) \operatorname{Cos}[c + d x]^6 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 (a + a \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)\right) \Big/ \left(64 d (A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x])\right) + \left((48 A + 35 B + 28 C) \operatorname{Cos}[c + d x]^6 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 (a + a \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)\right) \Big/ \left(64 d (A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x])\right) + \frac{1}{15360 d (A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x])} \operatorname{Cos}[c + d x] \operatorname{Sec}[c] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 (a + a \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) (600 A d x \operatorname{Cos}[d x] + 600 A d x \operatorname{Cos}[2 c + d x] + 300 A d x \operatorname{Cos}[2 c + 3 d x] + 300 A d x \operatorname{Cos}[4 c + 3 d x] + 60 A d x \operatorname{Cos}[4 c + 5 d x] + 60 A d x \operatorname{Cos}[6 c + 5 d x] + 4880 A \operatorname{Sin}[d x] + 5120 B \operatorname{Sin}[d x] + 4720 C \operatorname{Sin}[d x] - 3120 A \operatorname{Sin}[2 c + d x] - 2880 B \operatorname{Sin}[2 c + d x] - 1920 C \operatorname{Sin}[2 c + d x] + 480 A \operatorname{Sin}[c + 2 d x] + 930 B \operatorname{Sin}[c + 2 d x] + 1320 C \operatorname{Sin}[c + 2 d x] + 480 A \operatorname{Sin}[3 c + 2 d x] + 930 B \operatorname{Sin}[3 c + 2 d x] + 1320 C \operatorname{Sin}[3 c + 2 d x] + 3280 A \operatorname{Sin}[2 c + 3 d x] + 3520 B \operatorname{Sin}[2 c + 3 d x] + 3200 C \operatorname{Sin}[2 c + 3 d x] - 720 A \operatorname{Sin}[4 c + 3 d x] - 480 B \operatorname{Sin}[4 c + 3 d x] - 120 C \operatorname{Sin}[4 c + 3 d x] + 240 A \operatorname{Sin}[3 c + 4 d x] + 405 B \operatorname{Sin}[3 c + 4 d x] + 420 C \operatorname{Sin}[3 c + 4 d x] + 240 A \operatorname{Sin}[5 c + 4 d x] + 405 B \operatorname{Sin}[5 c + 4 d x] + 420 C \operatorname{Sin}[5 c + 4 d x] + 800 A \operatorname{Sin}[4 c + 5 d x] + 800 B \operatorname{Sin}[4 c + 5 d x] + 664 C \operatorname{Sin}[4 c + 5 d x])$$

Problem 441: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c + d x] (a + a \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 196 leaves, 8 steps):

$$a^4 (4 A + B) x + \frac{a^4 (52 A + 48 B + 35 C) \text{ArcTanh}[\text{Sin}[c + d x]]}{8 d} + \frac{A (a + a \text{Sec}[c + d x])^4 \text{Sin}[c + d x]}{d} + \frac{5 a^4 (4 A + 8 B + 7 C) \text{Tan}[c + d x]}{8 d} - \frac{a (4 A - C) (a + a \text{Sec}[c + d x])^3 \text{Tan}[c + d x]}{4 d} - \frac{(12 A - 4 B - 7 C) (a^2 + a^2 \text{Sec}[c + d x])^2 \text{Tan}[c + d x]}{12 d} - \frac{(12 A - 32 B - 35 C) (a^4 + a^4 \text{Sec}[c + d x]) \text{Tan}[c + d x]}{24 d}$$

Result (type 3, 738 leaves):

$$\Big(\Big((-52 A - 48 B - 35 C) \text{Cos}[c + d x]^6 \text{Log}\Big[\text{Cos}\Big[\frac{c}{2} + \frac{d x}{2}\Big] - \text{Sin}\Big[\frac{c}{2} + \frac{d x}{2}\Big]\Big] \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2)\Big) \Big/ \Big(64 d (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])\Big) + \Big((52 A + 48 B + 35 C) \text{Cos}[c + d x]^6 \text{Log}\Big[\text{Cos}\Big[\frac{c}{2} + \frac{d x}{2}\Big] + \text{Sin}\Big[\frac{c}{2} + \frac{d x}{2}\Big]\Big] \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2)\Big) \Big/ \Big(64 d (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])\Big) + \frac{1}{1536 d (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])} \text{Cos}[c + d x]^2 \text{Sec}[c] \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2) (288 A d x \text{Cos}[c] + 72 B d x \text{Cos}[c] + 192 A d x \text{Cos}[c + 2 d x] + 48 B d x \text{Cos}[c + 2 d x] + 192 A d x \text{Cos}[3 c + 2 d x] + 48 B d x \text{Cos}[3 c + 2 d x] + 48 A d x \text{Cos}[3 c + 4 d x] + 12 B d x \text{Cos}[3 c + 4 d x] + 48 A d x \text{Cos}[5 c + 4 d x] + 12 B d x \text{Cos}[5 c + 4 d x] - 288 A \text{Sin}[c] - 480 B \text{Sin}[c] - 480 C \text{Sin}[c] + 24 A \text{Sin}[d x] + 48 B \text{Sin}[d x] + 105 C \text{Sin}[d x] + 24 A \text{Sin}[2 c + d x] + 48 B \text{Sin}[2 c + d x] + 105 C \text{Sin}[2 c + d x] + 288 A \text{Sin}[c + 2 d x] + 496 B \text{Sin}[c + 2 d x] + 544 C \text{Sin}[c + 2 d x] - 96 A \text{Sin}[3 c + 2 d x] - 144 B \text{Sin}[3 c + 2 d x] - 96 C \text{Sin}[3 c + 2 d x] + 30 A \text{Sin}[2 c + 3 d x] + 48 B \text{Sin}[2 c + 3 d x] + 81 C \text{Sin}[2 c + 3 d x] + 30 A \text{Sin}[4 c + 3 d x] + 48 B \text{Sin}[4 c + 3 d x] + 81 C \text{Sin}[4 c + 3 d x] + 96 A \text{Sin}[3 c + 4 d x] + 160 B \text{Sin}[3 c + 4 d x] + 160 C \text{Sin}[3 c + 4 d x] + 6 A \text{Sin}[4 c + 5 d x] + 6 A \text{Sin}[6 c + 5 d x])$$

Problem 442: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c + d x]^2 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2) \, dx$$

Optimal (type 3, 209 leaves, 7 steps):

$$\frac{1}{2} a^4 (13 A + 8 B + 2 C) x + \frac{a^4 (8 A + 13 B + 12 C) \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{2 d} +$$
$$\frac{5 a^4 (A - B - 2 C) \operatorname{Sin}[c + d x]}{2 d} - \frac{a (3 A - 2 C) (a + a \operatorname{Sec}[c + d x])^3 \operatorname{Sin}[c + d x]}{6 d} +$$
$$\frac{A \operatorname{Cos}[c + d x] (a + a \operatorname{Sec}[c + d x])^4 \operatorname{Sin}[c + d x]}{2 d} - \frac{(A - B - 2 C) (a^2 + a^2 \operatorname{Sec}[c + d x])^2 \operatorname{Sin}[c + d x]}{2 d} +$$
$$\frac{(3 A + 18 B + 22 C) (a^4 + a^4 \operatorname{Sec}[c + d x]) \operatorname{Sin}[c + d x]}{6 d}$$

Result (type 3, 739 leaves):

$$\left(\left(-8 A - 13 B - 12 C\right) \operatorname{Cos}[c + d x]^6 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 (a + a \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)\right) \Big/ \left(16 d \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right)\right) +$$
$$\left(\left(8 A + 13 B + 12 C\right) \operatorname{Cos}[c + d x]^6 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 (a + a \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)\right) \Big/ \left(16 d \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right)\right) +$$
$$\frac{1}{1536 d \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right)} \operatorname{Cos}[c + d x]^3 \operatorname{Sec}[c] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 (a + a \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)$$
$$(468 A d x \operatorname{Cos}[d x] + 288 B d x \operatorname{Cos}[d x] + 72 C d x \operatorname{Cos}[d x] + 468 A d x \operatorname{Cos}[2 c + d x] +$$
$$288 B d x \operatorname{Cos}[2 c + d x] + 72 C d x \operatorname{Cos}[2 c + d x] + 156 A d x \operatorname{Cos}[2 c + 3 d x] +$$
$$96 B d x \operatorname{Cos}[2 c + 3 d x] + 24 C d x \operatorname{Cos}[2 c + 3 d x] + 156 A d x \operatorname{Cos}[4 c + 3 d x] +$$
$$96 B d x \operatorname{Cos}[4 c + 3 d x] + 24 C d x \operatorname{Cos}[4 c + 3 d x] + 102 A \operatorname{Sin}[d x] + 384 B \operatorname{Sin}[d x] +$$
$$672 C \operatorname{Sin}[d x] - 42 A \operatorname{Sin}[2 c + d x] - 192 B \operatorname{Sin}[2 c + d x] - 288 C \operatorname{Sin}[2 c + d x] +$$
$$96 A \operatorname{Sin}[c + 2 d x] + 48 B \operatorname{Sin}[c + 2 d x] + 96 C \operatorname{Sin}[c + 2 d x] + 96 A \operatorname{Sin}[3 c + 2 d x] +$$
$$48 B \operatorname{Sin}[3 c + 2 d x] + 96 C \operatorname{Sin}[3 c + 2 d x] + 57 A \operatorname{Sin}[2 c + 3 d x] + 192 B \operatorname{Sin}[2 c + 3 d x] +$$
$$320 C \operatorname{Sin}[2 c + 3 d x] + 9 A \operatorname{Sin}[4 c + 3 d x] + 48 A \operatorname{Sin}[3 c + 4 d x] + 12 B \operatorname{Sin}[3 c + 4 d x] +$$
$$48 A \operatorname{Sin}[5 c + 4 d x] + 12 B \operatorname{Sin}[5 c + 4 d x] + 3 A \operatorname{Sin}[4 c + 5 d x] + 3 A \operatorname{Sin}[6 c + 5 d x])$$

Problem 443: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c + d x]^3 (a + a \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 217 leaves, 7 steps):

$$\frac{1}{2} a^4 (12 A + 13 B + 8 C) x + \frac{a^4 (2 A + 8 B + 13 C) \text{ArcTanh}[\text{Sin}[c + d x]]}{2 d} + \frac{5 a^4 (2 A + B - C) \text{Sin}[c + d x]}{2 d} + \frac{a (4 A + 3 B) \text{Cos}[c + d x] (a + a \text{Sec}[c + d x])^3 \text{Sin}[c + d x]}{6 d} + \frac{A \text{Cos}[c + d x]^2 (a + a \text{Sec}[c + d x])^4 \text{Sin}[c + d x]}{3 d} - \frac{(2 A + B - C) (a^2 + a^2 \text{Sec}[c + d x])^2 \text{Sin}[c + d x]}{2 d} - \frac{(8 A - 3 B - 18 C) (a^4 + a^4 \text{Sec}[c + d x]) \text{Sin}[c + d x]}{6 d}$$

Result (type 3, 1518 leaves):

$$\Big((12 A + 13 B + 8 C) x \text{Cos}[c + d x]^6 \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2)\Big) \Big/ (16 (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])) +$$

$$\Big((-2 A - 8 B - 13 C) \text{Cos}[c + d x]^6 \text{Log}\Big[\text{Cos}\Big[\frac{c}{2} + \frac{d x}{2}\Big] - \text{Sin}\Big[\frac{c}{2} + \frac{d x}{2}\Big]\Big] \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2)\Big) \Big/ (16 d (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])) +$$

$$\Big((2 A + 8 B + 13 C) \text{Cos}[c + d x]^6 \text{Log}\Big[\text{Cos}\Big[\frac{c}{2} + \frac{d x}{2}\Big] + \text{Sin}\Big[\frac{c}{2} + \frac{d x}{2}\Big]\Big] \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2)\Big) \Big/ (16 d (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])) +$$

$$\Big((27 A + 16 B + 4 C) \text{Cos}[d x] \text{Cos}[c + d x]^6 \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2) \text{Sin}[c]\Big) \Big/ (32 d (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])) +$$

$$\Big((4 A + B) \text{Cos}[2 d x] \text{Cos}[c + d x]^6 \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2) \text{Sin}[2 c]\Big) \Big/ (32 d (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])) +$$

$$\Big(A \text{Cos}[3 d x] \text{Cos}[c + d x]^6 \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2) \text{Sin}[3 c]\Big) \Big/ (96 d (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])) +$$

$$\Big((27 A + 16 B + 4 C) \text{Cos}[c] \text{Cos}[c + d x]^6 \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2) \text{Sin}[d x]\Big) \Big/ (32 d (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])) +$$

$$\Big((4 A + B) \text{Cos}[2 c] \text{Cos}[c + d x]^6 \text{Sec}\Big[\frac{c}{2} + \frac{d x}{2}\Big]^8 (a + a \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2) \text{Sin}[2 d x]\Big) \Big/$$

$$\left(32\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(A\,\mathrm{Cos}[3\,c]\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\mathrm{Sin}[3\,d\,x]\right)\Big/\left(96\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(C\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(32\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^6\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+4\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/\left(8\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)-$$
$$\left(C\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(32\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^6\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+4\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/\left(8\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)$$

Problem 444: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 217 leaves, 7 steps):

$$\frac{1}{8}\,a^4\,\left(35\,A+48\,B+52\,C\right)\,x+\frac{a^4\,\left(B+4\,C\right)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{d}+$$
$$\frac{5\,a^4\,\left(7\,A+8\,B+4\,C\right)\,\mathrm{Sin}[c+d\,x]}{8\,d}+\frac{a\,(A+B)\,\mathrm{Cos}[c+d\,x]^2\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\mathrm{Sin}[c+d\,x]}{3\,d}+$$
$$\frac{A\,\mathrm{Cos}[c+d\,x]^3\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\,\mathrm{Sin}[c+d\,x]}{4\,d}+$$
$$\frac{\left(7\,A+8\,B+4\,C\right)\,\mathrm{Cos}[c+d\,x]\,\left(a^2+a^2\,\mathrm{Sec}[c+d\,x]\right)^2\,\mathrm{Sin}[c+d\,x]}{8\,d}-$$
$$\frac{\left(35\,A+32\,B-12\,C\right)\,\left(a^4+a^4\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Sin}[c+d\,x]}{24\,d}$$

Result (type 3, 1436 leaves):

$$a^4\,\left(\left(\left(35\,A+48\,B+52\,C\right)\,x\,\mathrm{Cos}[c+d\,x]^2\,\left(1+\mathrm{Cos}[c+d\,x]\right)^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\right.\right.$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big)\Big/\left(64\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(\left(-B-4\,C\right)\text{Cos}[c+d\,x]^2\left(1+\text{Cos}[c+d\,x]\right)^4\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big)\Big/\left(8\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(\left(B+4\,C\right)\text{Cos}[c+d\,x]^2\left(1+\text{Cos}[c+d\,x]\right)^4\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big)\Big/\left(8\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(\left(28\,A+27\,B+16\,C\right)\text{Cos}[d\,x]\,\text{Cos}[c+d\,x]^2\left(1+\text{Cos}[c+d\,x]\right)^4\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c]\Big)\Big/$$

$$\left(32\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(\left(7\,A+4\,B+C\right)\text{Cos}[2\,d\,x]\,\text{Cos}[c+d\,x]^2\left(1+\text{Cos}[c+d\,x]\right)^4$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[2\,c]\Big)\Big/$$

$$\left(32\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(\left(4\,A+B\right)\text{Cos}[3\,d\,x]\,\text{Cos}[c+d\,x]^2\left(1+\text{Cos}[c+d\,x]\right)^4\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[3\,c]\Big)\Big/$$

$$\left(96\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(A\,\text{Cos}[4\,d\,x]\,\text{Cos}[c+d\,x]^2\left(1+\text{Cos}[c+d\,x]\right)^4\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sin}[4\,c]\Big)\Big/\left(256\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(\left(28\,A+27\,B+16\,C\right)\text{Cos}[c]\,\text{Cos}[c+d\,x]^2\left(1+\text{Cos}[c+d\,x]\right)^4\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[d\,x]\Big)\Big/$$

$$\left(32\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(\left(7\,A+4\,B+C\right)\text{Cos}[2\,c]\,\text{Cos}[c+d\,x]^2\left(1+\text{Cos}[c+d\,x]\right)^4\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[2\,d\,x]\Big)\Big/$$

$$\left(32\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(\left(4\,A+B\right)\text{Cos}[3\,c]\,\text{Cos}[c+d\,x]^2\left(1+\text{Cos}[c+d\,x]\right)^4\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[3\,d\,x]\Big)\Big/$$

$$\left(96\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(A\,\text{Cos}[4\,c]\,\text{Cos}[c+d\,x]^2\left(1+\text{Cos}[c+d\,x]\right)^4\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sin}[4\,d\,x]\Big)\Big/\left(256\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(C\,\text{Cos}[c+d\,x]^2\,(1+\text{Cos}[c+d\,x])^4\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Bigg/\left(8\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)+$$
$$\left(C\,\text{Cos}[c+d\,x]^2\,(1+\text{Cos}[c+d\,x])^4\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Bigg/\left(8\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)$$

Problem 449: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 183 leaves, 7 steps):

$$\frac{3\,(4\,A-4\,B+5\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,a\,d}-\frac{(3\,A-4\,B+4\,C)\,\text{Tan}[c+d\,x]}{a\,d}+$$
$$\frac{3\,(4\,A-4\,B+5\,C)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{8\,a\,d}+\frac{(4\,A-4\,B+5\,C)\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{4\,a\,d}-$$
$$\frac{(A-B+C)\,\text{Sec}[c+d\,x]^4\,\text{Tan}[c+d\,x]}{d\,(a+a\,\text{Sec}[c+d\,x])}-\frac{(3\,A-4\,B+4\,C)\,\text{Tan}[c+d\,x]^3}{3\,a\,d}$$

Result (type 3, 1099 leaves):

$$-\left(\left(3\,(4\,A-4\,B+5\,C)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Cos}[c+d\,x]\right.\right.$$
$$\left.\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left.\left(2\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])\right)\right)+$$
$$\left(3\,(4\,A-4\,B+5\,C)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(2\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])\right)+$$
$$\left(1\Big/\left(192\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])\right)\right)$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(-60\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+108\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-75\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-60\,A\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]+124\,B\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]-\right.$$
$$91\,C\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]+204\,A\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]-252\,B\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]+219\,C\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]-$$
$$60\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+12\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+21\,C\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+84\,A\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]-$$
$$132\,B\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]+165\,C\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]+36\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+28\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$5\,C\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+36\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-36\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+69\,C\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$132\,A\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]-132\,B\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+165\,C\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]-156\,A\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]+$$
$$220\,B\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]-211\,C\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]-60\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+124\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$115\,C\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-60\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+60\,B\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-51\,C\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+$$
$$36\,A\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]-36\,B\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+45\,C\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]-12\,A\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+$$
$$28\,B\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]-19\,C\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+12\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+4\,B\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+$$
$$5\,C\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+12\,A\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-12\,B\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+21\,C\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+$$
$$36\,A\,\mathrm{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]-36\,B\,\mathrm{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]+45\,C\,\mathrm{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]-48\,A\,\mathrm{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]+$$
$$64\,B\,\mathrm{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]-64\,C\,\mathrm{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]-24\,A\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+40\,B\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-$$
$$\left.40\,C\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-24\,A\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+24\,B\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]-24\,C\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

Problem 450: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sec}[c+d\,x]^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{a+a\,\mathrm{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 148 leaves, 6 steps):

$$-\frac{(2A-3B+3C)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{2ad}+\frac{(3A-3B+4C)\,\text{Tan}[c+dx]}{ad}-\frac{(2A-3B+3C)\,\text{Sec}[c+dx]\,\text{Tan}[c+dx]}{2ad}-\frac{(A-B+C)\,\text{Sec}[c+dx]^3\,\text{Tan}[c+dx]}{d\,(a+a\,\text{Sec}[c+dx])}+\frac{(3A-3B+4C)\,\text{Tan}[c+dx]^3}{3ad}$$

Result (type 3, 898 leaves):

$$\left(2\,(2A-3B+3C)\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\right)-\left(2\,(2A-3B+3C)\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])\right)+\frac{1}{24\,d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])}\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c]\,\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\left(-6A\,\text{Sin}\left[\frac{dx}{2}\right]+6B\,\text{Sin}\left[\frac{dx}{2}\right]+6C\,\text{Sin}\left[\frac{dx}{2}\right]+30A\,\text{Sin}\left[\frac{3dx}{2}\right]-27B\,\text{Sin}\left[\frac{3dx}{2}\right]+39C\,\text{Sin}\left[\frac{3dx}{2}\right]-12A\,\text{Sin}\left[c-\frac{dx}{2}\right]+12B\,\text{Sin}\left[c-\frac{dx}{2}\right]-24C\,\text{Sin}\left[c-\frac{dx}{2}\right]-6A\,\text{Sin}\left[c+\frac{dx}{2}\right]+6B\,\text{Sin}\left[c+\frac{dx}{2}\right]-6C\,\text{Sin}\left[c+\frac{dx}{2}\right]-24A\,\text{Sin}\left[2c+\frac{dx}{2}\right]+24B\,\text{Sin}\left[2c+\frac{dx}{2}\right]-24C\,\text{Sin}\left[2c+\frac{dx}{2}\right]+12A\,\text{Sin}\left[c+\frac{3dx}{2}\right]-9B\,\text{Sin}\left[c+\frac{3dx}{2}\right]+21C\,\text{Sin}\left[c+\frac{3dx}{2}\right]+12A\,\text{Sin}\left[2c+\frac{3dx}{2}\right]-9B\,\text{Sin}\left[2c+\frac{3dx}{2}\right]+9C\,\text{Sin}\left[2c+\frac{3dx}{2}\right]-6A\,\text{Sin}\left[3c+\frac{3dx}{2}\right]+9B\,\text{Sin}\left[3c+\frac{3dx}{2}\right]-9C\,\text{Sin}\left[3c+\frac{3dx}{2}\right]+6A\,\text{Sin}\left[c+\frac{5dx}{2}\right]-3B\,\text{Sin}\left[c+\frac{5dx}{2}\right]+7C\,\text{Sin}\left[c+\frac{5dx}{2}\right]+3B\,\text{Sin}\left[2c+\frac{5dx}{2}\right]+C\,\text{Sin}\left[2c+\frac{5dx}{2}\right]+3B\,\text{Sin}\left[3c+\frac{5dx}{2}\right]-3C\,\text{Sin}\left[3c+\frac{5dx}{2}\right]-6A\,\text{Sin}\left[4c+\frac{5dx}{2}\right]+9B\,\text{Sin}\left[4c+\frac{5dx}{2}\right]-9C\,\text{Sin}\left[4c+\frac{5dx}{2}\right]+12A\,\text{Sin}\left[2c+\frac{7dx}{2}\right]-12B\,\text{Sin}\left[2c+\frac{7dx}{2}\right]+16C\,\text{Sin}\left[2c+\frac{7dx}{2}\right]+6A\,\text{Sin}\left[3c+\frac{7dx}{2}\right]-6B\,\text{Sin}\left[3c+\frac{7dx}{2}\right]+10C\,\text{Sin}\left[3c+\frac{7dx}{2}\right]+6A\,\text{Sin}\left[4c+\frac{7dx}{2}\right]-6B\,\text{Sin}\left[4c+\frac{7dx}{2}\right]+6C\,\text{Sin}\left[4c+\frac{7dx}{2}\right]\right)$$

Problem 451: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{a+a \text{Sec}[c+d x]} \, dx$$

Optimal (type 3, 119 leaves, 6 steps):

$$\frac{(2 A-2 B+3 C) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 a d}-\frac{(A-2 B+2 C) \text{Tan}[c+d x]}{a d}+$$
$$\frac{(2 A-2 B+3 C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{2 a d}-\frac{(A-B+C) \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{d (a+a \text{Sec}[c+d x])}$$

Result (type 3, 900 leaves):

$$-\left(\left(2\,(2\,A-2\,B+3\,C)\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\right.\right.$$
$$\left.\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left.\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)\right)+$$
$$\left(2\,(2\,A-2\,B+3\,C)\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$
$$\left(4\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$
$$\left(C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a+a\,\text{Sec}[c+d\,x]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)-$$
$$\left(4\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\left(-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right.$$
$$\left.\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)-$$
$$\left(C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a+a\,\text{Sec}[c+d\,x]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)-$$
$$\left(4\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\left(-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a+a\,\text{Sec}[c+d\,x]\right)\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)$$

Problem 452: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 63 leaves, 4 steps):

$$\frac{(B-C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a\,d}+\frac{C\,\text{Tan}[c+d\,x]}{a\,d}+\frac{(A-B+C)\,\text{Tan}[c+d\,x]}{a\,d\,(1+\text{Sec}[c+d\,x])}$$

Result (type 3, 255 leaves):

$$\frac{1}{a\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)])\,(1+\text{Sec}[c+d\,x])}$$
$$4\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Cos}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\left(\left(A-B+C\right)\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sin}\left[\frac{d\,x}{2}\right]+\right.$$
$$\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(-(B-C)\,\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.\right.\right.$$
$$\left.\left.\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)+(C\,\text{Sin}[d\,x])\Big/\left(\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\right.$$
$$\left.\left.\left.\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\right)\right)$$

Problem 453: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 52 leaves, 4 steps):

$$\frac{A\,x}{a}+\frac{C\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a\,d}-\frac{(A-B+C)\,\text{Tan}[c+d\,x]}{a\,d\,(1+\text{Sec}[c+d\,x])}$$

Result (type 3, 163 leaves):

$$\left(4\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(C+B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[c+d\,x]^2\right)\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(A\,d\,x-C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.\right.$$
$$\left.\left.\left.C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)-(A-B+C)\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(a\,d\,(1+\text{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)])\right)$$

Problem 456: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 139 leaves, 6 steps):

$$-\frac{(3\,A-3\,B+2\,C)\,x}{2\,a}+\frac{(4\,A-3\,B+3\,C)\,\text{Sin}[c+d\,x]}{a\,d}-\frac{(3\,A-3\,B+2\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a\,d}-$$
$$\frac{(A-B+C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Sec}[c+d\,x])}-\frac{(4\,A-3\,B+3\,C)\,\text{Sin}[c+d\,x]^3}{3\,a\,d}$$

Result (type 3, 307 leaves):

$$\frac{1}{24\,a\,d\,\left(1+\text{Cos}[c+d\,x]\right)}\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\left(-12\,(3\,A-3\,B+2\,C)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-12\,(3\,A-3\,B+2\,C)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+69\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-60\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+60\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]+21\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-12\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+12\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+18\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-9\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+12\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+18\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-9\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+12\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-2\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+3\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-2\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+3\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]\right)$$

Problem 457: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 174 leaves, 7 steps):

$$\frac{3\,(5\,A-4\,B+4\,C)\,x}{8\,a}-\frac{(4\,A-4\,B+3\,C)\,\text{Sin}[c+d\,x]}{a\,d}+\frac{3\,(5\,A-4\,B+4\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{8\,a\,d}+\frac{(5\,A-4\,B+4\,C)\,\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{4\,a\,d}-\frac{(A-B+C)\,\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{d\,\left(a+a\,\text{Sec}[c+d\,x]\right)}+\frac{(4\,A-4\,B+3\,C)\,\text{Sin}[c+d\,x]^3}{3\,a\,d}$$

Result (type 3, 393 leaves):

$$\frac{1}{192\,a\,d\,\left(1+\text{Cos}[c+d\,x]\right)}\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\left(72\,(5\,A-4\,B+4\,C)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+72\,(5\,A-4\,B+4\,C)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-552\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+552\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-480\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]-168\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+168\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-96\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-120\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+144\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-72\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-120\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+144\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-72\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+40\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-16\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+24\,C\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+40\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-16\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+24\,C\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-5\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+8\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-5\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+8\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+3\,A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+3\,A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

Problem 458: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^4 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)}{\left(a+a \,\text{Sec}[c+d x]\right)^2} \, dx$$

Optimal (type 3, 194 leaves, 7 steps):

$$-\frac{(4 A-7 B+10 C) \,\text{ArcTanh}[\text{Sin}[c+d x]]}{2 a^2 d}+\frac{(5 A-8 B+12 C) \,\text{Tan}[c+d x]}{a^2 d}-\frac{(4 A-7 B+10 C) \,\text{Sec}[c+d x] \,\text{Tan}[c+d x]}{2 a^2 d}-\frac{(4 A-7 B+10 C) \,\text{Sec}[c+d x]^3 \,\text{Tan}[c+d x]}{3 a^2 d \,(1+\text{Sec}[c+d x])}-\frac{(A-B+C) \,\text{Sec}[c+d x]^4 \,\text{Tan}[c+d x]}{3 d \,(a+a \,\text{Sec}[c+d x])^2}+\frac{(5 A-8 B+12 C) \,\text{Tan}[c+d x]^3}{3 a^2 d}$$

Result (type 3, 1069 leaves):

$$\left(4\,(4\,A-7\,B+10\,C)\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$
$$\left.\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)-$$
$$\left(4\,(4\,A-7\,B+10\,C)\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$
$$\left(1\Big/\left(48\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)\right)$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-48\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+45\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-6\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]+132\,A\,\text{Sin}\left[\frac{3\,d\,x}{2}\right]-201\,B\,\text{Sin}\left[\frac{3\,d\,x}{2}\right]+\right.$$
$$310\,C\,\text{Sin}\left[\frac{3\,d\,x}{2}\right]-120\,A\,\text{Sin}\left[c-\frac{d\,x}{2}\right]+195\,B\,\text{Sin}\left[c-\frac{d\,x}{2}\right]-306\,C\,\text{Sin}\left[c-\frac{d\,x}{2}\right]+$$
$$48\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-51\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+42\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-120\,A\,\text{Sin}\left[2\,c+\frac{d\,x}{2}\right]+$$
$$189\,B\,\text{Sin}\left[2\,c+\frac{d\,x}{2}\right]-270\,C\,\text{Sin}\left[2\,c+\frac{d\,x}{2}\right]-8\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$50\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+72\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-81\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+90\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$68\,A\,\text{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+119\,B\,\text{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]-170\,C\,\text{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+$$
$$84\,A\,\text{Sin}\left[c+\frac{5\,d\,x}{2}\right]-129\,B\,\text{Sin}\left[c+\frac{5\,d\,x}{2}\right]+198\,C\,\text{Sin}\left[c+\frac{5\,d\,x}{2}\right]-9\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$42\,C\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+48\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-57\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+66\,C\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-$$
$$36\,A\,\text{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+63\,B\,\text{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]-90\,C\,\text{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+48\,A\,\text{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]-$$
$$75\,B\,\text{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+114\,C\,\text{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+6\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-15\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+$$
$$36\,C\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+30\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-39\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+48\,C\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-$$
$$12\,A\,\text{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]+21\,B\,\text{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]-30\,C\,\text{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]+20\,A\,\text{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]-$$
$$32\,B\,\text{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]+48\,C\,\text{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]+6\,A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-12\,B\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+$$
$$\left.22\,C\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+14\,A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]-20\,B\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+26\,C\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)\Bigg)$$

Problem 459: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)}{\left(a+a \,\text{Sec}[c+d x]\right)^2} \, dx$$

Optimal (type 3, 169 leaves, 7 steps):

$$\frac{(2 A-4 B+7 C) \,\text{ArcTanh}[\text{Sin}[c+d x]]}{2 a^2 d}-\frac{2 (2 A-5 B+8 C) \,\text{Tan}[c+d x]}{3 a^2 d}+\frac{(2 A-4 B+7 C) \,\text{Sec}[c+d x] \,\text{Tan}[c+d x]}{2 a^2 d}-\frac{(2 A-5 B+8 C) \,\text{Sec}[c+d x]^2 \,\text{Tan}[c+d x]}{3 a^2 d (1+\text{Sec}[c+d x])}-\frac{(A-B+C) \,\text{Sec}[c+d x]^3 \,\text{Tan}[c+d x]}{3 d (a+a \,\text{Sec}[c+d x])^2}$$

Result (type 3, 901 leaves):

$$-\left(\left(4\,(2A-4B+7C)\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)\right)+$$

$$\left(4\,(2A-4B+7C)\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c]\,\text{Sec}[c+dx]^2\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\left(20A\,\text{Sin}\left[\frac{dx}{2}\right]-14B\,\text{Sin}\left[\frac{dx}{2}\right]+14C\,\text{Sin}\left[\frac{dx}{2}\right]-22A\,\text{Sin}\left[\frac{3dx}{2}\right]+64B\,\text{Sin}\left[\frac{3dx}{2}\right]-97C\,\text{Sin}\left[\frac{3dx}{2}\right]+36A\,\text{Sin}\left[c-\frac{dx}{2}\right]-84B\,\text{Sin}\left[c-\frac{dx}{2}\right]+126C\,\text{Sin}\left[c-\frac{dx}{2}\right]-36A\,\text{Sin}\left[c+\frac{dx}{2}\right]+42B\,\text{Sin}\left[c+\frac{dx}{2}\right]-42C\,\text{Sin}\left[c+\frac{dx}{2}\right]+20A\,\text{Sin}\left[2c+\frac{dx}{2}\right]-56B\,\text{Sin}\left[2c+\frac{dx}{2}\right]+98C\,\text{Sin}\left[2c+\frac{dx}{2}\right]+18A\,\text{Sin}\left[c+\frac{3dx}{2}\right]-6B\,\text{Sin}\left[c+\frac{3dx}{2}\right]+3C\,\text{Sin}\left[c+\frac{3dx}{2}\right]-22A\,\text{Sin}\left[2c+\frac{3dx}{2}\right]+34B\,\text{Sin}\left[2c+\frac{3dx}{2}\right]-37C\,\text{Sin}\left[2c+\frac{3dx}{2}\right]+18A\,\text{Sin}\left[3c+\frac{3dx}{2}\right]-36B\,\text{Sin}\left[3c+\frac{3dx}{2}\right]+63C\,\text{Sin}\left[3c+\frac{3dx}{2}\right]-18A\,\text{Sin}\left[c+\frac{5dx}{2}\right]+48B\,\text{Sin}\left[c+\frac{5dx}{2}\right]-75C\,\text{Sin}\left[c+\frac{5dx}{2}\right]+6A\,\text{Sin}\left[2c+\frac{5dx}{2}\right]+6B\,\text{Sin}\left[2c+\frac{5dx}{2}\right]-15C\,\text{Sin}\left[2c+\frac{5dx}{2}\right]-18A\,\text{Sin}\left[3c+\frac{5dx}{2}\right]+30B\,\text{Sin}\left[3c+\frac{5dx}{2}\right]-39C\,\text{Sin}\left[3c+\frac{5dx}{2}\right]+6A\,\text{Sin}\left[4c+\frac{5dx}{2}\right]-12B\,\text{Sin}\left[4c+\frac{5dx}{2}\right]+21C\,\text{Sin}\left[4c+\frac{5dx}{2}\right]-8A\,\text{Sin}\left[2c+\frac{7dx}{2}\right]+20B\,\text{Sin}\left[2c+\frac{7dx}{2}\right]-32C\,\text{Sin}\left[2c+\frac{7dx}{2}\right]+6B\,\text{Sin}\left[3c+\frac{7dx}{2}\right]-12C\,\text{Sin}\left[3c+\frac{7dx}{2}\right]-8A\,\text{Sin}\left[4c+\frac{7dx}{2}\right]+14B\,\text{Sin}\left[4c+\frac{7dx}{2}\right]-20C\,\text{Sin}\left[4c+\frac{7dx}{2}\right]\right)\right)\Big/\left(24d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)$$

Problem 460: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]^2\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)}{(a+a\,\text{Sec}[c+dx])^2}\,dx$$

Optimal (type 3, 112 leaves, 6 steps):

$$\frac{(B-2C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a^2\,d}+\frac{(A-B+4C)\,\text{Tan}[c+d\,x]}{3\,a^2\,d}-\frac{(B-2C)\,\text{Tan}[c+d\,x]}{a^2\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A-B+C)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d\,(a+a\,\text{Sec}[c+d\,x])^2}$$

Result (type 3, 312 leaves):

$$\Big(4\,\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\Big((A-B+C)\,\text{Sec}\Big[\tfrac{c}{2}\Big]\,\text{Sin}\Big[\tfrac{d\,x}{2}\Big]+2\,(A-4B+7C)\,\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]^2\,\text{Sec}\Big[\tfrac{c}{2}\Big]\,\text{Sin}\Big[\tfrac{d\,x}{2}\Big]+\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]^3\Big(-6\,(B-2C)\Big(\text{Log}\Big[\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]-\text{Sin}\Big[\tfrac{1}{2}(c+d\,x)\Big]\Big]-\text{Log}\Big[\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]+\text{Sin}\Big[\tfrac{1}{2}(c+d\,x)\Big]\Big]\Big)+(6\,C\,\text{Sin}[d\,x])\Big/\Big(\Big(\text{Cos}\Big[\tfrac{c}{2}\Big]-\text{Sin}\Big[\tfrac{c}{2}\Big]\Big)\Big(\text{Cos}\Big[\tfrac{c}{2}\Big]+\text{Sin}\Big[\tfrac{c}{2}\Big]\Big)\Big(\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]-\text{Sin}\Big[\tfrac{1}{2}(c+d\,x)\Big]\Big)\Big(\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]+\text{Sin}\Big[\tfrac{1}{2}(c+d\,x)\Big]\Big)\Big)\Big)+(A-B+C)\,\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]\,\text{Tan}\Big[\tfrac{c}{2}\Big]\Big)\Big)\Big/\Big(3\,a^2\,d\,(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)])\,(1+\text{Sec}[c+d\,x])^2\Big)$$

Problem 461: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 3, 81 leaves, 4 steps):

$$\frac{C\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a^2\,d}+\frac{(A+2B-5C)\,\text{Tan}[c+d\,x]}{3\,a^2\,d\,(1+\text{Sec}[c+d\,x])}+\frac{(A-B+C)\,\text{Tan}[c+d\,x]}{3\,d\,(a+a\,\text{Sec}[c+d\,x])^2}$$

Result (type 3, 219 leaves):

$$-\Big(\Big(4\,\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]\,(C+B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[c+d\,x]^2)\Big(6\,C\,\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]^3\Big(\text{Log}\Big[\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]-\text{Sin}\Big[\tfrac{1}{2}(c+d\,x)\Big]\Big]-\text{Log}\Big[\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]+\text{Sin}\Big[\tfrac{1}{2}(c+d\,x)\Big]\Big]\Big)+(A-B+C)\,\text{Sec}\Big[\tfrac{c}{2}\Big]\,\text{Sin}\Big[\tfrac{d\,x}{2}\Big]-2\,(2A+B-4C)\,\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]^2\,\text{Sec}\Big[\tfrac{c}{2}\Big]\,\text{Sin}\Big[\tfrac{d\,x}{2}\Big]+(A-B+C)\,\text{Cos}\Big[\tfrac{1}{2}(c+d\,x)\Big]\,\text{Tan}\Big[\tfrac{c}{2}\Big]\Big)\Big)\Big/\Big(3\,a^2\,d\,(1+\text{Cos}[c+d\,x])^2\,(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)])\Big)\Big)$$

Problem 462: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

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

$$\frac{A x}{a^2}-\frac{(4 A-B-2 C) \operatorname{Tan}[c+d x]}{3 a^2 d (1+\operatorname{Sec}[c+d x])}-\frac{(A-B+C) \operatorname{Tan}[c+d x]}{3 d (a+a \operatorname{Sec}[c+d x])^2}$$

Result (type 3, 175 leaves):

$$\frac{1}{24 a^2 d}\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^3 \left(9 A d x \operatorname{Cos}\left[\frac{d x}{2}\right]+9 A d x \operatorname{Cos}\left[c+\frac{d x}{2}\right]+3 A d x \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]+3 A d x \operatorname{Cos}\left[2 c+\frac{3 d x}{2}\right]-18 A \operatorname{Sin}\left[\frac{d x}{2}\right]+6 B \operatorname{Sin}\left[\frac{d x}{2}\right]+6 C \operatorname{Sin}\left[\frac{d x}{2}\right]+12 A \operatorname{Sin}\left[c+\frac{d x}{2}\right]-6 B \operatorname{Sin}\left[c+\frac{d x}{2}\right]-10 A \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]+4 B \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]+2 C \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]\right)$$

Problem 463: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x] \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{(a+a \operatorname{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 100 leaves, 5 steps):

$$-\frac{(2 A-B) x}{a^2}+\frac{(10 A-4 B+C) \operatorname{Sin}[c+d x]}{3 a^2 d}-\frac{(2 A-B) \operatorname{Sin}[c+d x]}{a^2 d (1+\operatorname{Sec}[c+d x])}-\frac{(A-B+C) \operatorname{Sin}[c+d x]}{3 d (a+a \operatorname{Sec}[c+d x])^2}$$

Result (type 3, 279 leaves):

$$\frac{1}{12 a^2 d (1+\operatorname{Cos}[c+d x])^2}\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right] \operatorname{Sec}\left[\frac{c}{2}\right] \left(-18 (2 A-B) d x \operatorname{Cos}\left[\frac{d x}{2}\right]-18 (2 A-B) d x \operatorname{Cos}\left[c+\frac{d x}{2}\right]-12 A d x \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]+6 B d x \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]-12 A d x \operatorname{Cos}\left[2 c+\frac{3 d x}{2}\right]+6 B d x \operatorname{Cos}\left[2 c+\frac{3 d x}{2}\right]+66 A \operatorname{Sin}\left[\frac{d x}{2}\right]-36 B \operatorname{Sin}\left[\frac{d x}{2}\right]+12 C \operatorname{Sin}\left[\frac{d x}{2}\right]-30 A \operatorname{Sin}\left[c+\frac{d x}{2}\right]+24 B \operatorname{Sin}\left[c+\frac{d x}{2}\right]-12 C \operatorname{Sin}\left[c+\frac{d x}{2}\right]+41 A \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]-20 B \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]+8 C \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]+9 A \operatorname{Sin}\left[2 c+\frac{3 d x}{2}\right]+3 A \operatorname{Sin}\left[2 c+\frac{5 d x}{2}\right]+3 A \operatorname{Sin}\left[3 c+\frac{5 d x}{2}\right]\right)$$

Problem 464: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{(a+a \operatorname{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 156 leaves, 6 steps):

$$\frac{(7A-4B+2C)\,x}{2a^2}-\frac{2\,(8A-5B+2C)\,\text{Sin}[c+dx]}{3a^2 d}+\frac{(7A-4B+2C)\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{2a^2 d}-\frac{(8A-5B+2C)\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{3a^2 d\,(1+\text{Sec}[c+dx])}-\frac{(A-B+C)\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{3d\,(a+a\,\text{Sec}[c+dx])^2}$$

Result (type 3, 377 leaves):

$$\frac{1}{192\,a^2 d}\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^3\left(36\,(7A-4B+2C)\,dx\,\text{Cos}\left[\frac{dx}{2}\right]+36\,(7A-4B+2C)\,dx\,\text{Cos}\left[c+\frac{dx}{2}\right]+84\,A\,dx\,\text{Cos}\left[c+\frac{3dx}{2}\right]-48\,B\,dx\,\text{Cos}\left[c+\frac{3dx}{2}\right]+24\,C\,dx\,\text{Cos}\left[c+\frac{3dx}{2}\right]+84\,A\,dx\,\text{Cos}\left[2c+\frac{3dx}{2}\right]-48\,B\,dx\,\text{Cos}\left[2c+\frac{3dx}{2}\right]+24\,C\,dx\,\text{Cos}\left[2c+\frac{3dx}{2}\right]-381\,A\,\text{Sin}\left[\frac{dx}{2}\right]+264\,B\,\text{Sin}\left[\frac{dx}{2}\right]-144\,C\,\text{Sin}\left[\frac{dx}{2}\right]+147\,A\,\text{Sin}\left[c+\frac{dx}{2}\right]-120\,B\,\text{Sin}\left[c+\frac{dx}{2}\right]+96\,C\,\text{Sin}\left[c+\frac{dx}{2}\right]-239\,A\,\text{Sin}\left[c+\frac{3dx}{2}\right]+164\,B\,\text{Sin}\left[c+\frac{3dx}{2}\right]-80\,C\,\text{Sin}\left[c+\frac{3dx}{2}\right]-63\,A\,\text{Sin}\left[2c+\frac{3dx}{2}\right]+36\,B\,\text{Sin}\left[2c+\frac{3dx}{2}\right]-15\,A\,\text{Sin}\left[2c+\frac{5dx}{2}\right]+12\,B\,\text{Sin}\left[2c+\frac{5dx}{2}\right]-15\,A\,\text{Sin}\left[3c+\frac{5dx}{2}\right]+12\,B\,\text{Sin}\left[3c+\frac{5dx}{2}\right]+3\,A\,\text{Sin}\left[3c+\frac{7dx}{2}\right]+3\,A\,\text{Sin}\left[4c+\frac{7dx}{2}\right]\right)$$

Problem 465: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+dx]^3\,(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2)}{(a+a\,\text{Sec}[c+dx])^2}\,dx$$

Optimal (type 3, 185 leaves, 7 steps):

$$-\frac{(10A-7B+4C)\,x}{2a^2}+\frac{(12A-8B+5C)\,\text{Sin}[c+dx]}{a^2 d}-\frac{(10A-7B+4C)\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{2a^2 d}-\frac{(10A-7B+4C)\,\text{Cos}[c+dx]^2\,\text{Sin}[c+dx]}{3a^2 d\,(1+\text{Sec}[c+dx])}-\frac{(A-B+C)\,\text{Cos}[c+dx]^2\,\text{Sin}[c+dx]}{3d\,(a+a\,\text{Sec}[c+dx])^2}-\frac{(12A-8B+5C)\,\text{Sin}[c+dx]^3}{3a^2 d}$$

Result (type 3, 473 leaves):

$$\frac{1}{192\,a^2\,d}\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\left(-36\,(10\,A-7\,B+4\,C)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-36\,(10\,A-7\,B+4\,C)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-\right.$$
$$120\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+84\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-48\,C\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-$$
$$120\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+84\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-48\,C\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$516\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-381\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+264\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]-156\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+$$
$$147\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-120\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+342\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-239\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$164\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+118\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-63\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+36\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$30\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-15\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+12\,C\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+30\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-$$
$$15\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+12\,C\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-3\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+3\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-$$
$$\left.3\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+3\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

Problem 466: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 216 leaves, 8 steps):

$$\frac{(2\,A-6\,B+13\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,a^3\,d}-\frac{2\,(11\,A-36\,B+76\,C)\,\text{Tan}[c+d\,x]}{15\,a^3\,d}+$$
$$\frac{(2\,A-6\,B+13\,C)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,a^3\,d}-\frac{(A-B+C)\,\text{Sec}[c+d\,x]^4\,\text{Tan}[c+d\,x]}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^3}-$$
$$\frac{(A-6\,B+11\,C)\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^2}-\frac{(11\,A-36\,B+76\,C)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{15\,d\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}$$

Result (type 3, 1081 leaves):

$$-\left(\left(8\,(2\,A-6\,B+13\,C)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\right.\right.$$
$$\left.\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left.\left(d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\right)\right)+$$
$$\left(8\,(2\,A-6\,B+13\,C)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.$$
$$\left.\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\right)+$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(490\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-870\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+1235\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-530\,A\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]+1830\,B\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]-\right.$$
$$3805\,C\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]+654\,A\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]-2094\,B\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]+4329\,C\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]-$$
$$654\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+1314\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-1989\,C\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+490\,A\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]-$$
$$1650\,B\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]+3575\,C\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]+350\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]-450\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$475\,C\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]-530\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+1230\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-2005\,C\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$350\,A\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]-1050\,B\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+2275\,C\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]-$$
$$378\,A\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]+1278\,B\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]-2673\,C\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]+150\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$90\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-105\,C\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-378\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+918\,B\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-$$
$$1593\,C\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+150\,A\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]-450\,B\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+$$
$$975\,C\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]-190\,A\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+630\,B\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]-$$
$$1325\,C\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+30\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+60\,B\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-255\,C\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-$$
$$190\,A\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+480\,B\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-875\,C\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+$$
$$30\,A\,\mathrm{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]-90\,B\,\mathrm{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]+195\,C\,\mathrm{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]-44\,A\,\mathrm{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]+$$
$$144\,B\,\mathrm{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]-304\,C\,\mathrm{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]+30\,B\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-90\,C\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-$$
$$\left.\left.44\,A\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+114\,B\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]-214\,C\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)\right)\Big/$$
$$\left(240\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\right)$$

Problem 467: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 3, 161 leaves, 7 steps):

$$\frac{(B-3\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a^3\,d}+\frac{(2\,A-7\,B+27\,C)\,\text{Tan}[c+d\,x]}{15\,a^3\,d}-\frac{(A-B+C)\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}+\frac{(A+4\,B-9\,C)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{15\,a\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-\frac{(B-3\,C)\,\text{Tan}[c+d\,x]}{d\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}$$

Result (type 3, 839 leaves):

$$\left(16\,(-B+3C)\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)-$$
$$\left(16\,(-B+3C)\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-20A\,\text{Sin}\left[\frac{d\,x}{2}\right]+160B\,\text{Sin}\left[\frac{d\,x}{2}\right]-255C\,\text{Sin}\left[\frac{d\,x}{2}\right]+22A\,\text{Sin}\left[\frac{3d\,x}{2}\right]-167B\,\text{Sin}\left[\frac{3d\,x}{2}\right]+\right.$$
$$567C\,\text{Sin}\left[\frac{3d\,x}{2}\right]-10A\,\text{Sin}\left[c-\frac{d\,x}{2}\right]+170B\,\text{Sin}\left[c-\frac{d\,x}{2}\right]-600C\,\text{Sin}\left[c-\frac{d\,x}{2}\right]+$$
$$10A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-170B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+375C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-20A\,\text{Sin}\left[2c+\frac{d\,x}{2}\right]+$$
$$160B\,\text{Sin}\left[2c+\frac{d\,x}{2}\right]-480C\,\text{Sin}\left[2c+\frac{d\,x}{2}\right]+75B\,\text{Sin}\left[c+\frac{3d\,x}{2}\right]-60C\,\text{Sin}\left[c+\frac{3d\,x}{2}\right]+$$
$$22A\,\text{Sin}\left[2c+\frac{3d\,x}{2}\right]-167B\,\text{Sin}\left[2c+\frac{3d\,x}{2}\right]+402C\,\text{Sin}\left[2c+\frac{3d\,x}{2}\right]+$$
$$75B\,\text{Sin}\left[3c+\frac{3d\,x}{2}\right]-225C\,\text{Sin}\left[3c+\frac{3d\,x}{2}\right]+10A\,\text{Sin}\left[c+\frac{5d\,x}{2}\right]-95B\,\text{Sin}\left[c+\frac{5d\,x}{2}\right]+$$
$$315C\,\text{Sin}\left[c+\frac{5d\,x}{2}\right]+15B\,\text{Sin}\left[2c+\frac{5d\,x}{2}\right]+30C\,\text{Sin}\left[2c+\frac{5d\,x}{2}\right]+10A\,\text{Sin}\left[3c+\frac{5d\,x}{2}\right]-$$
$$95B\,\text{Sin}\left[3c+\frac{5d\,x}{2}\right]+240C\,\text{Sin}\left[3c+\frac{5d\,x}{2}\right]+15B\,\text{Sin}\left[4c+\frac{5d\,x}{2}\right]-45C\,\text{Sin}\left[4c+\frac{5d\,x}{2}\right]+$$
$$2A\,\text{Sin}\left[2c+\frac{7d\,x}{2}\right]-22B\,\text{Sin}\left[2c+\frac{7d\,x}{2}\right]+72C\,\text{Sin}\left[2c+\frac{7d\,x}{2}\right]+15C\,\text{Sin}\left[3c+\frac{7d\,x}{2}\right]+$$
$$\left.\left.2A\,\text{Sin}\left[4c+\frac{7d\,x}{2}\right]-22B\,\text{Sin}\left[4c+\frac{7d\,x}{2}\right]+57C\,\text{Sin}\left[4c+\frac{7d\,x}{2}\right]\right)\right)\Big/$$
$$\left(60\,d\,(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)$$

Problem 468: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 132 leaves, 5 steps):

$$\frac{C\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a^3\,d}-\frac{(A-B+C)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^3}-$$
$$\frac{(3A+2B-7C)\,\text{Tan}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^2}+\frac{(6A+4B-29C)\,\text{Tan}[c+d\,x]}{15\,d\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}$$

Result (type 3, 277 leaves):

$$-\left(\left(\left(C+B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[c+d\,x]^2\right)\left(240\,C\,\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]^6\left(\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)-\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(5\,(3\,A+4\,B-29\,C)\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-15\,(A-5\,C)\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+15\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+10\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]-95\,C\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+15\,C\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+3\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+2\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-22\,C\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]\right)\right)\right)\Big/\left(15\,a^3\,d\,(1+\mathrm{Cos}[c+d\,x])^3\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,(c+d\,x)]\right)\right)\right)$$

Problem 470: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{(a+a\,\mathrm{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 115 leaves, 4 steps):

$$\frac{A\,x}{a^3}-\frac{(A-B+C)\,\mathrm{Tan}[c+d\,x]}{5\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^3}-\frac{(7\,A-2\,B-3\,C)\,\mathrm{Tan}[c+d\,x]}{15\,a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^2}-\frac{(22\,A-2\,B-3\,C)\,\mathrm{Tan}[c+d\,x]}{15\,d\,(a^3+a^3\,\mathrm{Sec}[c+d\,x])}$$

Result (type 3, 289 leaves):

$$\frac{1}{480\,a^3\,d}\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(150\,A\,d\,x\,\mathrm{Cos}\left[\frac{d\,x}{2}\right]+150\,A\,d\,x\,\mathrm{Cos}\left[c+\frac{d\,x}{2}\right]+75\,A\,d\,x\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]+75\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+15\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+15\,A\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-370\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+80\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+30\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+270\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-60\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-30\,C\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-230\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+40\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+30\,C\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+90\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-30\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-64\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+14\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+6\,C\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]\right)$$

Problem 471: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Cos}[c+d\,x]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{(a+a\,\mathrm{Sec}[c+d\,x])^3}\,dx$$

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

$$-\frac{(3A-B)\,x}{a^3}+\frac{2\,(36A-11B+C)\,\text{Sin}[c+d\,x]}{15\,a^3\,d}-\frac{(A-B+C)\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^3}-\frac{(9A-4B-C)\,\text{Sin}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^2}-\frac{(3A-B)\,\text{Sin}[c+d\,x]}{d\,(a^3+a^3\,\text{Sec}[c+d\,x])}$$

Result (type 3, 419 leaves):

$$\frac{1}{960\,a^3\,d}\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(-300\,(3A-B)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-300\,(3A-B)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-450\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+150\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-450\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+150\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-90\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+30\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]-90\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+30\,B\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+1755\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-740\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+160\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]-1125\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+540\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-120\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+1215\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-460\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+80\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-225\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+180\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-60\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+363\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-128\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+28\,C\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+75\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+15\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+15\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]\right)$$

Problem 472: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

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

$$\frac{(13A-6B+2C)\,x}{2\,a^3}-\frac{2\,(76A-36B+11C)\,\text{Sin}[c+d\,x]}{15\,a^3\,d}+\frac{(13A-6B+2C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a^3\,d}-\frac{(A-B+C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^3}-\frac{(11A-6B+C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^2}-\frac{(76A-36B+11C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{15\,d\,(a^3+a^3\,\text{Sec}[c+d\,x])}$$

Result (type 3, 557 leaves):

$$\frac{1}{3840\, a^3\, d}\, \text{Sec}\left[\frac{c}{2}\right]\, \text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$
$$\left(600\,(13\,A-6\,B+2\,C)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+600\,(13\,A-6\,B+2\,C)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+\right.$$
$$3900\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-1800\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+600\,C\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$3900\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-1800\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+600\,C\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$780\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]-360\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+120\,C\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$780\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-360\,B\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+120\,C\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-$$
$$12\,760\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+7020\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-2960\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]+7560\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-$$
$$4500\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+2160\,C\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-9230\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+4860\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-$$
$$1840\,C\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+930\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-900\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+720\,C\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$2782\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+1452\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-512\,C\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$750\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+300\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-105\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+60\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-$$
$$\left.105\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+60\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+15\,A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+15\,A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

Problem 473: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 237 leaves, 8 steps):

$$-\frac{(23\,A-13\,B+6\,C)\,x}{2\,a^3}+\frac{4\,(34\,A-19\,B+9\,C)\,\text{Sin}[c+d\,x]}{5\,a^3\,d}-\frac{(23\,A-13\,B+6\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a^3\,d}-$$
$$\frac{(A-B+C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^3}-\frac{(13\,A-8\,B+3\,C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^2}-$$
$$\frac{(23\,A-13\,B+6\,C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{3\,d\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}-\frac{4\,(34\,A-19\,B+9\,C)\,\text{Sin}[c+d\,x]^3}{15\,a^3\,d}$$

Result (type 3, 655 leaves):

$$\frac{1}{3840\,a^3\,d}\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$
$$\left(-600\,(23\,A-13\,B+6\,C)\,d\,x\,\mathrm{Cos}\left[\frac{d\,x}{2}\right]-600\,(23\,A-13\,B+6\,C)\,d\,x\,\mathrm{Cos}\left[c+\frac{d\,x}{2}\right]-\right.$$
$$6900\,A\,d\,x\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]+3900\,B\,d\,x\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]-1800\,C\,d\,x\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]-$$
$$6900\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+3900\,B\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-1800\,C\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$1380\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+780\,B\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]-360\,C\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$1380\,A\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+780\,B\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-360\,C\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+$$
$$20410\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-12760\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+7020\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-11110\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+$$
$$7560\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-4500\,C\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+15380\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]-9230\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$4860\,C\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]-380\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+930\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-900\,C\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$4777\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-2782\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+1452\,C\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$1625\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-750\,B\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+300\,C\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+$$
$$230\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-105\,B\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+60\,C\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+230\,A\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-$$
$$105\,B\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+60\,C\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-20\,A\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+15\,B\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-$$
$$\left.20\,A\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+15\,B\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+5\,A\,\mathrm{Sin}\left[5\,c+\frac{11\,d\,x}{2}\right]+5\,A\,\mathrm{Sin}\left[6\,c+\frac{11\,d\,x}{2}\right]\right)$$

Problem 474: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sec}[c+d\,x]^5\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{(a+a\,\mathrm{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 3, 254 leaves, 9 steps):

$$\frac{(2\,A-8\,B+21\,C)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,a^4\,d}-$$
$$\frac{8\,(20\,A-83\,B+216\,C)\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d}+\frac{(2\,A-8\,B+21\,C)\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{2\,a^4\,d}-$$
$$\frac{(10\,A-52\,B+129\,C)\,\mathrm{Sec}[c+d\,x]^3\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d\,(1+\mathrm{Sec}[c+d\,x])^2}-\frac{4\,(20\,A-83\,B+216\,C)\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d\,(1+\mathrm{Sec}[c+d\,x])}-$$
$$\frac{(A-B+C)\,\mathrm{Sec}[c+d\,x]^5\,\mathrm{Tan}[c+d\,x]}{7\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^4}+\frac{(B-2\,C)\,\mathrm{Sec}[c+d\,x]^4\,\mathrm{Tan}[c+d\,x]}{5\,a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^3}$$

Result (type 3, 1322 leaves):

$$- \left(\left(16 \left(2 A - 8 B + 21 C\right) \text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 \right. \right.$$

$$\left. \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right] \text{Sec}[c + d x]^2 \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) \right) \Big/$$

$$\left. \left(d \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \left(a + a \text{Sec}[c + d x]\right)^4\right) \right) +$$

$$\left(16 \left(2 A - 8 B + 21 C\right) \text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right]^8 \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right] \right.$$

$$\left. \text{Sec}[c + d x]^2 \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) \right) \Big/$$

$$\left(d \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \left(a + a \text{Sec}[c + d x]\right)^4\right) -$$

$$\left(4 \text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right]^2 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c + d x]^2 \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) \right.$$

$$\left. \left(A \text{Sin}\left[\frac{c}{2}\right] - B \text{Sin}\left[\frac{c}{2}\right] + C \text{Sin}\left[\frac{c}{2}\right]\right) \right) \Big/$$

$$\left(7 d \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \left(a + a \text{Sec}[c + d x]\right)^4\right) -$$

$$\left(8 \text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right]^4 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c + d x]^2 \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) \right.$$

$$\left. \left(10 A \text{Sin}\left[\frac{c}{2}\right] - 17 B \text{Sin}\left[\frac{c}{2}\right] + 24 C \text{Sin}\left[\frac{c}{2}\right]\right) \right) \Big/$$

$$\left(35 d \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \left(a + a \text{Sec}[c + d x]\right)^4\right) -$$

$$\left(16 \text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right]^6 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c + d x]^2 \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) \right.$$

$$\left. \left(55 A \text{Sin}\left[\frac{c}{2}\right] - 139 B \text{Sin}\left[\frac{c}{2}\right] + 258 C \text{Sin}\left[\frac{c}{2}\right]\right) \right) \Big/$$

$$\left(105 d \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \left(a + a \text{Sec}[c + d x]\right)^4\right) -$$

$$\left(4 \text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c + d x]^2 \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) \right.$$

$$\left. \left(A \text{Sin}\left[\frac{d x}{2}\right] - B \text{Sin}\left[\frac{d x}{2}\right] + C \text{Sin}\left[\frac{d x}{2}\right]\right) \right) \Big/$$

$$\left(7 d \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \left(a + a \text{Sec}[c + d x]\right)^4\right) -$$

$$\left(8 \text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right]^3 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c + d x]^2 \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) \right.$$

$$\left. \left(10 A \text{Sin}\left[\frac{d x}{2}\right] - 17 B \text{Sin}\left[\frac{d x}{2}\right] + 24 C \text{Sin}\left[\frac{d x}{2}\right]\right) \right) \Big/$$

$$\left(35 d \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \left(a + a \text{Sec}[c + d x]\right)^4\right) -$$

$$\left(16 \text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right]^5 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c + d x]^2 \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) \right.$$

$$\left. \left(55 A \text{Sin}\left[\frac{d x}{2}\right] - 139 B \text{Sin}\left[\frac{d x}{2}\right] + 258 C \text{Sin}\left[\frac{d x}{2}\right]\right) \right) \Big/$$

$$\left(105 d \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \left(a + a \text{Sec}[c + d x]\right)^4\right) -$$

$$\left(32 \text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right]^7 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c + d x]^2 \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right) \right.$$

$$\left. \left(160 A \text{Sin}\left[\frac{d x}{2}\right] - 559 B \text{Sin}\left[\frac{d x}{2}\right] + 1308 C \text{Sin}\left[\frac{d x}{2}\right]\right) \right) \Big/$$

$$\left(105\,d\,(A+2C+2B\cos[c+dx]+A\cos[2c+2dx])\,(a+a\sec[c+dx])^4\right)+$$
$$\left(16\,C\cos\left[\frac{c}{2}+\frac{dx}{2}\right]^8\sec[c]\sec[c+dx]^4\left(A+B\sec[c+dx]+C\sec[c+dx]^2\right)\sin[dx]\right)\Big/$$
$$\left(d\,(A+2C+2B\cos[c+dx]+A\cos[2c+2dx])\,(a+a\sec[c+dx])^4\right)+$$
$$\left(16\cos\left[\frac{c}{2}+\frac{dx}{2}\right]^8\sec[c]\sec[c+dx]^3\left(A+B\sec[c+dx]+C\sec[c+dx]^2\right)\right.$$
$$\left.(C\sin[c]+2B\sin[dx]-8C\sin[dx])\right)\Big/$$
$$\left(d\,(A+2C+2B\cos[c+dx]+A\cos[2c+2dx])\,(a+a\sec[c+dx])^4\right)$$

Problem 475: Result more than twice size of optimal antiderivative.

$$\int\frac{\sec[c+dx]^4\left(A+B\sec[c+dx]+C\sec[c+dx]^2\right)}{(a+a\sec[c+dx])^4}\,dx$$

Optimal (type 3, 204 leaves, 8 steps):

$$\frac{(B-4C)\,\text{ArcTanh}[\sin[c+dx]]}{a^4\,d}+\frac{(6A-55B+244C)\tan[c+dx]}{105\,a^4\,d}+$$
$$\frac{(3A+25B-88C)\sec[c+dx]^2\tan[c+dx]}{105\,a^4\,d\,(1+\sec[c+dx])^2}-\frac{(B-4C)\tan[c+dx]}{a^4\,d\,(1+\sec[c+dx])}-$$
$$\frac{(A-B+C)\sec[c+dx]^4\tan[c+dx]}{7\,d\,(a+a\sec[c+dx])^4}+\frac{(2A+5B-12C)\sec[c+dx]^3\tan[c+dx]}{35\,a\,d\,(a+a\sec[c+dx])^3}$$

Result (type 3, 1208 leaves):

$$\left(32\,(-B+4C)\cos\left[\frac{c}{2}+\frac{dx}{2}\right]^8\log\left[\cos\left[\frac{c}{2}+\frac{dx}{2}\right]-\sin\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\right.$$
$$\left.\sec[c+dx]^2\left(A+B\sec[c+dx]+C\sec[c+dx]^2\right)\right)\Big/$$
$$\left(d\,(A+2C+2B\cos[c+dx]+A\cos[2c+2dx])\,(a+a\sec[c+dx])^4\right)-$$
$$\left(32\,(-B+4C)\cos\left[\frac{c}{2}+\frac{dx}{2}\right]^8\log\left[\cos\left[\frac{c}{2}+\frac{dx}{2}\right]+\sin\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\right.$$
$$\left.\sec[c+dx]^2\left(A+B\sec[c+dx]+C\sec[c+dx]^2\right)\right)\Big/$$
$$\left(d\,(A+2C+2B\cos[c+dx]+A\cos[2c+2dx])\,(a+a\sec[c+dx])^4\right)+$$
$$\left(4\cos\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sec\left[\frac{c}{2}\right]\sec[c+dx]^2\left(A+B\sec[c+dx]+C\sec[c+dx]^2\right)\right.$$
$$\left.\left(A\sin\left[\frac{c}{2}\right]-B\sin\left[\frac{c}{2}\right]+C\sin\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(7\,d\,(A+2C+2B\cos[c+dx]+A\cos[2c+2dx])\,(a+a\sec[c+dx])^4\right)+$$
$$\left(8\cos\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sec\left[\frac{c}{2}\right]\sec[c+dx]^2\left(A+B\sec[c+dx]+C\sec[c+dx]^2\right)\right.$$
$$\left.\left(3A\sin\left[\frac{c}{2}\right]-10B\sin\left[\frac{c}{2}\right]+17C\sin\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(35\,d\,(A+2C+2B\cos[c+dx]+A\cos[2c+2dx])\,(a+a\sec[c+dx])^4\right)+$$

$$\left(16\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(6\,A\,\text{Sin}\left[\frac{c}{2}\right]-55\,B\,\text{Sin}\left[\frac{c}{2}\right]+139\,C\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/\left(105\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\left(4\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/\left(7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\left(8\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(3\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-10\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+17\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/\left(35\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\left(16\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(6\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-55\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+139\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/\left(105\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\left(32\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^7\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(6\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-160\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+559\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/\left(105\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\left(32\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[d\,x]\right)\Big/\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)$$

Problem 479: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\left(a+a\,\text{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 3, 148 leaves, 5 steps):

$$\frac{A\,x}{a^4}-\frac{(55\,A-6\,B-8\,C)\,\text{Tan}[c+d\,x]}{105\,a^4\,d\,\left(1+\text{Sec}[c+d\,x]\right)^2}-\frac{2\,(80\,A-3\,B-4\,C)\,\text{Tan}[c+d\,x]}{105\,a^4\,d\,\left(1+\text{Sec}[c+d\,x]\right)}-\frac{(A-B+C)\,\text{Tan}[c+d\,x]}{7\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4}-\frac{(10\,A-3\,B-4\,C)\,\text{Tan}[c+d\,x]}{35\,a\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}$$

Result (type 3, 405 leaves):

$$\frac{1}{13440\,a^4\,d}\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^7\Bigg(3675\,A\,d\,x\,\mathrm{Cos}\left[\frac{d\,x}{2}\right]+3675\,A\,d\,x\,\mathrm{Cos}\left[c+\frac{d\,x}{2}\right]+2205\,A\,d\,x\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$2205\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+735\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+735\,A\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+$$
$$105\,A\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]+105\,A\,d\,x\,\mathrm{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right]-9940\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+1260\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+$$
$$560\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+8260\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-1260\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-350\,C\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-$$
$$7140\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+882\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+336\,C\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+3780\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$630\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-210\,C\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-2800\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$294\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+182\,C\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+840\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-$$
$$210\,B\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-520\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+72\,B\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+26\,C\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]\Bigg)$$

Problem 480: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[c+d\,x]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 3, 176 leaves, 7 steps):

$$-\frac{(4\,A-B)\,x}{a^4}+\frac{2\left(332\,A-80\,B+3\,C\right)\mathrm{Sin}[c+d\,x]}{105\,a^4\,d}-\frac{\left(88\,A-25\,B-3\,C\right)\mathrm{Sin}[c+d\,x]}{105\,a^4\,d\left(1+\mathrm{Sec}[c+d\,x]\right)^2}-$$
$$\frac{(4\,A-B)\,\mathrm{Sin}[c+d\,x]}{a^4\,d\left(1+\mathrm{Sec}[c+d\,x]\right)}-\frac{\left(A-B+C\right)\mathrm{Sin}[c+d\,x]}{7\,d\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4}-\frac{\left(12\,A-5\,B-2\,C\right)\mathrm{Sin}[c+d\,x]}{35\,a\,d\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3}$$

Result (type 3, 567 leaves):

$$\frac{1}{26880\, a^4\, d} \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^7 \left(-7350 (4 A-B) d x \operatorname{Cos}\left[\frac{d x}{2}\right]-7350 (4 A-B) d x \operatorname{Cos}\left[c+\frac{d x}{2}\right]-17640 A d x \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]+\right.$$
$$4410 B d x \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]-17640 A d x \operatorname{Cos}\left[2 c+\frac{3 d x}{2}\right]+4410 B d x \operatorname{Cos}\left[2 c+\frac{3 d x}{2}\right]-$$
$$5880 A d x \operatorname{Cos}\left[2 c+\frac{5 d x}{2}\right]+1470 B d x \operatorname{Cos}\left[2 c+\frac{5 d x}{2}\right]-5880 A d x \operatorname{Cos}\left[3 c+\frac{5 d x}{2}\right]+$$
$$1470 B d x \operatorname{Cos}\left[3 c+\frac{5 d x}{2}\right]-840 A d x \operatorname{Cos}\left[3 c+\frac{7 d x}{2}\right]+210 B d x \operatorname{Cos}\left[3 c+\frac{7 d x}{2}\right]-$$
$$840 A d x \operatorname{Cos}\left[4 c+\frac{7 d x}{2}\right]+210 B d x \operatorname{Cos}\left[4 c+\frac{7 d x}{2}\right]+60830 A \operatorname{Sin}\left[\frac{d x}{2}\right]-$$
$$19880 B \operatorname{Sin}\left[\frac{d x}{2}\right]+2520 C \operatorname{Sin}\left[\frac{d x}{2}\right]-46130 A \operatorname{Sin}\left[c+\frac{d x}{2}\right]+16520 B \operatorname{Sin}\left[c+\frac{d x}{2}\right]-$$
$$2520 C \operatorname{Sin}\left[c+\frac{d x}{2}\right]+46116 A \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]-14280 B \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]+1764 C \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]-$$
$$18060 A \operatorname{Sin}\left[2 c+\frac{3 d x}{2}\right]+7560 B \operatorname{Sin}\left[2 c+\frac{3 d x}{2}\right]-1260 C \operatorname{Sin}\left[2 c+\frac{3 d x}{2}\right]+$$
$$19292 A \operatorname{Sin}\left[2 c+\frac{5 d x}{2}\right]-5600 B \operatorname{Sin}\left[2 c+\frac{5 d x}{2}\right]+588 C \operatorname{Sin}\left[2 c+\frac{5 d x}{2}\right]-$$
$$2100 A \operatorname{Sin}\left[3 c+\frac{5 d x}{2}\right]+1680 B \operatorname{Sin}\left[3 c+\frac{5 d x}{2}\right]-420 C \operatorname{Sin}\left[3 c+\frac{5 d x}{2}\right]+$$
$$3791 A \operatorname{Sin}\left[3 c+\frac{7 d x}{2}\right]-1040 B \operatorname{Sin}\left[3 c+\frac{7 d x}{2}\right]+144 C \operatorname{Sin}\left[3 c+\frac{7 d x}{2}\right]+$$
$$\left.735 A \operatorname{Sin}\left[4 c+\frac{7 d x}{2}\right]+105 A \operatorname{Sin}\left[4 c+\frac{9 d x}{2}\right]+105 A \operatorname{Sin}\left[5 c+\frac{9 d x}{2}\right]\right)$$

Problem 481: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{(a+a \operatorname{Sec}[c+d x])^4} \, dx$$

Optimal (type 3, 239 leaves, 8 steps):

$$\frac{(21 A-8 B+2 C) x}{2 a^4}-\frac{8 (216 A-83 B+20 C) \operatorname{Sin}[c+d x]}{105 a^4 d}+\frac{(21 A-8 B+2 C) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{2 a^4 d}-$$
$$\frac{(129 A-52 B+10 C) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{105 a^4 d (1+\operatorname{Sec}[c+d x])^2}-\frac{4 (216 A-83 B+20 C) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{105 a^4 d (1+\operatorname{Sec}[c+d x])}-$$
$$\frac{(A-B+C) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{7 d (a+a \operatorname{Sec}[c+d x])^4}-\frac{(2 A-B) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{5 a d (a+a \operatorname{Sec}[c+d x])^3}$$

Result (type 3, 1290 leaves):

$$\left(16 (21 A-8 B+2 C) x \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \operatorname{Sec}[c+d x]^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$
$$\left((A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]) (a+a \operatorname{Sec}[c+d x])^4\right)+$$

$$\left(4\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(A\,\text{Sin}\left[\frac{c}{2}\right]-B\,\text{Sin}\left[\frac{c}{2}\right]+C\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)-$$
$$\left(8\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(39\,A\,\text{Sin}\left[\frac{c}{2}\right]-32\,B\,\text{Sin}\left[\frac{c}{2}\right]+25\,C\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(35\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$
$$\left(16\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(447\,A\,\text{Sin}\left[\frac{c}{2}\right]-286\,B\,\text{Sin}\left[\frac{c}{2}\right]+160\,C\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(105\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$
$$\left(4\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)-$$
$$\left(8\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(39\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-32\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+25\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(35\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$
$$\left(16\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(447\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-286\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+160\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(105\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)-$$
$$\left(32\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^7\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(1653\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-764\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+260\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(105\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$
$$\left((4\,A-B)\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(-\frac{16\,\mathbb{i}\,\text{Cos}[c+d\,x]}{d}-\frac{16\,\text{Sin}[c+d\,x]}{d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$
$$\left((4\,A-B)\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(\frac{16\,\mathbb{i}\,\text{Cos}[c+d\,x]}{d}-\frac{16\,\text{Sin}[c+d\,x]}{d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\left(8\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\mathrm{Sec}[c+d\,x]^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sin}[2\,c+2\,d\,x]\right)\Big/\left(d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\right)$$

Problem 486: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 100 leaves, 5 steps):

$$\frac{2\,\sqrt{a}\,A\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a\,(3\,B+C)\,\mathrm{Tan}[c+d\,x]}{3\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+\frac{2\,C\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Tan}[c+d\,x]}{3\,d}$$

Result (type 4, 506 leaves):

$$\left(\mathrm{Cos}[c+d\,x]^2\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\sqrt{a\,\left(1+\mathrm{Sec}[c+d\,x]\right)}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\left(\frac{4}{3}\,(3\,B+2\,C)\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{4}{3}\,C\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/\left(d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)-\frac{1}{d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)}$$

$$16\,\left(-3-2\,\sqrt{2}\right)\,A\,\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}\,\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

$$\mathrm{Cos}[c+d\,x]\,\left(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$

$$\left.2\,\mathrm{EllipticPi}\left[-3+2\,\sqrt{2},\,-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]}$$

$$\sqrt{a\,\left(1+\mathrm{Sec}[c+d\,x]\right)}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\sqrt{3-2\,\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$

Problem 487: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x] \sqrt{a+a \,\text{Sec}[c+d x]} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 98 leaves, 5 steps):

$$\frac{\sqrt{a} \,(A+2 B) \,\text{ArcTan}\left[\frac{\sqrt{a} \,\text{Tan}[c+d x]}{\sqrt{a+a \,\text{Sec}[c+d x]}}\right]}{d}+\frac{A \sqrt{a+a \,\text{Sec}[c+d x]} \,\text{Sin}[c+d x]}{d}-\frac{a \,(A-2 C) \,\text{Tan}[c+d x]}{d \sqrt{a+a \,\text{Sec}[c+d x]}}$$

Result (type 4, 402 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2} (c+d x)\right] \sqrt{a \,(1+\text{Sec}[c+d x])} \left(\frac{1}{2} (-A+4 C) \,\text{Sin}\left[\frac{1}{2} (c+d x)\right]+\frac{1}{2} A \,\text{Sin}\left[\frac{3}{2} (c+d x)\right]\right)-$$
$$\frac{1}{d} 4 \left(-3-2 \sqrt{2}\right) (A+2 B) \,\text{Cos}\left[\frac{1}{4} (c+d x)\right]^4 \sqrt{\frac{7-5 \sqrt{2}+\left(10-7 \sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]}} \left(1-\sqrt{2}+\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]\right)$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]+\right.$$
$$\left.2 \,\text{EllipticPi}\left[-3+2 \sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \text{Sec}\left[\frac{1}{4} (c+d x)\right]^2} \,\text{Sec}\left[\frac{1}{2} (c+d x)\right]$$
$$\text{Sec}[c+d x] \sqrt{a \,(1+\text{Sec}[c+d x])} \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4} (c+d x)\right]^2}$$

Problem 488: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2 \sqrt{a+a \,\text{Sec}[c+d x]} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 117 leaves, 4 steps):

$$\frac{\sqrt{a}\,(3A+4B+8C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{4 d}+\frac{a\,(A+4B)\,\text{Sin}[c+d x]}{4 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{A\,\text{Cos}[c+d x]\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{2 d}$$

Result (type 4, 421 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}\left(-\frac{1}{8}(A+4B)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{4}(A+2B)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{8}A\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)+$$
$$\frac{1}{d}\left(2+\frac{3}{\sqrt{2}}\right)(3A+4B+8C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\;\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$
$$\text{Sec}[c+d x]\sqrt{a\,(1+\text{Sec}[c+d x])}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 489: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3\sqrt{a+a\,\text{Sec}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\,dx$$

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

$$\frac{\sqrt{a}\,(5A+6B+8C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{8 d}+\frac{a\,(5A+6B+8C)\,\text{Sin}[c+d x]}{8 d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$
$$\frac{a\,(A+6B)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{12 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{A\,\text{Cos}[c+d x]^2\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{3 d}$$

Result (type 4, 452 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{a\,(1+\text{Sec}[c+d\,x])}\left(-\frac{1}{48}(11\,A+6\,B+24\,C)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{12}(4\,A+3\,B+6\,C)\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+\frac{1}{16}(A+2\,B)\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+\frac{1}{24}A\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]\right)+$$

$$\frac{1}{d}\left(1+\frac{3}{2\sqrt{2}}\right)(5\,A+6\,B+8\,C)\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \text{Sec}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\text{Sec}[c+d\,x]\sqrt{a\,(1+\text{Sec}[c+d\,x])}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

Problem 490: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^4\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 3, 209 leaves, 6 steps):

$$\frac{\sqrt{a}\,(35\,A+40\,B+48\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{64\,d}+$$

$$\frac{a\,(35\,A+40\,B+48\,C)\,\text{Sin}[c+d\,x]}{64\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,(35\,A+40\,B+48\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{96\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$

$$\frac{a\,(A+8\,B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{24\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{A\,\text{Cos}[c+d\,x]^3\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d}$$

Result (type 4, 476 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a(1+\text{Sec}[c+d x])}$$
$$\left(-\frac{1}{384}(41 A+88 B+48 C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{48}(11 A+16 B+12 C)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{128}\right.$$
$$\left.(15 A+8 B+16 C)\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]+\frac{1}{48}(A+2 B)\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]+\frac{1}{64}A\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]\right)+$$
$$\frac{1}{\left(-64+48\sqrt{2}\right)d}(35 A+40 B+48 C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\;\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$
$$\text{Sec}[c+d x]\sqrt{a(1+\text{Sec}[c+d x])}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 494: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int(a+a\,\text{Sec}[c+d x])^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

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

$$\frac{2 a^{3/2} A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{d}+\frac{2 a^2(15 A+20 B+12 C)\,\text{Tan}[c+d x]}{15 d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$
$$\frac{2 a(5 B+3 C)\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{15 d}+\frac{2 C(a+a\,\text{Sec}[c+d x])^{3/2}\,\text{Tan}[c+d x]}{5 d}$$

Result (type 4, 554 leaves):

$$\left(\text{Cos}[c+d\,x]^3\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{2}{15}\,(15\,A+25\,B+18\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{2}{5}\,C\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$
$$\left.\left.\frac{2}{15}\,\text{Sec}[c+d\,x]\,\left(5\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+9\,C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$
$$\frac{1}{d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$
$$8\,\left(-3-2\,\sqrt{2}\right)\,A\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}\,\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$
$$\text{Cos}[c+d\,x]^2\,\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$
$$\left(a\,(1+\text{Sec}[c+d\,x])\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$

Problem 496: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^2\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 157 leaves, 5 steps):

$$\frac{a^{3/2}\,(7\,A+12\,B+8\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{4\,d}+\frac{a^2\,(5\,A+4\,B-8\,C)\,\text{Sin}[c+d\,x]}{4\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-$$
$$\frac{a\,(A-4\,C)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\,\text{Sin}[c+d\,x]}{2\,d}+\frac{A\,\text{Cos}[c+d\,x]\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 436 leaves):

$$\frac{1}{2}\left(\frac{1}{d}\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 (a(1+\text{Sec}[c+d x]))^{3/2}\right.$$

$$\left(-\frac{1}{8}(5A+4B-16C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{4}(3A+2B)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{8}A\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)+$$

$$\frac{1}{d}\left(2+\frac{3}{\sqrt{2}}\right)(7A+12B+8C)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3(a(1+\text{Sec}[c+d x]))^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)$$

Problem 498: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^4 (a+a\,\text{Sec}[c+d x])^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 215 leaves, 6 steps):

$$\frac{a^{3/2}(75A+88B+112C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{64 d}+$$

$$\frac{a^2(75A+88B+112C)\,\text{Sin}[c+d x]}{64 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a^2(39A+56B+48C)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{96 d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$

$$\frac{a(3A+8B)\,\text{Cos}[c+d x]^2\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{24 d}+$$

$$\frac{A\,\text{Cos}[c+d x]^3(a+a\,\text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{4 d}$$

Result (type 4, 586 leaves):

$$\Big(\text{Cos}[c+d x]^3\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^3\,\big(a\,(1+\text{Sec}[c+d x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\big)\,\Big(-\frac{1}{384}(129 A+136 B+240 C)\,\text{Sin}\Big[\frac{1}{2}(c+d x)\Big]+\frac{1}{48}(27 A+28 B+36 C)\,\text{Sin}\Big[\frac{3}{2}(c+d x)\Big]+\frac{1}{128}(23 A+24 B+16 C)\,\text{Sin}\Big[\frac{5}{2}(c+d x)\Big]+\frac{1}{48}(3 A+2 B)\,\text{Sin}\Big[\frac{7}{2}(c+d x)\Big]+\frac{1}{64}A\,\text{Sin}\Big[\frac{9}{2}(c+d x)\Big]\Big)\Big)\Big/\Big(d\,\big(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\big)\Big)+$$

$$\frac{1}{\left(-64+48\sqrt{2}\right) d\,\big(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\big)}$$

$$(75 A+88 B+112 C)\,\text{Cos}\Big[\frac{1}{4}(c+d x)\Big]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

$$\Big(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\Big[\frac{1}{2}(c+d x)\Big]\Big)\,\text{Cos}[c+d x]^2$$

$$\Big(\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\Big],\,17-12\sqrt{2}\Big]+$$

$$2\,\text{EllipticPi}\Big[-3+2\sqrt{2},\,-\text{ArcSin}\Big[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\Big],\,17-12\sqrt{2}\Big]\Big)$$

$$\sqrt{\Big(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\Big[\frac{1}{2}(c+d x)\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2}$$

$$\sqrt{\Big(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\Big[\frac{1}{2}(c+d x)\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2}\;\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^3$$

$$\big(a\,(1+\text{Sec}[c+d x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\big)\,\sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2}$$

Problem 499: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^5\,(a+a\,\text{Sec}[c+d x])^{3/2}\,\big(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\big)\,dx$$

Optimal (type 3, 263 leaves, 7 steps):

$$\frac{a^{3/2}\,(133\,A+150\,B+176\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{128\,d}+$$

$$\frac{a^2\,(133\,A+150\,B+176\,C)\,\text{Sin}[c+d\,x]}{128\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,(133\,A+150\,B+176\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{192\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$

$$\frac{a^2\,(67\,A+90\,B+80\,C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{240\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$

$$\frac{a\,(3\,A+10\,B)\,\text{Cos}[c+d\,x]^3\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{40\,d}+$$

$$\frac{A\,\text{Cos}[c+d\,x]^4\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 4, 611 leaves) :

$$\frac{1}{d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)}$$
$$\text{Cos}[c+d\,x]^3\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-\frac{(1019A+1290B+1360C)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{3840}+\frac{1}{480}(239A+270B+280C)\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+\right.$$
$$\frac{1}{256}(49A+46B+48C)\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+\frac{1}{240}(17A+15B+10C)\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]+$$
$$\left.\frac{1}{128}(3A+2B)\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]+\frac{1}{160}A\,\text{Sin}\left[\frac{11}{2}(c+d\,x)\right]\right)+$$
$$\frac{1}{64\,d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)}\left(4+3\sqrt{2}\right)(133A+150B+176C)$$
$$\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Cos}[c+d\,x]^2$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3$$
$$\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

Problem 503: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 3, 182 leaves, 7 steps):

$$\frac{2 a^{5/2} A \operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right]}{d}+\frac{2 a^3 (245 A+224 B+160 C) \operatorname{Tan}[c+d x]}{105 d \sqrt{a+a \operatorname{Sec}[c+d x]}}+$$

$$\frac{2 a^2 (35 A+56 B+40 C) \sqrt{a+a \operatorname{Sec}[c+d x]} \operatorname{Tan}[c+d x]}{105 d}+$$

$$\frac{2 a (7 B+5 C) (a+a \operatorname{Sec}[c+d x])^{3/2} \operatorname{Tan}[c+d x]}{35 d}+\frac{2 C (a+a \operatorname{Sec}[c+d x])^{5/2} \operatorname{Tan}[c+d x]}{7 d}$$

Result (type 4, 606 leaves):

$$\frac{1}{d (A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])} \operatorname{Cos}[c+d x]^4 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^5 (a (1+\operatorname{Sec}[c+d x]))^{5/2} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\left(\frac{1}{105} (280 A+301 B+230 C) \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+\frac{1}{7} C \operatorname{Sec}[c+d x]^3 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+\right.$$
$$\frac{1}{35} \operatorname{Sec}[c+d x]^2 \left(7 B \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+20 C \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)+$$
$$\left.\frac{1}{105} \operatorname{Sec}[c+d x] \left(35 A \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+98 B \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+115 C \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)-$$
$$\frac{1}{d (A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])} 4 \left(-3-2 \sqrt{2}\right) A \operatorname{Cos}\left[\frac{1}{4} (c+d x)\right]^4$$
$$\sqrt{\frac{7-5 \sqrt{2}+\left(10-7 \sqrt{2}\right) \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]}} \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right) \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \operatorname{Cos}[c+d x]^3$$
$$\left(\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]+\right.$$
$$\left.2 \operatorname{EllipticPi}\left[-3+2 \sqrt{2}, -\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^2} \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^5$$
$$(a (1+\operatorname{Sec}[c+d x]))^{5/2} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \sqrt{3-2 \sqrt{2}-\operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]^2}$$

Problem 505: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^2\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 197 leaves, 6 steps):

$$\frac{a^{5/2}\,(19\,A+20\,B+8\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{4\,d}+\frac{a^3\,(27\,A-12\,B-56\,C)\,\text{Sin}[c+d\,x]}{12\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{a^2\,(A-4\,B-8\,C)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{2\,d}-\frac{a\,(3\,A-4\,C)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{6\,d}+\frac{A\,\text{Cos}[c+d\,x]\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 467 leaves):

$$\frac{1}{2}\left(\frac{1}{d}\text{Cos}[c+d\,x]^2\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right.$$

$$\left(-\frac{1}{48}(27\,A-36\,B-128\,C)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}\,C\,\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\right.$$

$$\left.\frac{1}{8}(5\,A+2\,B)\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+\frac{1}{16}\,A\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]\right)+$$

$$\frac{1}{d}\left(1+\frac{3}{2\sqrt{2}}\right)(19\,A+20\,B+8\,C)\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)$$

Problem 507: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^4\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 215 leaves, 6 steps):

$$\frac{a^{5/2}\,(163\,A+200\,B+304\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{64\,d}+\frac{a^3\,(299\,A+392\,B+432\,C)\,\text{Sin}[c+d\,x]}{192\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(17\,A+24\,B+16\,C)\,\text{Cos}[c+d\,x]\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{32\,d}+$$
$$\frac{a\,(5\,A+8\,B)\,\text{Cos}[c+d\,x]^2\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{24\,d}+$$
$$\frac{A\,\text{Cos}[c+d\,x]^3\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{4\,d}$$

Result (type 4, 587 leaves):

$$\left(\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right.$$
$$(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,\left(-\frac{1}{768}\,(265\,A+376\,B+432\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$
$$\frac{1}{96}\,(55\,A+64\,B+60\,C)\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+\frac{1}{256}\,(47\,A+40\,B+16\,C)\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+$$
$$\left.\left.\frac{1}{96}\,(5\,A+2\,B)\,\text{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]+\frac{1}{128}\,A\,\text{Sin}\left[\frac{9}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$
$$\frac{1}{64\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$\left(4+3\,\sqrt{2}\right)\,(163\,A+200\,B+304\,C)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4$$
$$\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}\,\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$
$$\text{Cos}[c+d\,x]^3\,\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$
$$(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$

Problem 508: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^5\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 261 leaves, 7 steps):

$$\frac{a^{5/2}\,\left(283\,A+326\,B+400\,C\right)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{128\,d}+\frac{a^3\,\left(283\,A+326\,B+400\,C\right)\,\text{Sin}[c+d\,x]}{128\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,\left(787\,A+950\,B+1040\,C\right)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{960\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,\left(79\,A+110\,B+80\,C\right)\,\text{Cos}[c+d\,x]^2\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{240\,d}+\frac{a\,\left(A+2\,B\right)\,\text{Cos}[c+d\,x]^3\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{8\,d}+\frac{A\,\text{Cos}[c+d\,x]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 4, 611 leaves):

$$\frac{1}{d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)}$$

$$\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(-\frac{\left(2309\,A+2650\,B+3760\,C\right)\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{7680}+\frac{1}{960}\left(509\,A+550\,B+640\,C\right)\,\text{Sin}\left[\frac{3}{2}\left(c+d\,x\right)\right]+\right.$$

$$\frac{1}{512}\left(95\,A+94\,B+80\,C\right)\,\text{Sin}\left[\frac{5}{2}\left(c+d\,x\right)\right]+\frac{1}{480}\left(32\,A+25\,B+10\,C\right)\,\text{Sin}\left[\frac{7}{2}\left(c+d\,x\right)\right]+$$

$$\left.\frac{1}{256}\left(5\,A+2\,B\right)\,\text{Sin}\left[\frac{9}{2}\left(c+d\,x\right)\right]+\frac{1}{320}A\,\text{Sin}\left[\frac{11}{2}\left(c+d\,x\right)\right]\right)+$$

$$\frac{1}{64\,d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)}\left(2+\frac{3}{\sqrt{2}}\right)\left(283\,A+326\,B+400\,C\right)$$

$$\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\,\text{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\,\text{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}\;\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5$$

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

Problem 509: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 311 leaves, 8 steps):

$$\frac{a^{5/2}\,(1015\,A+1132\,B+1304\,C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{512\,d}+$$

$$\frac{a^3\,(1015\,A+1132\,B+1304\,C)\,\text{Sin}[c+d\,x]}{512\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,(1015\,A+1132\,B+1304\,C)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{768\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$

$$\frac{a^3\,(545\,A+628\,B+680\,C)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{960\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{1}{480\,d}$$

$$a^2\,(115\,A+156\,B+120\,C)\,\text{Cos}[c+d\,x]^3\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+$$

$$\frac{a\,(5\,A+12\,B)\,\text{Cos}[c+d\,x]^4\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{60\,d}+$$

$$\frac{A\,\text{Cos}[c+d\,x]^5\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{6\,d}$$

Result (type 4, 635 leaves) :

$$\frac{1}{d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)}\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(-\frac{(7945A+9236B+10600C)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{30720}+\frac{(935A+1018B+1100C)\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]}{1920}+\frac{(1145A+1140B+1128C)\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]}{6144}+\frac{(145A+128B+100C)\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]}{1920}+\frac{(83A+60B+24C)\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]}{3072}+\frac{1}{640}(5A+2B)\,\text{Sin}\left[\frac{11}{2}(c+d\,x)\right]+\frac{1}{768}A\,\text{Sin}\left[\frac{13}{2}(c+d\,x)\right]\right)+$$

$$\frac{1}{512\,d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)}\left(4+3\sqrt{2}\right)(1015A+1132B+1304C)\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Cos}[c+d\,x]^3\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

Problem 522: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}\,dx$$

Optimal (type 3, 120 leaves, 4 steps):

$$\frac{(A+3B-7C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{2\sqrt{2}\,a^{3/2}\,d}+\frac{(A-B+C)\,\text{Tan}[c+d x]}{2\,d\,(a+a\,\text{Sec}[c+d x])^{3/2}}+\frac{2\,C\,\text{Tan}[c+d x]}{a\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}$$

Result (type 3, 307 leaves):

$$\left(2\,(A+3B-7C)\,\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\,\sqrt{1+\text{Sec}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\sqrt{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}\,\sqrt{\text{Sec}[c+d x]}\,(a\,(1+\text{Sec}[c+d x]))^{3/2}\right)+$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\left(4\,(A-B+5C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-2\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+C\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\Big/\left(d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,(a\,(1+\text{Sec}[c+d x]))^{3/2}\right)$$

Problem 526: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d x]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{(a+a\,\text{Sec}[c+d x])^{3/2}}\,dx$$

Optimal (type 3, 284 leaves, 9 steps):

$$-\frac{(47A-38B+24C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{8\,a^{3/2}\,d}+\frac{(17A-13B+9C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{2\sqrt{2}\,a^{3/2}\,d}-\frac{(A-B+C)\,\text{Cos}[c+d x]^2\,\text{Sin}[c+d x]}{2\,d\,(a+a\,\text{Sec}[c+d x])^{3/2}}+\frac{(21A-14B+12C)\,\text{Sin}[c+d x]}{8\,a\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}-\frac{(13A-12B+6C)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{12\,a\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{(5A-3B+3C)\,\text{Cos}[c+d x]^2\,\text{Sin}[c+d x]}{6\,a\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}$$

Result (type 3, 831 leaves):

$$\Bigg(\mathrm{Cos}[c+d\,x]^2\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\sqrt{2}\,\left(-21\,A+14\,B-12\,C\right)\,\mathrm{ArcTan}\Big[\frac{\sqrt{2}}{\sqrt{-1+\mathrm{Sec}[c+d\,x]}}\Big]\,\mathrm{Cos}[c+d\,x]^2$$

$$\sqrt{-1+\mathrm{Sec}[c+d\,x]}\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\mathrm{Sin}[c+d\,x]\Bigg)\Big/\Bigg(d\,\left(1+\mathrm{Cos}[c+d\,x]\right)$$

$$\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,\sqrt{\mathrm{Cos}[c+d\,x]^2\,\left(-1+\mathrm{Sec}[c+d\,x]\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)}\Bigg)-$$

$$\Bigg(\left(47\,A-38\,B+24\,C\right)\,\Bigg(\sqrt{2}\,\mathrm{ArcTan}\Big[\frac{\sqrt{2}}{\sqrt{-1+\mathrm{Sec}[c+d\,x]}}\Big]+\mathrm{ArcTan}\Big[\frac{-2+\sqrt{1+\mathrm{Sec}[c+d\,x]}}{\sqrt{-1+\mathrm{Sec}[c+d\,x]}}\Big]-$$

$$\mathrm{ArcTan}\Big[\frac{2+\sqrt{1+\mathrm{Sec}[c+d\,x]}}{\sqrt{-1+\mathrm{Sec}[c+d\,x]}}\Big]\Bigg)\,\mathrm{Cos}[c+d\,x]^2\,\sqrt{-1+\mathrm{Sec}[c+d\,x]}$$

$$\left(1+\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\mathrm{Sin}[c+d\,x]\Bigg)\Big/\Bigg(d\,\left(1+\mathrm{Cos}[c+d\,x]\right)\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}$$

$$\sqrt{\mathrm{Cos}[c+d\,x]^2\,\left(-1+\mathrm{Sec}[c+d\,x]\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)}\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(8\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\right)+$$

$$\left(1\Big/\left(\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\right)\right)$$

$$\mathrm{Cos}[c+d\,x]^2$$

$$\sqrt{\left(1+\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Sec}[c+d\,x]}$$

$$\left(1+\mathrm{Sec}[c+d\,x]\right)^{3/2}$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\frac{\mathrm{Sec}\big[\frac{c}{2}\big]\,\mathrm{Sec}\big[\frac{c}{2}+\frac{d\,x}{2}\big]^2\,\left(-A\,\mathrm{Sin}\big[\frac{c}{2}\big]+B\,\mathrm{Sin}\big[\frac{c}{2}\big]-C\,\mathrm{Sin}\big[\frac{c}{2}\big]\right)}{2\,d}+\frac{\left(25\,A-14\,B+8\,C\right)\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{4\,d}-$$

$$\frac{\left(11\,A-6\,B\right)\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]}{12\,d}+\frac{A\,\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]}{6\,d}+\frac{1}{12\,d}$$

$$\mathrm{Sec}\Big[\frac{c}{2}\Big]\,\mathrm{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]\,\left(-61\,A\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]+30\,B\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]-12\,C\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]\right)+$$

$$\frac{\mathrm{Sec}\big[\frac{c}{2}\big]\,\mathrm{Sec}\big[\frac{c}{2}+\frac{d\,x}{2}\big]^3\,\left(-A\,\mathrm{Sin}\big[\frac{d\,x}{2}\big]+B\,\mathrm{Sin}\big[\frac{d\,x}{2}\big]-C\,\mathrm{Sin}\big[\frac{d\,x}{2}\big]\right)}{2\,d}+$$

$$\frac{\left(25\,A-14\,B+8\,C\right)\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{4\,d}-\frac{\left(11\,A-6\,B\right)\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{12\,d}+$$

$$\frac{A\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{6\,d}-\frac{\left(61\,A-30\,B+12\,C\right)\,\mathrm{Tan}\big[\frac{c}{2}\big]}{12\,d}\Bigg)$$

Problem 529: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 179 leaves, 5 steps):

$$\frac{(5 A+19 B-75 C) \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sec}[c+d x]}}\right]}{16 \sqrt{2} a^{5/2} d}-\frac{(A-B+C) \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{4 d (a+a \text{Sec}[c+d x])^{5/2}}-\frac{(3 A+5 B-13 C) \text{Tan}[c+d x]}{16 a d (a+a \text{Sec}[c+d x])^{3/2}}+\frac{(A-B+9 C) \text{Tan}[c+d x]}{4 a^2 d \sqrt{a+a \text{Sec}[c+d x]}}$$

Result (type 3, 372 leaves):

$$\left((5 A+19 B-75 C) \text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right] \text{Cos}\left[\frac{1}{2} (c+d x)\right]^4 \sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}} \sqrt{\text{Sec}[c+d x]} \sqrt{1+\text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(2 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2} (a (1+\text{Sec}[c+d x]))^{5/2}\right)+\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]^5 \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left((A-9 B+49 C) \text{Sin}\left[\frac{1}{2} (c+d x)\right]+\frac{1}{2} \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \left(3 A \text{Sin}\left[\frac{1}{2} (c+d x)\right]+5 B \text{Sin}\left[\frac{1}{2} (c+d x)\right]-13 C \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)+\text{Sec}\left[\frac{1}{2} (c+d x)\right]^4 \left(-A \text{Sin}\left[\frac{1}{2} (c+d x)\right]+B \text{Sin}\left[\frac{1}{2} (c+d x)\right]-C \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)\right) \Big/ \left(d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a (1+\text{Sec}[c+d x]))^{5/2}\right)$$

Problem 530: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 137 leaves, 4 steps):

$$\frac{(3A+5B+19C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{16\sqrt{2}\,a^{5/2}\,d}-\frac{(A-B+C)\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{4 d\,(a+a\,\text{Sec}[c+d x])^{5/2}}+\frac{(7A+B-9C)\,\text{Tan}[c+d x]}{16 a d\,(a+a\,\text{Sec}[c+d x])^{3/2}}$$

Result (type 3, 371 leaves):

$$\left((3A+5B+19C)\,\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Cos}\left[\frac{1}{2}(c+d x)\right]^4\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\,\sqrt{\text{Sec}[c+d x]}\,\sqrt{1+\text{Sec}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(2 d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\sqrt{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}\,\left(a\,(1+\text{Sec}[c+d x])\right)^{5/2}\right)+\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^5\text{Sec}[c+d x]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\left((7A+B-9C)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+C\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+\frac{1}{2}\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-11A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+3B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+5C\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\Big/\left(d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\left(a\,(1+\text{Sec}[c+d x])\right)^{5/2}\right)$$

Problem 531: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{(a+a\,\text{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 171 leaves, 7 steps):

$$\frac{2A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{a^{5/2}\,d}-\frac{(43A-3B-5C)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{16\sqrt{2}\,a^{5/2}\,d}-\frac{(A-B+C)\,\text{Tan}[c+d x]}{4 d\,(a+a\,\text{Sec}[c+d x])^{5/2}}-\frac{(11A-3B-5C)\,\text{Tan}[c+d x]}{16 a d\,(a+a\,\text{Sec}[c+d x])^{3/2}}$$

Result (type 3, 418 leaves):

$$\left(\left(\left((-43 A+3 B+5 C) \text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]+32 \sqrt{2} A \text{ArcTan}\left[\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}}\right]\right)\right.\right.$$

$$\text{Cos}\left[\frac{1}{2}(c+d x)\right]^4 \sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}} \sqrt{\text{Sec}[c+d x]}$$

$$\left.\sqrt{1+\text{Sec}[c+d x]}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(2 d\, (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}\,(a (1+\text{Sec}[c+d x]))^{5/2}\right)+$$

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^5 \text{Sec}[c+d x]\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right.$$

$$\left(-(15 A-7 B-C) \text{Sin}\left[\frac{1}{2}(c+d x)\right]+\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(-A \text{Sin}\left[\frac{1}{2}(c+d x)\right]+B \text{Sin}\left[\frac{1}{2}(c+d x)\right]-C \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+$$

$$\left.\left.\frac{1}{2} \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(19 A \text{Sin}\left[\frac{1}{2}(c+d x)\right]-11 B \text{Sin}\left[\frac{1}{2}(c+d x)\right]+3 C \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right) \Big/$$

$$\left(d\,(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\,(a (1+\text{Sec}[c+d x]))^{5/2}\right)$$

Problem 532: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^{5/2}}\, dx$$

Optimal (type 3, 217 leaves, 8 steps):

$$-\frac{(5 A-2 B) \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{a^{5/2} d}+\frac{(115 A-43 B+3 C) \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sec}[c+d x]}}\right]}{16 \sqrt{2} a^{5/2} d}-$$

$$\frac{(A-B+C) \text{Sin}[c+d x]}{4 d (a+a \text{Sec}[c+d x])^{5/2}}-\frac{(15 A-7 B-C) \text{Sin}[c+d x]}{16 a d (a+a \text{Sec}[c+d x])^{3/2}}+\frac{(35 A-11 B+3 C) \text{Sin}[c+d x]}{16 a^2 d \sqrt{a+a \text{Sec}[c+d x]}}$$

Result (type 3, 839 leaves):

$$\left(\text{Cos}[c+d x]^2 \left(1+\text{Sec}[c+d x]\right)^{5/2} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)\right.$$

$$\left(\left(\left(\sqrt{2} \left(-35 A+11 B-3 C\right) \text{ArcTan}\left[\frac{\sqrt{2}}{\sqrt{-1+\text{Sec}[c+d x]}}\right] \text{Cos}[c+d x]^2\right.\right.\right.$$

$$\left.\sqrt{-1+\text{Sec}[c+d x]} \left(1+\text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]\right) \Big/ \left(d \left(1+\text{Cos}[c+d x]\right)\right.$$

$$\left.\sqrt{1-\text{Cos}[c+d x]^2} \sqrt{\text{Cos}[c+d x]^2 \left(-1+\text{Sec}[c+d x]\right) \left(1+\text{Sec}[c+d x]\right)}\right) -$$

$$\left(\left(80 A-32 B\right) \left(\sqrt{2} \text{ArcTan}\left[\frac{\sqrt{2}}{\sqrt{-1+\text{Sec}[c+d x]}}\right]+\text{ArcTan}\left[\frac{-2+\sqrt{1+\text{Sec}[c+d x]}}{\sqrt{-1+\text{Sec}[c+d x]}}\right]-\right.\right.$$

$$\left.\text{ArcTan}\left[\frac{2+\sqrt{1+\text{Sec}[c+d x]}}{\sqrt{-1+\text{Sec}[c+d x]}}\right]\right) \text{Cos}[c+d x]^2 \sqrt{-1+\text{Sec}[c+d x]}$$

$$\left.\left(1+\text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]\right) \Big/ \left(d \left(1+\text{Cos}[c+d x]\right) \sqrt{1-\text{Cos}[c+d x]^2}\right.$$

$$\left.\left.\left.\sqrt{\text{Cos}[c+d x]^2 \left(-1+\text{Sec}[c+d x]\right) \left(1+\text{Sec}[c+d x]\right)}\right)\right)\right) \Big/$$

$$\left(16 \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right) \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\right)+$$

$$\left(1 \Big/ \left(\left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right) \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\right)\right)$$

$$\text{Cos}[c+d x]^2$$

$$\sqrt{\left(1+\text{Cos}[c+d x]\right) \text{Sec}[c+d x]}$$

$$\left(1+\text{Sec}[c+d x]\right)^{5/2}$$

$$\left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)$$

$$\left(\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \left(-27 A \,\text{Sin}\left[\frac{c}{2}\right]+19 B \,\text{Sin}\left[\frac{c}{2}\right]-11 C \,\text{Sin}\left[\frac{c}{2}\right]\right)}{16 d}+\right.$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(A \,\text{Sin}\left[\frac{c}{2}\right]-B \,\text{Sin}\left[\frac{c}{2}\right]+C \,\text{Sin}\left[\frac{c}{2}\right]\right)}{8 d}+\frac{2 A \,\text{Cos}[d x] \,\text{Sin}[c]}{d}+$$

$$\frac{1}{16 d} \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3 \left(-27 A \,\text{Sin}\left[\frac{d x}{2}\right]+19 B \,\text{Sin}\left[\frac{d x}{2}\right]-11 C \,\text{Sin}\left[\frac{d x}{2}\right]\right)+$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5 \left(A \,\text{Sin}\left[\frac{d x}{2}\right]-B \,\text{Sin}\left[\frac{d x}{2}\right]+C \,\text{Sin}\left[\frac{d x}{2}\right]\right)}{8 d}+$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(7 A \,\text{Sin}\left[\frac{d x}{2}\right]-15 B \,\text{Sin}\left[\frac{d x}{2}\right]+7 C \,\text{Sin}\left[\frac{d x}{2}\right]\right)}{8 d}+$$

$$\left.\frac{2 A \,\text{Cos}[c] \,\text{Sin}[d x]}{d}+\frac{\left(7 A-15 B+7 C\right) \text{Tan}\left[\frac{c}{2}\right]}{8 d}\right)$$

Problem 534: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^{3/2} (a+a \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 217 leaves, 9 steps):

$$-\frac{1}{5 d}2 a (5 A+3 (B+C)) \sqrt{\text{Cos}[c+d x]} \text{ EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}+\frac{1}{21 d}2 a (7 A+7 B+5 C) \sqrt{\text{Cos}[c+d x]} \text{ EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}+\frac{2 a (5 A+3 (B+C)) \sqrt{\text{Sec}[c+d x]} \text{ Sin}[c+d x]}{5 d}+\frac{2 a (7 A+7 B+5 C) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{21 d}+\frac{2 a (B+C) \text{Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{5 d}+\frac{2 a C \text{Sec}[c+d x]^{7/2} \text{Sin}[c+d x]}{7 d}$$

Result (type 5, 997 leaves):

$$a \left(-\left(\left(2 \sqrt{2} A e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \text{Cos}[c+d x]^2 \text{Csc}[c] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}} \text{ Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)\right)-\left(6 \sqrt{2} B e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \text{Cos}[c+d x]^2 \text{Csc}[c] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}} \text{ Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(5 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)-\left(6 \sqrt{2} C e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \text{Cos}[c+d x]^2 \text{Csc}[c] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}} \text{ Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(5 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+\right.$$

$$\left(4\,A\,\text{Cos}[c+d\,x]^{5/2}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(4\,B\,\text{Cos}[c+d\,x]^{5/2}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(20\,C\,\text{Cos}[c+d\,x]^{5/2}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{4\,(5\,A+3\,B+3\,C)\,\text{Cos}[d\,x]\,\text{Csc}[c]}{5\,d}+\right.\right.$$
$$\frac{4\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\text{Sin}[d\,x]}{7\,d}+\frac{1}{35\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2$$
$$(5\,C\,\text{Sin}[c]+7\,B\,\text{Sin}[d\,x]+7\,C\,\text{Sin}[d\,x])+\frac{1}{105\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(21\,B\,\text{Sin}[c]+21\,C$$
$$\left.\left.\text{Sin}[c]+35\,A\,\text{Sin}[d\,x]+35\,B\,\text{Sin}[d\,x]+25\,C\,\text{Sin}[d\,x])+\frac{4\,(7\,A+7\,B+5\,C)\,\text{Tan}[c]}{21\,d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\right)$$

Problem 535: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 181 leaves, 8 steps):

$$-\frac{1}{5\,d}2\,a\,(5\,A+5\,B+3\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{1}{3\,d}2\,a\,(3\,A+B+C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{2\,a\,(5\,A+5\,B+3\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{5\,d}+$$
$$\frac{2\,a\,(B+C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,d}+\frac{2\,a\,C\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 5, 937 leaves):

$$a\left(-\left(\left(2\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^2\,\text{Csc}[c]\right.\right.\right.$$

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

$$\left.\left.\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)\right)-$$

$$\left(2 \sqrt{2}\ B\ e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}[c+d x]^2 \text{Csc}[c]\right.$$

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

$$\left.\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)-$$

$$\left(6 \sqrt{2}\ C\ e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}[c+d x]^2 \text{Csc}[c]\right.$$

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

$$\left.\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(5 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(4 A \text{Cos}[c+d x]^{5/2} \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}\right.$$

$$\left.\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(4 B \text{Cos}[c+d x]^{5/2} \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}\right.$$

$$\left.\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(3 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(4 C \text{Cos}[c+d x]^{5/2} \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}\right.$$

$$\left.\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(3 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+\left(\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right.$$

$$\left(\frac{4 (5 A+5 B+3 C) \text{Cos}[d x] \text{Csc}[c]}{5 d}+\frac{4 C \text{Sec}[c] \text{Sec}[c+d x]^2 \text{Sin}[d x]}{5 d}+\frac{1}{15 d}\right.$$

$$\left.\left.4 \text{Sec}[c] \text{Sec}[c+d x] \left(3 C \text{Sin}[c]+5 B \text{Sin}[d x]+5 C \text{Sin}[d x]\right)+\frac{4 (B+C) \text{Tan}[c]}{3 d}\right)\right) \Big/$$

$$\left.\left(\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{3/2}\right)\right)$$

Problem 536: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a\,\mathrm{Sec}[c + d\,x])\,\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)}{\sqrt{\mathrm{Sec}[c + d\,x]}}\,dx$$

Optimal (type 4, 143 leaves, 7 steps):

$$\frac{2\,a\,(A - B - C)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}}{d} + \frac{1}{3\,d}2\,a\,(3\,A + 3\,B + C)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]} + \frac{2\,a\,(B + C)\,\sqrt{\mathrm{Sec}[c + d\,x]}\,\,\mathrm{Sin}[c + d\,x]}{d} + \frac{2\,a\,C\,\mathrm{Sec}[c + d\,x]^{3/2}\,\mathrm{Sin}[c + d\,x]}{3\,d}$$

Result (type 5, 908 leaves):

$$a\left(\left(\left(2\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1 + e^{2\,i\,(c+d\,x)}}}\,\,\mathrm{Cos}[c + d\,x]^2\,\mathrm{Csc}[c]\right.\right.\right.$$
$$\left(1 + e^{2\,i\,(c+d\,x)} + \left(-1 + e^{2\,i\,c}\right)\,\sqrt{1 + e^{2\,i\,(c+d\,x)}}\,\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)\right) \Big/ \left(d\,\left(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x]\right)\right) -$$
$$\left(2\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1 + e^{2\,i\,(c+d\,x)}}}\,\,\mathrm{Cos}[c + d\,x]^2\,\mathrm{Csc}[c]\right.$$
$$\left(1 + e^{2\,i\,(c+d\,x)} + \left(-1 + e^{2\,i\,c}\right)\,\sqrt{1 + e^{2\,i\,(c+d\,x)}}\,\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)\right) \Big/ \left(d\,\left(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x]\right)\right) -$$
$$\left(2\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1 + e^{2\,i\,(c+d\,x)}}}\,\,\mathrm{Cos}[c + d\,x]^2\,\mathrm{Csc}[c]\right.$$
$$\left(1 + e^{2\,i\,(c+d\,x)} + \left(-1 + e^{2\,i\,c}\right)\,\sqrt{1 + e^{2\,i\,(c+d\,x)}}\,\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)\right) \Big/ \left(d\,\left(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x]\right)\right) +$$
$$\left(4\,A\,\mathrm{Cos}[c + d\,x]^{5/2}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}\right.$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/\left(d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(4\,B\,\mathrm{Cos}[c+d\,x]^{5/2}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/\left(d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Big(4\,C\,\mathrm{Cos}[c+d\,x]^{5/2}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/\left(3\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Bigg(\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\left(-\frac{2\,\left(A-2\,B-2\,C+A\,\mathrm{Cos}[2\,c]\right)\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}[c]}{d}+\right.$$

$$\left.\frac{4\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{d}+\frac{4\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}[d\,x]}{3\,d}+\frac{4\,C\,\mathrm{Tan}[c]}{3\,d}\right)\Bigg)\Big/$$

$$\left(\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{3/2}\right)\Bigg)$$

Problem 537: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\mathrm{Sec}[c+d\,x])\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\mathrm{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 138 leaves, 7 steps):

$$\frac{2\,a\,(A+B-C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{d}+$$

$$\frac{1}{3\,d}2\,a\,\left(A+3\,(B+C)\right)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}+$$

$$\frac{2\,a\,A\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}+\frac{2\,a\,C\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{d}$$

Result (type 5, 162 leaves):

$$\frac{1}{3\,d}a\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\Big(-6\,i\,A\,\mathrm{Cos}[c+d\,x]-6\,i\,B\,\mathrm{Cos}[c+d\,x]+$$

$$6\,i\,C\,\mathrm{Cos}[c+d\,x]+2\,\left(A+3\,(B+C)\right)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]+$$

$$6\,i\,(A+B-C)\,e^{-i\,(c+d\,x)}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]+$$

$$6\,C\,\mathrm{Sin}[c+d\,x]+A\,\mathrm{Sin}\left[2\,(c+d\,x)\right]\Big)$$

Problem 538: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\mathrm{Sec}[c+d\,x])\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\mathrm{Sec}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 4, 146 leaves, 7 steps):

$$\frac{1}{5 d} 2 a \left(3 A+5 (B+C)\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+\frac{1}{3 d} 2 a (A+B+3 C) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+\frac{2 a A \text{Sin}[c+d x]}{5 d \text{Sec}[c+d x]^{3/2}}+\frac{2 a (A+B) \text{Sin}[c+d x]}{3 d \sqrt{\text{Sec}[c+d x]}}$$

Result (type 5, 156 leaves):

$$\frac{1}{30 d} a \sqrt{\text{Sec}[c+d x]} \left(20 (A+B+3 C) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]+12 i \left(3 A+5 (B+C)\right) e^{-i (c+d x)} \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]+2 \text{Cos}[c+d x] \left(-6 i \left(3 A+5 (B+C)\right)+10 (A+B) \text{Sin}[c+d x]+3 A \text{Sin}[2 (c+d x)]\right)\right)$$

Problem 539: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{\text{Sec}[c+d x]^{7/2}}\, dx$$

Optimal (type 4, 182 leaves, 8 steps):

$$\frac{1}{5 d} 2 a \left(3 (A+B)+5 C\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+\frac{1}{21 d} 2 a \left(5 A+7 (B+C)\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+\frac{2 a A \text{Sin}[c+d x]}{7 d \text{Sec}[c+d x]^{5/2}}+\frac{2 a (A+B) \text{Sin}[c+d x]}{5 d \text{Sec}[c+d x]^{3/2}}+\frac{2 a \left(5 A+7 (B+C)\right) \text{Sin}[c+d x]}{21 d \sqrt{\text{Sec}[c+d x]}}$$

Result (type 5, 180 leaves):

$$\frac{1}{420 d} a \sqrt{\text{Sec}[c+d x]} \left(40 \left(5 A+7 (B+C)\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]+168 i (3 A+3 B+5 C) e^{-i (c+d x)} \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]+2 \text{Cos}[c+d x] \left(-84 i (3 A+3 B+5 C)+5 \left(23 A+28 (B+C)\right) \text{Sin}[c+d x]+42 (A+B) \text{Sin}[2 (c+d x)]+15 A \text{Sin}[3 (c+d x)]\right)\right)$$

Problem 540: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{\text{Sec}[c+d x]^{9/2}}\, dx$$

Optimal (type 4, 215 leaves, 9 steps):

$$\frac{1}{15 d}2 a \left(7 A+9 (B+C)\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+\frac{1}{21 d}2 a (5 (A+B)+7 C) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+\frac{2 a A \text{Sin}[c+d x]}{9 d \text{Sec}[c+d x]^{7/2}}+\frac{2 a (A+B) \text{Sin}[c+d x]}{7 d \text{Sec}[c+d x]^{5/2}}+\frac{2 a \left(7 A+9 (B+C)\right) \text{Sin}[c+d x]}{45 d \text{Sec}[c+d x]^{3/2}}+\frac{2 a (5 (A+B)+7 C) \text{Sin}[c+d x]}{21 d \sqrt{\text{Sec}[c+d x]}}$$

Result (type 5, 210 leaves):

$$\frac{1}{2520 d} a \sqrt{\text{Sec}[c+d x]} \left(240 (5 A+5 B+7 C) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]+336 i \left(7 A+9 (B+C)\right) e^{-i (c+d x)} \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]+2 \text{Cos}[c+d x] \left(-1176 i A-1512 i B-1512 i C+30 (23 A+23 B+28 C) \text{Sin}[c+d x]+14 \left(19 A+18 (B+C)\right) \text{Sin}[2 (c+d x)]+90 A \text{Sin}[3 (c+d x)]+90 B \text{Sin}[3 (c+d x)]+35 A \text{Sin}[4 (c+d x)]\right)\right)$$

Problem 541: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^{3/2} (a+a \text{Sec}[c+d x])^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 291 leaves, 10 steps):

$$-\frac{1}{15 d}4 a^2 (12 A+9 B+8 C) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+\frac{1}{21 d}4 a^2 (7 A+6 B+5 C) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+\frac{4 a^2 (12 A+9 B+8 C) \sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{15 d}+\frac{4 a^2 (7 A+6 B+5 C) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{21 d}+\frac{2 a^2 (21 A+27 B+19 C) \text{Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{105 d}+\frac{2 C \text{Sec}[c+d x]^{5/2} (a+a \text{Sec}[c+d x])^2 \text{Sin}[c+d x]}{9 d}+\frac{2 (9 B+4 C) \text{Sec}[c+d x]^{5/2} \left(a^2+a^2 \text{Sec}[c+d x]\right) \text{Sin}[c+d x]}{63 d}$$

Result (type 5, 1240 leaves):

$$-\left(\left(\left(4 \sqrt{2}\ A e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}[c+d x]^4 \text{Csc}[c]\right.\right.\right.$$
$$\left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right)$$

$$\left.\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left.\left(5\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)\right)-$$

$$\left(3\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\right.$$

$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$

$$\left.\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(5\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(8\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\right.$$

$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$

$$\left.\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(15\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(2\,A\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$

$$\left.\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$

$$\left(4\,B\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$

$$\left.\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(7\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$

$$\left(10\,C\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$

$$\left.\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(21\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$

$$\frac{1}{\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{7/2}}$$

$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(\frac{2\,(12\,A+9\,B+8\,C)\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}[c]}{15\,d}+\frac{C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^4\,\mathrm{Sin}[d\,x]}{9\,d}+\frac{\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,(7\,C\,\mathrm{Sin}[c]+9\,B\,\mathrm{Sin}[d\,x]+18\,C\,\mathrm{Sin}[d\,x])}{63\,d}+\frac{1}{315\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,(45\,B\,\mathrm{Sin}[c]+90\,C\,\mathrm{Sin}[c]+63\,A\,\mathrm{Sin}[d\,x]+126\,B\,\mathrm{Sin}[d\,x]+112\,C\,\mathrm{Sin}[d\,x])+\frac{1}{315\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,(63\,A\,\mathrm{Sin}[c]+126\,B\,\mathrm{Sin}[c]+112\,C\,\mathrm{Sin}[c]+210\,A\,\mathrm{Sin}[d\,x]+180\,B\,\mathrm{Sin}[d\,x]+150\,C\,\mathrm{Sin}[d\,x])+\frac{2\,(7\,A+6\,B+5\,C)\,\mathrm{Tan}[c]}{21\,d}\right)$$

Problem 542: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\mathrm{Sec}[c+d\,x]}\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 4, 255 leaves, 9 steps):

$$-\frac{1}{5\,d}4\,a^2\,(5\,A+4\,B+3\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\sqrt{\mathrm{Sec}[c+d\,x]}+\frac{1}{21\,d}4\,a^2\,(14\,A+7\,B+6\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\sqrt{\mathrm{Sec}[c+d\,x]}+\frac{4\,a^2\,(5\,A+4\,B+3\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{5\,d}+\frac{2\,a^2\,(35\,A+49\,B+33\,C)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{105\,d}+\frac{2\,C\,\mathrm{Sec}[c+d\,x]^{3/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\mathrm{Sin}[c+d\,x]}{7\,d}+\frac{2\,(7\,B+4\,C)\,\mathrm{Sec}[c+d\,x]^{3/2}\,(a^2+a^2\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sin}[c+d\,x]}{35\,d}$$

Result (type 5, 1184 leaves):

$$-\left(\left(\left(\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\left(1+e^{2\,i\,(c+d\,x)}+(-1+e^{2\,i\,c})\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\right)\Big/\left(d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right)\right)-$$

$$\left(4\sqrt{2}\,B\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}[c+dx]^4\,\text{Csc}[c]\right.$$
$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(5d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right)-$$
$$\left(3\sqrt{2}\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}[c+dx]^4\,\text{Csc}[c]\right.$$
$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(5d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right)+$$
$$\left(4A\sqrt{\text{Cos}[c+dx]}\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\right.$$
$$\left.\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(3d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{7/2}\right)+$$
$$\left(2B\sqrt{\text{Cos}[c+dx]}\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\right.$$
$$\left.\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(3d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{7/2}\right)+$$
$$\left(4C\sqrt{\text{Cos}[c+dx]}\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\right.$$
$$\left.\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(7d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{7/2}\right)+$$
$$\left(\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right.$$
$$\left(\frac{2\left(5A+4B+3C\right)\text{Cos}[dx]\,\text{Csc}[c]}{5d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+dx]^3\,\text{Sin}[dx]}{7d}+\right.$$
$$\frac{\text{Sec}[c]\,\text{Sec}[c+dx]^2\left(5C\,\text{Sin}[c]+7B\,\text{Sin}[dx]+14C\,\text{Sin}[dx]\right)}{35d}+\frac{1}{105d}$$
$$\text{Sec}[c]\,\text{Sec}[c+dx]\left(21B\,\text{Sin}[c]+42C\,\text{Sin}[c]+35A\,\text{Sin}[dx]+70B\,\text{Sin}[dx]+60C\,\text{Sin}[dx]\right)+$$
$$\left.\left.\frac{\left(7A+14B+12C\right)\text{Tan}[c]}{21d}\right)\right)\Big/\left(\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{7/2}\right)$$

Problem 543: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 214 leaves, 8 steps):

$$-\frac{1}{5\,d}4\,a^2\,(5\,B+4\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{3\,d}4\,a^2\,(3\,A+2\,B+C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{2\,a^2\,(15\,A+25\,B+17\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d}+\frac{2\,C\,\sqrt{\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{5\,d}+\frac{2\,(5\,B+4\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(a^2+a^2\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{15\,d}$$

Result (type 5, 942 leaves):

$$-\left(\left(\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\right.\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left.\left(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)\right)-$$
$$\left(4\,\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left(2\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$

$$\left.(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{7/2}\right)+$$
$$\left(4\,B\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$
$$\left.(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{7/2}\right)+$$
$$\left(2\,C\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$
$$\left.(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{7/2}\right)+$$
$$\left(\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{(-5\,A-20\,B-16\,C+5\,A\,\text{Cos}[2\,c])\,\text{Cos}[d\,x]\,\text{Csc}[c]}{10\,d}+\right.$$
$$\frac{A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{5\,d}+$$
$$\left.\left.\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(3\,C\,\text{Sin}[c]+5\,B\,\text{Sin}[d\,x]+10\,C\,\text{Sin}[d\,x])}{15\,d}+\frac{(B+2\,C)\,\text{Tan}[c]}{3\,d}\right)\right)\Big/$$
$$\left((A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{7/2}\right)$$

Problem 544: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 208 leaves, 8 steps):

$$\frac{4\,a^2\,(A-C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{d}+\frac{1}{3\,d}$$
$$4\,a^2\,(2\,A+3\,B+2\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,-$$
$$\frac{2\,a^2\,(A-3\,B-5\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}+\frac{2\,A\,(a+a\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Sec}[c+d\,x]}}-$$
$$\frac{2\,(A-C)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(a^2+a^2\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 233 leaves):

$$\frac{1}{6d} a^2 e^{-i(2c+dx)} \mathrm{Sec}[c+dx]^{3/2} \Big(-12\,i\,A + 12\,i\,C - 12\,i\,A\,\mathrm{Cos}[2(c+dx)] + 12\,i\,C\,\mathrm{Cos}[2(c+dx)] + 8(2A+3B+2C)\,\mathrm{Cos}[c+dx]^{3/2}\,\mathrm{EllipticF}\left[\frac{1}{2}(c+dx), 2\right] + 12\,i\,(A-C)\,e^{-2i(c+dx)}\left(1+e^{2i(c+dx)}\right)^{3/2}\mathrm{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2i(c+dx)}\right] + A\,\mathrm{Sin}[c+dx] + 4\,C\,\mathrm{Sin}[c+dx] + 6\,B\,\mathrm{Sin}[2(c+dx)] + 12\,C\,\mathrm{Sin}[2(c+dx)] + A\,\mathrm{Sin}[3(c+dx)]\Big)\left(\mathrm{Cos}[2c+dx] + i\,\mathrm{Sin}[2c+dx]\right)$$

Problem 545: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a\,\mathrm{Sec}[c+dx])^2 \left(A + B\,\mathrm{Sec}[c+dx] + C\,\mathrm{Sec}[c+dx]^2\right)}{\mathrm{Sec}[c+dx]^{5/2}}\, dx$$

Optimal (type 4, 214 leaves, 8 steps):

$$\frac{1}{5d}4a^2(4A+5B)\sqrt{\mathrm{Cos}[c+dx]}\,\mathrm{EllipticE}\left[\frac{1}{2}(c+dx), 2\right]\sqrt{\mathrm{Sec}[c+dx]} + \frac{1}{3d}4a^2(A+2B+3C)\sqrt{\mathrm{Cos}[c+dx]}\,\mathrm{EllipticF}\left[\frac{1}{2}(c+dx), 2\right]\sqrt{\mathrm{Sec}[c+dx]} - \frac{2a^2(7A+5B-15C)\sqrt{\mathrm{Sec}[c+dx]}\,\mathrm{Sin}[c+dx]}{15d} + \frac{2A(a+a\,\mathrm{Sec}[c+dx])^2\,\mathrm{Sin}[c+dx]}{5d\,\mathrm{Sec}[c+dx]^{3/2}} + \frac{2(4A+5B)\left(a^2+a^2\,\mathrm{Sec}[c+dx]\right)\mathrm{Sin}[c+dx]}{15d\sqrt{\mathrm{Sec}[c+dx]}}$$

Result (type 5, 187 leaves):

$$\frac{1}{30d} a^2\sqrt{\mathrm{Sec}[c+dx]}\Big(-96\,i\,A\,\mathrm{Cos}[c+dx] - 120\,i\,B\,\mathrm{Cos}[c+dx] + 40(A+2B+3C)\sqrt{\mathrm{Cos}[c+dx]}\,\mathrm{EllipticF}\left[\frac{1}{2}(c+dx), 2\right] + 24\,i\,(4A+5B)\,e^{-i(c+dx)}\sqrt{1+e^{2i(c+dx)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2i(c+dx)}\right] + 3A\,\mathrm{Sin}[c+dx] + 60\,C\,\mathrm{Sin}[c+dx] + 20\,A\,\mathrm{Sin}[2(c+dx)] + 10\,B\,\mathrm{Sin}[2(c+dx)] + 3\,A\,\mathrm{Sin}[3(c+dx)]\Big)$$

Problem 546: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a\,\mathrm{Sec}[c+dx])^2 \left(A + B\,\mathrm{Sec}[c+dx] + C\,\mathrm{Sec}[c+dx]^2\right)}{\mathrm{Sec}[c+dx]^{7/2}}\, dx$$

Optimal (type 4, 219 leaves, 8 steps):

$$\frac{1}{5\,d}4\,a^2\,\left(3\,A+4\,B+5\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{1}{21\,d}4\,a^2\,\left(6\,A+7\,B+14\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{2\,a^2\,\left(33\,A+49\,B+35\,C\right)\,\text{Sin}[c+d\,x]}{105\,d\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{2\,A\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{7\,d\,\text{Sec}[c+d\,x]^{5/2}}+$$
$$\frac{2\,\left(4\,A+7\,B\right)\,\left(a^2+a^2\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{35\,d\,\text{Sec}[c+d\,x]^{3/2}}$$

Result (type 5, 189 leaves):

$$\frac{1}{420\,d}\,a^2\,\sqrt{\text{Sec}[c+d\,x]}\,\left(80\,\left(6\,A+7\,\left(B+2\,C\right)\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]+\right.$$
$$336\,\mathbb{i}\,\left(3\,A+4\,B+5\,C\right)\,e^{-\mathbb{i}\,(c+d\,x)}\,\sqrt{1+e^{2\,\mathbb{i}\,(c+d\,x)}}\,\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,\mathbb{i}\,(c+d\,x)}\right]+$$
$$2\,\text{Cos}[c+d\,x]\,\left(-504\,\mathbb{i}\,A-672\,\mathbb{i}\,B-840\,\mathbb{i}\,C+5\,\left(51\,A+28\,\left(2\,B+C\right)\right)\,\text{Sin}[c+d\,x]+\right.$$
$$\left.\left.42\,\left(2\,A+B\right)\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]+15\,A\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]\right)\right)$$

Problem 547: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{9/2}}\,dx$$

Optimal (type 4, 255 leaves, 9 steps):

$$\frac{1}{15\,d}4\,a^2\,\left(8\,A+9\,B+12\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{1}{21\,d}4\,a^2\,\left(5\,A+6\,B+7\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{2\,a^2\,\left(19\,A+27\,B+21\,C\right)\,\text{Sin}[c+d\,x]}{105\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{4\,a^2\,\left(5\,A+6\,B+7\,C\right)\,\text{Sin}[c+d\,x]}{21\,d\,\sqrt{\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,A\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{9\,d\,\text{Sec}[c+d\,x]^{7/2}}+\frac{2\,\left(4\,A+9\,B\right)\,\left(a^2+a^2\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{63\,d\,\text{Sec}[c+d\,x]^{5/2}}$$

Result (type 5, 248 leaves):

$$\frac{1}{2520\,d}\,a^2\,e^{-\mathbb{i}\,(2\,c+d\,x)}\,\sqrt{\text{Sec}[c+d\,x]}\,\left(480\,\left(5\,A+6\,B+7\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]+\right.$$
$$672\,\mathbb{i}\,\left(8\,A+9\,B+12\,C\right)\,e^{-\mathbb{i}\,(c+d\,x)}\,\sqrt{1+e^{2\,\mathbb{i}\,(c+d\,x)}}\,\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,\mathbb{i}\,(c+d\,x)}\right]+$$
$$2\,\text{Cos}[c+d\,x]\,\left(-2688\,\mathbb{i}\,A-3024\,\mathbb{i}\,B-4032\,\mathbb{i}\,C+30\,\left(46\,A+51\,B+56\,C\right)\,\text{Sin}[c+d\,x]+\right.$$
$$14\,\left(37\,A+36\,B+18\,C\right)\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]+180\,A\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]+$$
$$\left.\left.90\,B\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]+35\,A\,\text{Sin}\left[4\,\left(c+d\,x\right)\right]\right)\right)\,\left(\text{Cos}[2\,c+d\,x]+\mathbb{i}\,\text{Sin}[2\,c+d\,x]\right)$$

Problem 548: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a\,\mathrm{Sec}[c + d\,x])^2\,(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2)}{\mathrm{Sec}[c + d\,x]^{11/2}}\,dx$$

Optimal (type 4, 291 leaves, 10 steps):

$$\frac{1}{15\,d}4\,a^2\,(7\,A + 8\,B + 9\,C)\,\sqrt{\mathrm{Cos}[c + d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]} + \frac{1}{231\,d}4\,a^2\,(50\,A + 55\,B + 66\,C)\,\sqrt{\mathrm{Cos}[c + d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]} + \frac{2\,a^2\,(89\,A + 121\,B + 99\,C)\,\mathrm{Sin}[c + d\,x]}{693\,d\,\mathrm{Sec}[c + d\,x]^{5/2}} + \frac{4\,a^2\,(7\,A + 8\,B + 9\,C)\,\mathrm{Sin}[c + d\,x]}{45\,d\,\mathrm{Sec}[c + d\,x]^{3/2}} + \frac{4\,a^2\,(50\,A + 55\,B + 66\,C)\,\mathrm{Sin}[c + d\,x]}{231\,d\,\sqrt{\mathrm{Sec}[c + d\,x]}} + \frac{2\,A\,(a + a\,\mathrm{Sec}[c + d\,x])^2\,\mathrm{Sin}[c + d\,x]}{11\,d\,\mathrm{Sec}[c + d\,x]^{9/2}} + \frac{2\,(4\,A + 11\,B)\,(a^2 + a^2\,\mathrm{Sec}[c + d\,x])\,\mathrm{Sin}[c + d\,x]}{99\,d\,\mathrm{Sec}[c + d\,x]^{7/2}}$$

Result (type 5, 1337 leaves):

$$\left(7\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1 + e^{2\,i\,(c+d\,x)}}}\;\mathrm{Cos}[c + d\,x]^4\,\mathrm{Csc}[c]\left(1 + e^{2\,i\,(c+d\,x)} + (-1 + e^{2\,i\,c})\,\sqrt{1 + e^{2\,i\,(c+d\,x)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,(a + a\,\mathrm{Sec}[c + d\,x])^2\,(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2)\right)\Big/$$
$$(15\,d\,(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x])) +$$
$$\left(8\,\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1 + e^{2\,i\,(c+d\,x)}}}\;\mathrm{Cos}[c + d\,x]^4\,\mathrm{Csc}[c]\left(1 + e^{2\,i\,(c+d\,x)} + (-1 + e^{2\,i\,c})\,\sqrt{1 + e^{2\,i\,(c+d\,x)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,(a + a\,\mathrm{Sec}[c + d\,x])^2\,(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2)\right)\Big/$$
$$(15\,d\,(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x])) +$$
$$\left(3\,\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1 + e^{2\,i\,(c+d\,x)}}}\;\mathrm{Cos}[c + d\,x]^4\,\mathrm{Csc}[c]\left(1 + e^{2\,i\,(c+d\,x)} + (-1 + e^{2\,i\,c})\,\sqrt{1 + e^{2\,i\,(c+d\,x)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,(a + a\,\mathrm{Sec}[c + d\,x])^2\,(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2)\right)\Big/$$

$$\left(5\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(100\,A\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$
$$\left.(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(231\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$

$$\left(10\,B\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$
$$\left.(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(21\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$

$$\left(4\,C\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$
$$\left.(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(7\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$

$$\frac{1}{\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}}$$
$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(-\frac{1}{720\,d}\left(298\,A+347\,B+396\,C+374\,A\,\mathrm{Cos}[2\,c]+421\,B\,\mathrm{Cos}[2\,c]+468\,C\,\mathrm{Cos}[2\,c]\right)\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}[c]+\right.$$
$$\frac{(2185\,A+2288\,B+2376\,C)\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]}{7392\,d}+\frac{(86\,A+79\,B+72\,C)\,\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]}{720\,d}+$$
$$\frac{(27\,A+22\,B+11\,C)\,\mathrm{Cos}[4\,d\,x]\,\mathrm{Sin}[4\,c]}{616\,d}+\frac{(2\,A+B)\,\mathrm{Cos}[5\,d\,x]\,\mathrm{Sin}[5\,c]}{144\,d}+$$
$$\frac{A\,\mathrm{Cos}[6\,d\,x]\,\mathrm{Sin}[6\,c]}{352\,d}+\frac{(374\,A+421\,B+468\,C)\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{360\,d}+$$
$$\frac{(2185\,A+2288\,B+2376\,C)\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{7392\,d}+\frac{(86\,A+79\,B+72\,C)\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{720\,d}+$$
$$\left.\frac{(27\,A+22\,B+11\,C)\,\mathrm{Cos}[4\,c]\,\mathrm{Sin}[4\,d\,x]}{616\,d}+\frac{(2\,A+B)\,\mathrm{Cos}[5\,c]\,\mathrm{Sin}[5\,d\,x]}{144\,d}+\frac{A\,\mathrm{Cos}[6\,c]\,\mathrm{Sin}[6\,d\,x]}{352\,d}\right)$$

Problem 549: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^{3/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 343 leaves, 11 steps):

$$-\frac{1}{15\,d}4\,a^3\,(21\,A+17\,B+15\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{231\,d}$$
$$4\,a^3\,(143\,A+121\,B+105\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{4\,a^3\,(21\,A+17\,B+15\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d}+$$
$$\frac{4\,a^3\,(143\,A+121\,B+105\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{231\,d}+$$
$$\frac{4\,a^3\,(264\,A+253\,B+210\,C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{1155\,d}+$$
$$\frac{2\,C\,\text{Sec}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{11\,d}+$$
$$\frac{2\,(11\,B+6\,C)\,\text{Sec}[c+d\,x]^{5/2}\,(a^2+a^2\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{99\,a\,d}+\frac{1}{693\,d}$$
$$2\,(99\,A+143\,B+105\,C)\,\text{Sec}[c+d\,x]^{5/2}\,(a^3+a^3\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]$$

Result (type 5, 1292 leaves):

$$-\left(\left(\left(7\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\right.\right.\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left.\left(5\,\sqrt{2}\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)\right)-$$
$$\left(17\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(15\,\sqrt{2}\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)-$$
$$\left(C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6 \left(a+a\,\text{Sec}[c+d\,x]\right)^3 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg) \Big/$$
$$\left(\sqrt{2}\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\Bigg(13\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\left(a+a\,\text{Sec}[c+d\,x]\right)^3 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg) \Big/$$
$$\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\Bigg(11\,B\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\left(a+a\,\text{Sec}[c+d\,x]\right)^3 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg) \Big/$$
$$\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\Bigg(5\,C\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\left(a+a\,\text{Sec}[c+d\,x]\right)^3 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg) \Big/$$
$$\left(11\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\frac{1}{\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{9/2}}$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6 \left(a+a\,\text{Sec}[c+d\,x]\right)^3 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\frac{(21\,A+17\,B+15\,C)\,\text{Cos}[d\,x]\,\text{Csc}[c]}{15\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^5\,\text{Sin}[d\,x]}{22\,d}+$$
$$\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]^4\,\left(9\,C\,\text{Sin}[c]+11\,B\,\text{Sin}[d\,x]+33\,C\,\text{Sin}[d\,x]\right)}{198\,d}+\frac{1}{1386\,d}\text{Sec}[c]$$
$$\text{Sec}[c+d\,x]^3\,\left(77\,B\,\text{Sin}[c]+231\,C\,\text{Sin}[c]+99\,A\,\text{Sin}[d\,x]+297\,B\,\text{Sin}[d\,x]+378\,C\,\text{Sin}[d\,x]\right)+$$
$$\frac{1}{6930\,d}\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(495\,A\,\text{Sin}[c]+1485\,B\,\text{Sin}[c]+1890\,C\,\text{Sin}[c]+\right.$$
$$\left.2079\,A\,\text{Sin}[d\,x]+2618\,B\,\text{Sin}[d\,x]+2310\,C\,\text{Sin}[d\,x]\right)+\frac{1}{6930\,d}$$
$$\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(2079\,A\,\text{Sin}[c]+2618\,B\,\text{Sin}[c]+2310\,C\,\text{Sin}[c]+4290\,A\,\text{Sin}[d\,x]+\right.$$
$$\left.3630\,B\,\text{Sin}[d\,x]+3150\,C\,\text{Sin}[d\,x]\right)+\frac{(143\,A+121\,B+105\,C)\,\text{Tan}[c]}{231\,d}\Bigg)$$

Problem 550: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 307 leaves, 10 steps):

$$-\frac{1}{15\,d}4\,a^3\,(27\,A+21\,B+17\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{1}{21\,d}4\,a^3\,(21\,A+13\,B+11\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{4\,a^3\,(27\,A+21\,B+17\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d}+$$
$$\frac{4\,a^3\,(42\,A+41\,B+32\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{105\,d}+$$
$$\frac{2\,C\,\text{Sec}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{9\,d}+$$
$$\frac{2\,(3\,B+2\,C)\,\text{Sec}[c+d\,x]^{3/2}\,(a^2+a^2\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{21\,a\,d}+$$
$$\frac{2\,(63\,A+99\,B+73\,C)\,\text{Sec}[c+d\,x]^{3/2}\,(a^3+a^3\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]}{315\,d}$$

Result (type 5, 1237 leaves):

$$-\Bigg(\Bigg(\Bigg(9\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$
$$\left(5\,\sqrt{2}\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)\Bigg)-$$
$$\Bigg(7\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$
$$\left(5\,\sqrt{2}\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)-$$
$$\Bigg(17\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$
$$\left(15\,\sqrt{2}\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$
$$\Bigg(A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$
$$\left(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\Bigg(13\,B\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$
$$\left(21\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\Bigg(11\,C\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$
$$\left(21\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\frac{1}{(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{9/2}}$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\frac{(27\,A+21\,B+17\,C)\,\text{Cos}[d\,x]\,\text{Csc}[c]}{15\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^4\,\text{Sin}[d\,x]}{18\,d}+$$
$$\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,(7\,C\,\text{Sin}[c]+9\,B\,\text{Sin}[d\,x]+27\,C\,\text{Sin}[d\,x])}{126\,d}+\frac{1}{630\,d}\text{Sec}[c]\,\text{Sec}[c+d\,x]^2$$
$$(45\,B\,\text{Sin}[c]+135\,C\,\text{Sin}[c]+63\,A\,\text{Sin}[d\,x]+189\,B\,\text{Sin}[d\,x]+238\,C\,\text{Sin}[d\,x])+$$
$$\frac{1}{630\,d}\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(63\,A\,\text{Sin}[c]+189\,B\,\text{Sin}[c]+238\,C\,\text{Sin}[c]+$$
$$315\,A\,\text{Sin}[d\,x]+390\,B\,\text{Sin}[d\,x]+330\,C\,\text{Sin}[d\,x])+\frac{(21\,A+26\,B+22\,C)\,\text{Tan}[c]}{42\,d}\Bigg)$$

Problem 551: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 271 leaves, 9 steps):

$$-\frac{1}{5d}4a^3(5A+9B+7C)\sqrt{\text{Cos}[c+dx]}\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}+$$
$$\frac{1}{21d}4a^3(35A+21B+13C)\sqrt{\text{Cos}[c+dx]}\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}+$$
$$\frac{4a^3(140A+147B+106C)\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{105d}+$$
$$\frac{2C\sqrt{\text{Sec}[c+dx]}\,(a+a\,\text{Sec}[c+dx])^3\,\text{Sin}[c+dx]}{7d}+$$
$$\frac{2(7B+6C)\sqrt{\text{Sec}[c+dx]}\,(a^2+a^2\,\text{Sec}[c+dx])^2\,\text{Sin}[c+dx]}{35ad}+$$
$$\frac{2(5A+9B+7C)\sqrt{\text{Sec}[c+dx]}\,(a^3+a^3\,\text{Sec}[c+dx])\,\text{Sin}[c+dx]}{15d}$$

Result (type 5, 1202 leaves):

$$-\left(\left(\left(A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}[c+dx]^5\,\text{Csc}[c]\right.\right.\right.$$
$$\left(1+e^{2i(c+dx)}+(-1+e^{2ic})\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6(a+a\,\text{Sec}[c+dx])^3\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left.\left(\sqrt{2}\,d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\right)\right)-$$
$$\left(9B\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}[c+dx]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2i(c+dx)}+(-1+e^{2ic})\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^6(a+a\,\text{Sec}[c+dx])^3\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(5\sqrt{2}\,d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\right)-$$
$$\left(7C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}[c+dx]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2i(c+dx)}+(-1+e^{2ic})\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)$$

$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(5 \sqrt{2}\, d \,(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\right)+$$
$$\left(5 A \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\right.$$
$$\left.(a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(3 d\, (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \text{Sec}[c+d x]^{9/2}\right)+$$
$$\left(B \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\right.$$
$$\left.(a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(d\, (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \text{Sec}[c+d x]^{9/2}\right)+$$
$$\left(13 C \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\right.$$
$$\left.(a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(21 d\, (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \text{Sec}[c+d x]^{9/2}\right)+$$
$$\left(\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right.$$
$$\left(-\frac{(-25 A-36 B-28 C+5 A \text{Cos}[2 c]) \text{Cos}[d x] \text{Csc}[c]}{20 d}+\right.$$
$$\frac{A \text{Cos}[c] \text{Sin}[d x]}{2 d}+\frac{C \text{Sec}[c] \text{Sec}[c+d x]^3 \text{Sin}[d x]}{14 d}+$$
$$\frac{\text{Sec}[c] \text{Sec}[c+d x]^2 (5 C \text{Sin}[c]+7 B \text{Sin}[d x]+21 C \text{Sin}[d x])}{70 d}+\frac{1}{210 d}\text{Sec}[c]$$
$$\text{Sec}[c+d x] (21 B \text{Sin}[c]+63 C \text{Sin}[c]+35 A \text{Sin}[d x]+105 B \text{Sin}[d x]+130 C \text{Sin}[d x])+$$
$$\left.\left.\frac{(7 A+21 B+26 C) \text{Tan}[c]}{42 d}\right)\right)\Big/\left((A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \text{Sec}[c+d x]^{9/2}\right)$$

Problem 552: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{\text{Sec}[c+d x]^{3/2}} \, dx$$

Optimal (type 4, 271 leaves, 9 steps):

$$\frac{1}{5 d}4 a^3 (5 A-5 B-9 C) \sqrt{\text{Cos}[c+d x]} \text{ EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+$$
$$\frac{1}{3 d}4 a^3 (5 A+5 B+3 C) \sqrt{\text{Cos}[c+d x]} \text{ EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+$$
$$\frac{4 a^3 (5 A+20 B+21 C) \sqrt{\text{Sec}[c+d x]} \text{ Sin}[c+d x]}{15 d}+\frac{2 A (a+a \text{Sec}[c+d x])^3 \text{Sin}[c+d x]}{3 d \sqrt{\text{Sec}[c+d x]}}-$$
$$\frac{2 (5 A-3 C) \sqrt{\text{Sec}[c+d x]} \left(a^2+a^2 \text{Sec}[c+d x]\right)^2 \text{Sin}[c+d x]}{15 a d}-$$
$$\frac{2 (5 A-5 B-9 C) \sqrt{\text{Sec}[c+d x]} \left(a^3+a^3 \text{Sec}[c+d x]\right) \text{Sin}[c+d x]}{15 d}$$

Result (type 5, 1190 leaves):

$$\left(A e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \text{Cos}[c+d x]^5 \text{Csc}[c]\right.$$
$$\left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}} \text{ Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(\sqrt{2} d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\right)-$$
$$\left(B e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \text{Cos}[c+d x]^5 \text{Csc}[c]\right.$$
$$\left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}} \text{ Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(\sqrt{2} d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\right)-$$
$$\left(9 C e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \text{Cos}[c+d x]^5 \text{Csc}[c]\right.$$
$$\left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}} \text{ Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(5 \sqrt{2} d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\right)+$$
$$\left(5 A \sqrt{\text{Cos}[c+d x]} \text{ EllipticF}\left[\frac{1}{2} (c+d x),2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\right.$$

$$\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{9/2}\right)+$$
$$\Big(5\,B\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{9/2}\right)+$$
$$\Big(C\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/$$
$$\left(d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{9/2}\right)+$$
$$\Big(\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Big(-\frac{1}{20\,d}\left(5\,A-25\,B-36\,C+15\,A\,\mathrm{Cos}[2\,c]+5\,B\,\mathrm{Cos}[2\,c]\right)\mathrm{Cos}[d\,x]\,\mathrm{Csc}[c]+$$
$$\frac{A\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]}{12\,d}+\frac{(3\,A+B)\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{2\,d}+\frac{C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Sin}[d\,x]}{10\,d}+$$
$$\frac{\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\left(3\,C\,\mathrm{Sin}[c]+5\,B\,\mathrm{Sin}[d\,x]+15\,C\,\mathrm{Sin}[d\,x]\right)}{30\,d}+\frac{A\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{12\,d}+$$
$$\frac{(B+3\,C)\,\mathrm{Tan}[c]}{6\,d}\Big)\Big)\Big/\left(\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{9/2}\right)$$

Problem 553: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\mathrm{Sec}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 4, 270 leaves, 9 steps):

$$\frac{1}{5\,d}4\,a^3\,(9\,A+5\,B-5\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\mathrm{Sec}[c+d\,x]}+$$
$$\frac{1}{3\,d}4\,a^3\,(3\,A+5\,(B+C))\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\mathrm{Sec}[c+d\,x]}-$$
$$\frac{4\,a^3\,(6\,A-5\,B-20\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{15\,d}+$$
$$\frac{2\,A\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\mathrm{Sin}[c+d\,x]}{5\,d\,\mathrm{Sec}[c+d\,x]^{3/2}}+\frac{2\,(6\,A+5\,B)\left(a^2+a^2\,\mathrm{Sec}[c+d\,x]\right)^2\mathrm{Sin}[c+d\,x]}{15\,a\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}-$$
$$\frac{2\,(9\,A+5\,B-5\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\left(a^3+a^3\,\mathrm{Sec}[c+d\,x]\right)\mathrm{Sin}[c+d\,x]}{15\,d}$$

Result (type 5, 1203 leaves):

$$\left(9\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(5\,\sqrt{2}\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$
$$\left(C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\right.$$
$$\left.\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\left(5\,B\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\right.$$
$$\left.\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\left(5\,C\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\right.$$
$$\left.\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)+$$

$$\left(\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6 \left(a+a\,\text{Sec}[c+d\,x]\right)^3 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{1}{80\,d}\left(71\,A+20\,B-100\,C+73\,A\,\text{Cos}[2\,c]+60\,B\,\text{Cos}[2\,c]+20\,C\,\text{Cos}[2\,c]\right)\text{Cos}[d\,x]\,\text{Csc}[c]+\right.$$
$$\frac{(3\,A+B)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{12\,d}+\frac{A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{40\,d}+$$
$$\frac{(73\,A+60\,B+20\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{40\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{6\,d}+$$
$$\left.\left.\frac{(3\,A+B)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{12\,d}+\frac{A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{40\,d}+\frac{C\,\text{Tan}[c]}{6\,d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)$$

Problem 554: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a\,\text{Sec}[c+d\,x])^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{7/2}}\,dx$$

Optimal (type 4, 271 leaves, 9 steps):

$$\frac{1}{5\,d}4\,a^3\,(7\,A+9\,B+5\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{1}{21\,d}4\,a^3\,(13\,A+21\,B+35\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}-$$
$$\frac{4\,a^3\,(41\,A+42\,B-35\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{105\,d}+\frac{2\,A\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{7\,d\,\text{Sec}[c+d\,x]^{5/2}}+$$
$$\frac{2\,(6\,A+7\,B)\,\left(a^2+a^2\,\text{Sec}[c+d\,x]\right)^2\text{Sin}[c+d\,x]}{35\,a\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{2\,(7\,A+9\,B+5\,C)\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)\text{Sin}[c+d\,x]}{15\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 5, 279 leaves):

$$\frac{1}{420\,d}$$
$$a^3\,e^{-i\,(2\,c+d\,x)}\sqrt{\text{Sec}[c+d\,x]}\,\left(-2352\,i\,A\,\text{Cos}[c+d\,x]-3024\,i\,B\,\text{Cos}[c+d\,x]-1680\,i\,C\,\text{Cos}[c+d\,x]+\right.$$
$$80\,(13\,A+21\,B+35\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]+$$
$$336\,i\,(7\,A+9\,B+5\,C)\,e^{-i\,(c+d\,x)}\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]+$$
$$126\,A\,\text{Sin}[c+d\,x]+42\,B\,\text{Sin}[c+d\,x]+840\,C\,\text{Sin}[c+d\,x]+550\,A\,\text{Sin}[2\,(c+d\,x)]+$$
$$420\,B\,\text{Sin}[2\,(c+d\,x)]+140\,C\,\text{Sin}[2\,(c+d\,x)]+126\,A\,\text{Sin}[3\,(c+d\,x)]+$$
$$\left.42\,B\,\text{Sin}[3\,(c+d\,x)]+15\,A\,\text{Sin}[4\,(c+d\,x)]\right)\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])$$

Problem 555: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)}{\text{Sec}[c+d\,x]^{9/2}}\,dx$$

Optimal (type 4, 271 leaves, 9 steps):

$$\frac{1}{15\,d}4\,a^3\,(17\,A+21\,B+27\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{21\,d}4\,a^3\,(11\,A+13\,B+21\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{4\,a^3\,(32\,A+41\,B+42\,C)\,\text{Sin}[c+d\,x]}{105\,d\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{2\,A\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{9\,d\,\text{Sec}[c+d\,x]^{7/2}}+\frac{2\,(2\,A+3\,B)\,(a^2+a^2\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{21\,a\,d\,\text{Sec}[c+d\,x]^{5/2}}+\frac{2\,(73\,A+99\,B+63\,C)\,(a^3+a^3\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]}{315\,d\,\text{Sec}[c+d\,x]^{3/2}}$$

Result (type 5, 214 leaves):

$$\frac{1}{2520\,d}a^3\,\sqrt{\text{Sec}[c+d\,x]}\,\Big(480\,(11\,A+13\,B+21\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]+672\,i\,(17\,A+21\,B+27\,C)\,e^{-i\,(c+d\,x)}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]+2\,\text{Cos}[c+d\,x]\,(-5712\,i\,A-7056\,i\,B-9072\,i\,C+30\,(97\,A+107\,B+84\,C)\,\text{Sin}[c+d\,x]+14\,(73\,A+54\,B+18\,C)\,\text{Sin}[2\,(c+d\,x)]+270\,A\,\text{Sin}[3\,(c+d\,x)]+90\,B\,\text{Sin}[3\,(c+d\,x)]+35\,A\,\text{Sin}[4\,(c+d\,x)])\Big)$$

Problem 556: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)}{\text{Sec}[c+d\,x]^{11/2}}\,dx$$

Optimal (type 4, 307 leaves, 10 steps):

$$\frac{1}{15\,d}4\,a^3\,(15\,A+17\,B+21\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{231\,d}$$
$$4\,a^3\,(105\,A+121\,B+143\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{4\,a^3\,(210\,A+253\,B+264\,C)\,\text{Sin}[c+d\,x]}{1155\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{4\,a^3\,(105\,A+121\,B+143\,C)\,\text{Sin}[c+d\,x]}{231\,d\,\sqrt{\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,A\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{11\,d\,\text{Sec}[c+d\,x]^{9/2}}+\frac{2\,(6\,A+11\,B)\,(a^2+a^2\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{99\,a\,d\,\text{Sec}[c+d\,x]^{7/2}}+$$
$$\frac{2\,(105\,A+143\,B+99\,C)\,(a^3+a^3\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]}{693\,d\,\text{Sec}[c+d\,x]^{5/2}}$$

Result (type 5, 247 leaves):

$$\frac{1}{55440\,d}$$
$$a^3\,\sqrt{\text{Sec}[c+d\,x]}\,\Bigg(960\,(105\,A+121\,B+143\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]+14784\,i$$
$$(15\,A+17\,B+21\,C)\,e^{-i\,(c+d\,x)}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]+$$
$$2\,\text{Cos}[c+d\,x]\,\big(-110880\,i\,A-125664\,i\,B-155232\,i\,C+$$
$$30\,(1953\,A+2134\,B+2354\,C)\,\text{Sin}[c+d\,x]+308\,(75\,A+73\,B+54\,C)\,\text{Sin}[2\,(c+d\,x)]+$$
$$8505\,A\,\text{Sin}[3\,(c+d\,x)]+5940\,B\,\text{Sin}[3\,(c+d\,x)]+1980\,C\,\text{Sin}[3\,(c+d\,x)]+$$
$$2310\,A\,\text{Sin}[4\,(c+d\,x)]+770\,B\,\text{Sin}[4\,(c+d\,x)]+315\,A\,\text{Sin}[5\,(c+d\,x)]\big)\Bigg)$$

Problem 557: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)}{\text{Sec}[c+d\,x]^{13/2}}\,dx$$

Optimal (type 4, 343 leaves, 11 steps):

$$\frac{1}{195\,d}4\,a^3\,(175\,A+195\,B+221\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{1}{231\,d}4\,a^3\,(95\,A+105\,B+121\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{20\,a^3\,(236\,A+273\,B+286\,C)\,\text{Sin}[c+d\,x]}{9009\,d\,\text{Sec}[c+d\,x]^{5/2}}+\frac{4\,a^3\,(175\,A+195\,B+221\,C)\,\text{Sin}[c+d\,x]}{585\,d\,\text{Sec}[c+d\,x]^{3/2}}+$$
$$\frac{4\,a^3\,(95\,A+105\,B+121\,C)\,\text{Sin}[c+d\,x]}{231\,d\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{2\,A\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{13\,d\,\text{Sec}[c+d\,x]^{11/2}}+$$
$$\frac{2\,(6\,A+13\,B)\,(a^2+a^2\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{143\,a\,d\,\text{Sec}[c+d\,x]^{9/2}}+$$
$$\frac{2\,(145\,A+195\,B+143\,C)\,(a^3+a^3\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]}{1287\,d\,\text{Sec}[c+d\,x]^{7/2}}$$

Result (type 5, 1386 leaves) :

$$\left(35\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(39\sqrt{2}\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left(B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left(17\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(15\sqrt{2}\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left(95\,A\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(231\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{9/2}\right)+$$
$$\left(5\,B\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(11\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{9/2}\right)+$$
$$\left(11\,C\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{9/2}\right)+\frac{1}{\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{9/2}}$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(-\frac{1}{149\,760\,d}\left(59\,375\,A+67\,080\,B+77\,272\,C+75\,025\,A\,\text{Cos}[2\,c]+82\,680\,B\,\text{Cos}[2\,c]+92\,456\,C\,\text{Cos}[2\,c]\right)\,\text{Cos}[d\,x]\,\text{Csc}[c]+\frac{\left(4267\,A+4473\,B+4664\,C\right)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{14\,784\,d}+\frac{\left(9005\,A+8580\,B+7852\,C\right)\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{74\,880\,d}+\frac{\left(59\,A+49\,B+33\,C\right)\,\text{Cos}[4\,d\,x]\,\text{Sin}[4\,c]}{1232\,d}+\frac{\left(245\,A+156\,B+52\,C\right)\,\text{Cos}[5\,d\,x]\,\text{Sin}[5\,c]}{14\,976\,d}+\frac{\left(3\,A+B\right)\,\text{Cos}[6\,d\,x]\,\text{Sin}[6\,c]}{704\,d}+\frac{A\,\text{Cos}[7\,d\,x]\,\text{Sin}[7\,c]}{1664\,d}+\frac{\left(75\,025\,A+82\,680\,B+92\,456\,C\right)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{74\,880\,d}+\frac{\left(4267\,A+4473\,B+4664\,C\right)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{14\,784\,d}+\frac{\left(9005\,A+8580\,B+7852\,C\right)\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{74\,880\,d}+\frac{\left(59\,A+49\,B+33\,C\right)\,\text{Cos}[4\,c]\,\text{Sin}[4\,d\,x]}{1232\,d}+\frac{\left(245\,A+156\,B+52\,C\right)\,\text{Cos}[5\,c]\,\text{Sin}[5\,d\,x]}{14\,976\,d}+\frac{\left(3\,A+B\right)\,\text{Cos}[6\,c]\,\text{Sin}[6\,d\,x]}{704\,d}+\frac{A\,\text{Cos}[7\,c]\,\text{Sin}[7\,d\,x]}{1664\,d}\right)$$

Problem 558: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 250 leaves, 9 steps):

$$-\frac{1}{5\,a\,d}3\,\left(5\,A-5\,B+7\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}-\frac{1}{3\,a\,d}\left(3\,A-5\,B+5\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{3\,\left(5\,A-5\,B+7\,C\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{5\,a\,d}-\frac{\left(3\,A-5\,B+5\,C\right)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,a\,d}+\frac{\left(5\,A-5\,B+7\,C\right)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{5\,a\,d}-\frac{\left(A-B+C\right)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{d\,\left(a+a\,\text{Sec}[c+d\,x]\right)}$$

Result (type 5, 1278 leaves):

$$-\left(\left(3\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left.\left(d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)\right)\right)+$$

$$\left(3\sqrt{2}\ B\,e^{-i (2 c+d x)}\sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Cos}[c+d x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)\right)-$$

$$\left(21\sqrt{2}\ C\,e^{-i (2 c+d x)}\sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Cos}[c+d x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(5 d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)\right)-$$

$$\left(2 A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{\text{Cos}[c+d x]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\ \left(a+a\,\text{Sec}[c+d x]\right)\right)+$$

$$\left(10 B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{\text{Cos}[c+d x]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(3 d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\ \left(a+a\,\text{Sec}[c+d x]\right)\right)-$$

$$\left(10 C\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{\text{Cos}[c+d x]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(3 d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\ \left(a+a\,\text{Sec}[c+d x]\right)\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{6\,(5\,A-5\,B+7\,C)\,\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]}{5\,d}-\right.\right.$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$
$$\frac{8\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{5\,d}+$$
$$\frac{8\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(3\,C\,\text{Sin}[c]+5\,B\,\text{Sin}[d\,x]-5\,C\,\text{Sin}[d\,x])}{15\,d}-\frac{1}{3\,d}$$
$$\left.\left.4\,(-2\,B+2\,C+3\,A\,\text{Cos}[c]-5\,B\,\text{Cos}[c]+5\,C\,\text{Cos}[c])\,\text{Sec}[c]\,\text{Tan}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left((A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])\right)$$

Problem 559: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 205 leaves, 8 steps):

$$\frac{(A-3\,B+3\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}}{a\,d}+$$
$$\frac{1}{3\,a\,d}(3\,A-3\,B+5\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}-$$
$$\frac{(A-3\,B+3\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{a\,d}+$$
$$\frac{(3\,A-3\,B+5\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,a\,d}-\frac{(A-B+C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 5, 1229 leaves):

$$\left(\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])\right)-$$

$$\left(3\sqrt{2}\, B\, e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$
$$\left(3\sqrt{2}\, C\, e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$
$$\left(2A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)-$$
$$\left(2B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$
$$\left(10C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(3d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\left(-\frac{2(A-3B+3C)\,\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}+\right.\right.$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\text{Sin}\left[\frac{dx}{2}\right]-B\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{d}+$$
$$\frac{8C\,\text{Sec}[c]\,\text{Sec}[c+dx]\,\text{Sin}[dx]}{3d}+$$
$$\left.\left.\frac{4\left(2C+3A\,\text{Cos}[c]-3B\,\text{Cos}[c]+5C\,\text{Cos}[c]\right)\text{Sec}[c]\,\text{Tan}\left[\frac{c}{2}\right]}{3d}\right)\right)\Big/$$

$$\left(\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 560: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 162 leaves, 7 steps):

$$-\frac{1}{a\,d}\left(A-B+3C\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}+\frac{\left(A+B-C\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}}{a\,d}+\frac{\left(A-B+3C\right)\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{a\,d}-\frac{\left(A-B+C\right)\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{d\left(a+a\,\text{Sec}[c+d\,x]\right)}$$

Result (type 5, 1190 leaves):

$$-\left(\left(\sqrt{2}\,A\,e^{-i\,(2c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.\right.$$
$$\left(1+e^{2i\,(c+d\,x)}+\left(-1+e^{2i\,c}\right)\sqrt{1+e^{2i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left.\left(d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)\right)\right)+$$
$$\left(\sqrt{2}\,B\,e^{-i\,(2c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2i\,(c+d\,x)}+\left(-1+e^{2i\,c}\right)\sqrt{1+e^{2i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$
$$\left(3\sqrt{2}\,C\,e^{-i\,(2c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)\right)+$$
$$\left(2 A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \sqrt{\text{Cos}[c+d x]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\left(a+a\,\text{Sec}[c+d x]\right)\right)+$$
$$\left(2 B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \sqrt{\text{Cos}[c+d x]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\left(a+a\,\text{Sec}[c+d x]\right)\right)-$$
$$\left(2 C\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \sqrt{\text{Cos}[c+d x]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\left(a+a\,\text{Sec}[c+d x]\right)\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\left(\frac{2(A-B+3 C)\,\text{Cos}[d x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}-\right.\right.$$
$$\left.\left.\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(A\,\text{Sin}\left[\frac{d x}{2}\right]-B\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{d}-\frac{4(A-B+C)\,\text{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Big/$$
$$\left(\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\left(a+a\,\text{Sec}[c+d x]\right)\right)$$

Problem 561: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{\sqrt{\text{Sec}[c+d x]}\left(a+a\,\text{Sec}[c+d x]\right)}\,dx$$

Optimal (type 4, 133 leaves, 6 steps):

$$\frac{(3 A-B+C)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{a d}-$$
$$\frac{(A-B-C)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{a d}-$$
$$\frac{(A-B+C)\sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{d\left(a+a\,\text{Sec}[c+d x]\right)}$$

Result (type 5, 1208 leaves):

$$\left(3\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)-$$

$$\left(\sqrt{2}\,B\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)-$$

$$\left(2A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(2B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$

$$\left(2C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(-\frac{2\left(2A-B+C+A\,\text{Cos}[2c]\right)\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}+\right.$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$

$$\left.\left.\frac{8\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{d}+\frac{4\left(A-B+C\right)\text{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Bigg/$$

$$\left(\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 562: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Sec}[c+d\,x]^{3/2}\left(a+a\,\text{Sec}[c+d\,x]\right)}\,dx$$

Optimal (type 4, 174 leaves, 7 steps):

$$-\frac{1}{a\,d}\left(3A-3B+C\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$

$$\frac{1}{3\,a\,d}\left(5A-3B+3C\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$

$$\frac{\left(5A-3B+3C\right)\text{Sin}[c+d\,x]}{3\,a\,d\sqrt{\text{Sec}[c+d\,x]}}-\frac{\left(A-B+C\right)\text{Sin}[c+d\,x]}{d\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)}$$

Result (type 5, 1256 leaves):

$$-\left(\left(\left(3\sqrt{2}\,A\,e^{-i\,(2c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.\right.\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Bigg/$$

$$\left.\left(d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)\right)\right)+$$

$$\left(3\sqrt{2}\,B\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)-$$
$$\left(\sqrt{2}\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$
$$\left(10\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(3\,d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)-$$
$$\left(2\,B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$
$$\left(2\,C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\sqrt{\text{Sec}[c+dx]}\left(a+a\,\text{Sec}[c+dx]\right)\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right.$$
$$\left(\frac{1}{d}2\left(2A-2B+C+A\,\text{Cos}[2c]-B\,\text{Cos}[2c]\right)\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]+\right.$$
$$\frac{4\,A\,\text{Cos}[2dx]\,\text{Sin}[2c]}{3\,d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\text{Sin}\left[\frac{dx}{2}\right]-B\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{d}-$$

$$\left.\left(\frac{8\,(A-B)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{d}+\frac{4\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{3\,d}-\frac{4\,(A-B+C)\,\text{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Big/\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 563: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Sec}[c+d\,x]^{5/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)}\,dx$$

Optimal (type 4, 214 leaves, 8 steps):

$$\frac{1}{5\,a\,d}3\,(7\,A-5\,B+5\,C)\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}-\frac{1}{3\,a\,d}(5\,A-5\,B+3\,C)\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+\frac{(7\,A-5\,B+5\,C)\,\text{Sin}[c+d\,x]}{5\,a\,d\,\text{Sec}[c+d\,x]^{3/2}}-\frac{(5\,A-5\,B+3\,C)\,\text{Sin}[c+d\,x]}{3\,a\,d\sqrt{\text{Sec}[c+d\,x]}}-\frac{(A-B+C)\,\text{Sin}[c+d\,x]}{d\,\text{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)}$$

Result (type 5, 1321 leaves):

$$\left(21\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(5\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$

$$\left(3\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$

$$\left(3\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

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

$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$
$$\left(d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$
$$\Bigg(10\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{\text{Cos}[c+d\,x]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c]\Bigg)\Bigg/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$
$$\Bigg(10\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{\text{Cos}[c+d\,x]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c]\Bigg)\Bigg/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$
$$\Bigg(2\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{\text{Cos}[c+d\,x]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c]\Bigg)\Bigg/$$
$$\left(d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$
$$\Bigg(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(-\frac{1}{10\,d}\left(51\,A-40\,B+40\,C+33\,A\,\text{Cos}[2\,c]-20\,B\,\text{Cos}[2\,c]+20\,C\,\text{Cos}[2\,c]\right)$$
$$\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]-\frac{4\,(A-B)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{3\,d}+$$
$$\frac{2\,A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{5\,d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$
$$\frac{2\left(33\,A-20\,B+20\,C\right)\text{Cos}[c]\,\text{Sin}[d\,x]}{5\,d}-\frac{4\,(A-B)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{3\,d}+$$
$$\frac{2\,A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{5\,d}+\frac{4\left(A-B+C\right)\text{Tan}\left[\frac{c}{2}\right]}{d}\Bigg)\Bigg)\Bigg/$$
$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 564: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Sec}[c+d\,x]^{7/2}\left(a+a\,\text{Sec}[c+d\,x]\right)}\,dx$$

Optimal (type 4, 250 leaves, 9 steps):

$$-\frac{1}{5\,a\,d}3\,(7\,A-7\,B+5\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+\frac{1}{21\,a\,d}5\,(9\,A-7\,B+7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+\frac{(9\,A-7\,B+7\,C)\,\text{Sin}[c+d\,x]}{7\,a\,d\,\text{Sec}[c+d\,x]^{5/2}}-\frac{(7\,A-7\,B+5\,C)\,\text{Sin}[c+d\,x]}{5\,a\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{5\,(9\,A-7\,B+7\,C)\,\text{Sin}[c+d\,x]}{21\,a\,d\,\sqrt{\text{Sec}[c+d\,x]}}-\frac{(A-B+C)\,\text{Sin}[c+d\,x]}{d\,\text{Sec}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 5, 1377 leaves):

$$-\left(\left(\left(21\,\sqrt{2}\,\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\,(a+a\,\text{Sec}[c+d\,x])\right)\right)+\left(21\,\sqrt{2}\,\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\,(a+a\,\text{Sec}[c+d\,x])\right)-\left(3\,\sqrt{2}\,\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\,(a+a\,\text{Sec}[c+d\,x])\right)+\left(30\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c]\right)\Big/$$

$$\left(7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$
$$\left(10\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c]\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$
$$\left(10\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c]\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{1}{10\,d}\left(51\,A-51\,B+40\,C+33\,A\,\text{Cos}[2\,c]-33\,B\,\text{Cos}[2\,c]+20\,C\,\text{Cos}[2\,c]\right)\,\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]+\right.$$
$$\frac{2\,(27\,A-14\,B+14\,C)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{21\,d}-\frac{2\,(A-B)\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{5\,d}+$$
$$\frac{A\,\text{Cos}[4\,d\,x]\,\text{Sin}[4\,c]}{7\,d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}-$$
$$\frac{2\,(33\,A-33\,B+20\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{5\,d}+\frac{2\,(27\,A-14\,B+14\,C)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{21\,d}-$$
$$\left.\left.\frac{2\,(A-B)\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{5\,d}+\frac{A\,\text{Cos}[4\,c]\,\text{Sin}[4\,d\,x]}{7\,d}-\frac{4\,(A-B+C)\,\text{Tan}\left[\frac{c}{2}\right]}{d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 565: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

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

$$\frac{(A-4B+7C)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}}{a^2 d}+\frac{1}{3a^2 d}(2A-5B+10C)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}-\frac{(A-4B+7C)\sqrt{\text{Sec}[c+dx]}\ \text{Sin}[c+dx]}{a^2 d}+\frac{(2A-5B+10C)\,\text{Sec}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{3a^2 d}-\frac{(A-4B+7C)\,\text{Sec}[c+dx]^{5/2}\,\text{Sin}[c+dx]}{3a^2 d\,(1+\text{Sec}[c+dx])}-\frac{(A-B+C)\,\text{Sec}[c+dx]^{7/2}\,\text{Sin}[c+dx]}{3d\,(a+a\,\text{Sec}[c+dx])^2}$$

Result (type 5, 1311 leaves):

$$\left(2\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)-$$

$$\left(8\sqrt{2}\,B\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$

$$\left(14\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$

$$\left(8\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)-$$
$$\left(20\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c]\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$
$$\left(40\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c]\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{4\,(A-4\,B+7\,C)\,\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]}{d}+\right.$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+\frac{1}{3\,d}8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]$$
$$\left(2\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-5\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+8\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+\frac{16\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{3\,d}+$$
$$\frac{8\,(2\,C+2\,A\,\text{Cos}[c]-5\,B\,\text{Cos}[c]+10\,C\,\text{Cos}[c])\,\text{Sec}[c]\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}+$$
$$\left.\left.\frac{4\,(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)$$

Problem 566: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 207 leaves, 8 steps):

$$\frac{(B-4C)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}}{a^2 d}+\frac{1}{3a^2 d}(A+2B-5C)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}-\frac{(B-4C)\sqrt{\text{Sec}[c+dx]}\ \text{Sin}[c+dx]}{a^2 d}+\frac{(A+2B-5C)\,\text{Sec}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{3a^2 d\,(1+\text{Sec}[c+dx])}-\frac{(A-B+C)\,\text{Sec}[c+dx]^{5/2}\,\text{Sin}[c+dx]}{3d\,(a+a\,\text{Sec}[c+dx])^2}$$

Result (type 5, 1072 leaves):

$$\left(2\sqrt{2}\,B\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)-$$

$$\left(8\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)+$$

$$\left(4A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)+$$

$$\left(8B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2\right)-$$

$$\left(20C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{4\,(-B+4\,C)\,\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]}{d}+\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+2\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-5\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-\right.$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+$$
$$\left.\left.\frac{8\,(A+2\,B-5\,C)\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}-\frac{4\,(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)$$

Problem 567: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 173 leaves, 7 steps):

$$-\frac{(A-C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{a^2\,d}+$$
$$\frac{1}{3\,a^2\,d}(2\,A+B+2\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{(A-C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{a^2\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A-B+C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}$$

Result (type 5, 1073 leaves):

$$-\left(\left(\left(2\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\right.\right.\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)\Bigg)+$$

$$\Bigg(2\,\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]$$

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

$$\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$

$$\Bigg(8\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c]\Bigg)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$

$$\Bigg(4\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c]\Bigg)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$

$$\Bigg(8\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c]\Bigg)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$

$$\Bigg(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\frac{4\,(A-C)\,\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]}{d}-$$

$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(4\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]-2\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-$$

$$\frac{8\,(4\,A-B-2\,C)\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}+\frac{4\,(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\Bigg)\Bigg)\Big/$$

$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)$$

Problem 568: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2}{\sqrt{\mathrm{Sec}[c + d\,x]}\,(a + a\,\mathrm{Sec}[c + d\,x])^2}\,dx$$

Optimal (type 4, 184 leaves, 7 steps):

$$\frac{(4\,A - B)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c + d\,x), 2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}}{a^2\,d} - \frac{1}{3\,a^2\,d}(5\,A - 2\,B - C)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x), 2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]} - \frac{(5\,A - 2\,B - C)\,\sqrt{\mathrm{Sec}[c + d\,x]}\,\mathrm{Sin}[c + d\,x]}{3\,a^2\,d\,(1 + \mathrm{Sec}[c + d\,x])} - \frac{(A - B + C)\,\sqrt{\mathrm{Sec}[c + d\,x]}\,\mathrm{Sin}[c + d\,x]}{3\,d\,(a + a\,\mathrm{Sec}[c + d\,x])^2}$$

Result (type 5, 1090 leaves):

$$\left(8\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1 + e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,\mathrm{Csc}\left[\frac{c}{2}\right]\left(1 + e^{2\,i\,(c+d\,x)} + \left(-1 + e^{2\,i\,c}\right)\sqrt{1 + e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}\right]\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)\right)\Big/\left(d\,(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x])\,(a + a\,\mathrm{Sec}[c + d\,x])^2\right) - \left(2\,\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1 + e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,\mathrm{Csc}\left[\frac{c}{2}\right]\left(1 + e^{2\,i\,(c+d\,x)} + \left(-1 + e^{2\,i\,c}\right)\sqrt{1 + e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2\,i\,(c+d\,x)}\right]\right)\mathrm{Sec}\left[\frac{c}{2}\right]\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)\right)\Big/\left(d\,(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x])\,(a + a\,\mathrm{Sec}[c + d\,x])^2\right) - \left(20\,A\,\mathrm{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x), 2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)\mathrm{Sin}[c]\right)\Big/\left(3\,d\,(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x])\,(a + a\,\mathrm{Sec}[c + d\,x])^2\right) + \left(8\,B\,\mathrm{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x), 2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)\mathrm{Sin}[c]\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)+$$
$$\left(4\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\right.$$
$$\left.\mathrm{Sec}\left[\frac{c}{2}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sin}[c]\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)+$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{4\,\left(3\,A-B+A\,\mathrm{Cos}[2\,c]\right)\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]}{d}+\right.$$
$$\frac{8\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(7\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-4\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-$$
$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+\frac{16\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{d}+$$
$$\left.\left.\frac{8\,\left(7\,A-4\,B+C\right)\,\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}-\frac{4\,\left(A-B+C\right)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)$$

Problem 569: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\mathrm{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 220 leaves, 8 steps):

$$-\frac{1}{a^2\,d}\left(7\,A-4\,B+C\right)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}+$$
$$\frac{1}{3\,a^2\,d}\left(10\,A-5\,B+2\,C\right)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}+$$
$$\frac{\left(10\,A-5\,B+2\,C\right)\,\mathrm{Sin}[c+d\,x]}{3\,a^2\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}-\frac{\left(7\,A-4\,B+C\right)\,\mathrm{Sin}[c+d\,x]}{3\,a^2\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(1+\mathrm{Sec}[c+d\,x]\right)}-$$
$$\frac{\left(A-B+C\right)\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2}$$

Result (type 5, 1346 leaves):

$$-\left(\left(\left(14\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.\right.\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left.\left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) (a+a \text{Sec}[c+d x])^2\right)\right)+$$

$$\left(8 \sqrt{2} B e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Csc}\left[\frac{c}{2}\right]\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) (a+a \text{Sec}[c+d x])^2\right)-$$

$$\left(2 \sqrt{2} C e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Csc}\left[\frac{c}{2}\right]\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) (a+a \text{Sec}[c+d x])^2\right)+$$

$$\left(40 A \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \sqrt{\text{Cos}[c+d x]} \text{ Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right] \sqrt{\text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/$$

$$\left(3 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) (a+a \text{Sec}[c+d x])^2\right)-$$

$$\left(20 B \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \sqrt{\text{Cos}[c+d x]} \text{ Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right] \sqrt{\text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/$$

$$\left(3 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) (a+a \text{Sec}[c+d x])^2\right)+$$

$$\left(8 C \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \sqrt{\text{Cos}[c+d x]} \text{ Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right] \sqrt{\text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/$$

$$\left(3 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) (a+a \text{Sec}[c+d x])^2\right)+$$

$$\frac{1}{\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\left(a+a\operatorname{Sec}[c+dx]\right)^2}$$
$$\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\operatorname{Sec}[c+dx]}\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)$$
$$\left(\frac{1}{d}4\left(5A-3B+C+2A\operatorname{Cos}[2c]-B\operatorname{Cos}[2c]\right)\operatorname{Cos}[dx]\operatorname{Csc}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}\right]+\frac{8A\operatorname{Cos}[2dx]\operatorname{Sin}[2c]}{3d}+\right.$$
$$\frac{4\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(A\operatorname{Sin}\left[\frac{dx}{2}\right]-B\operatorname{Sin}\left[\frac{dx}{2}\right]+C\operatorname{Sin}\left[\frac{dx}{2}\right]\right)}{3d}-\frac{1}{3d}8\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]$$
$$\left(10A\operatorname{Sin}\left[\frac{dx}{2}\right]-7B\operatorname{Sin}\left[\frac{dx}{2}\right]+4C\operatorname{Sin}\left[\frac{dx}{2}\right]\right)-\frac{16\left(2A-B\right)\operatorname{Cos}[c]\operatorname{Sin}[dx]}{d}+$$
$$\left.\frac{8A\operatorname{Cos}[2c]\operatorname{Sin}[2dx]}{3d}-\frac{8\left(10A-7B+4C\right)\operatorname{Tan}\left[\frac{c}{2}\right]}{3d}+\frac{4\left(A-B+C\right)\operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\operatorname{Tan}\left[\frac{c}{2}\right]}{3d}\right)$$

Problem 570: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2}{\operatorname{Sec}[c+dx]^{5/2}\left(a+a\operatorname{Sec}[c+dx]\right)^2}\,dx$$

Optimal (type 4, 254 leaves, 9 steps):

$$\frac{1}{5a^2d}\left(56A-35B+20C\right)\sqrt{\operatorname{Cos}[c+dx]}\operatorname{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\operatorname{Sec}[c+dx]}-$$
$$\frac{1}{3a^2d}5\left(3A-2B+C\right)\sqrt{\operatorname{Cos}[c+dx]}\operatorname{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\operatorname{Sec}[c+dx]}+$$
$$\frac{\left(56A-35B+20C\right)\operatorname{Sin}[c+dx]}{15a^2d\operatorname{Sec}[c+dx]^{3/2}}-\frac{5\left(3A-2B+C\right)\operatorname{Sin}[c+dx]}{3a^2d\sqrt{\operatorname{Sec}[c+dx]}}-$$
$$\frac{\left(3A-2B+C\right)\operatorname{Sin}[c+dx]}{a^2d\operatorname{Sec}[c+dx]^{3/2}\left(1+\operatorname{Sec}[c+dx]\right)}-\frac{\left(A-B+C\right)\operatorname{Sin}[c+dx]}{3d\operatorname{Sec}[c+dx]^{3/2}\left(a+a\operatorname{Sec}[c+dx]\right)^2}$$

Result (type 5, 1408 leaves):

$$\left(112\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\operatorname{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\operatorname{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)$$
$$\left.\operatorname{Sec}\left[\frac{c}{2}\right]\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(5d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\left(a+a\operatorname{Sec}[c+dx]\right)^2\right)-$$

$$\left(14\sqrt{2}\,B\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$
$$\left(8\sqrt{2}\,C\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)-$$
$$\left(20\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$
$$\left(40\,B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(3\,d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)-$$
$$\left(20\,C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(3\,d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2\right)+$$
$$\frac{1}{\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^2}$$
$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(-\frac{1}{5d}\left(151A-100B+60C+73A\,\text{Cos}[2c]-40B\,\text{Cos}[2c]+20C\,\text{Cos}[2c]\right)\text{Cos}[dx]\right.$$
$$\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]-\frac{8\left(2A-B\right)\text{Cos}[2dx]\,\text{Sin}[2c]}{3d}+\frac{4A\,\text{Cos}[3dx]\,\text{Sin}[3c]}{5d}-$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+\frac{1}{3\,d}$$

$$8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(13\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-10\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+7\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+$$

$$\frac{4\,(73\,A-40\,B+20\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{5\,d}-\frac{8\,(2\,A-B)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{3\,d}+$$

$$\left.\frac{4\,A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{5\,d}+\frac{8\,(13\,A-10\,B+7\,C)\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}-\frac{4\,(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)$$

Problem 571: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^{7/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 308 leaves, 10 steps):

$$\frac{1}{10\,a^3\,d}(9\,A-49\,B+119\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+$$

$$\frac{1}{6\,a^3\,d}(3\,A-13\,B+33\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}-$$

$$\frac{(9\,A-49\,B+119\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{10\,a^3\,d}+$$

$$\frac{(3\,A-13\,B+33\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{6\,a^3\,d}-\frac{(A-B+C)\,\text{Sec}[c+d\,x]^{9/2}\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^3}+$$

$$\frac{(B-2\,C)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{3\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^2}-\frac{(9\,A-49\,B+119\,C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{30\,d\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}$$

Result (type 5, 1432 leaves):

$$\left(18\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)-$$

$$\left(98\,\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(5 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^3\right)+$$

$$\left(238 \sqrt{2} C e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right]\right.$$

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

$$\left.\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(5 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^3\right)+$$

$$\left(4 A \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\text{Cos}[c+d x]} \text{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/$$

$$\left(d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^3\right)-$$

$$\left(52 B \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\text{Cos}[c+d x]} \text{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/$$

$$\left(3 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^3\right)+$$

$$\left(44 C \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\text{Cos}[c+d x]} \text{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/$$

$$\left(d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^3\right)+$$

$$\frac{1}{(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^3} \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Sec}[c+d x]^{3/2}$$

$$\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{4 (9 A-49 B+119 C) \text{Cos}[d x] \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right]}{5 d}+\right.$$

$$\frac{4 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5 \left(A \text{Sin}\left[\frac{d x}{2}\right]-B \text{Sin}\left[\frac{d x}{2}\right]+C \text{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+\frac{1}{15 d} 8 \text{Sec}\left[\frac{c}{2}\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3 \left(3 A \text{Sin}\left[\frac{d x}{2}\right]-8 B \text{Sin}\left[\frac{d x}{2}\right]+13 C \text{Sin}\left[\frac{d x}{2}\right]\right)+\frac{1}{3 d} 8 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]$$

$$\left(3 A \text{Sin}\left[\frac{d x}{2}\right]-13 B \text{Sin}\left[\frac{d x}{2}\right]+29 C \text{Sin}\left[\frac{d x}{2}\right]\right)+\frac{32 C \text{Sec}[c] \text{Sec}[c+d x] \text{Sin}[d x]}{3 d}+$$

$$\frac{8\,(4\,C+3\,A\,Cos[c]-13\,B\,Cos[c]+33\,C\,Cos[c])\,Sec[c]\,Tan\left[\frac{c}{2}\right]}{3\,d}+$$
$$\left.\frac{8\,(3\,A-8\,B+13\,C)\,Sec\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,Tan\left[\frac{c}{2}\right]}{15\,d}+\frac{4\,(A-B+C)\,Sec\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,Tan\left[\frac{c}{2}\right]}{5\,d}\right)$$

Problem 572: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{Sec[c+d\,x]^{5/2}\,(A+B\,Sec[c+d\,x]+C\,Sec[c+d\,x]^2)}{(a+a\,Sec[c+d\,x])^3}\,dx$$

Optimal (type 4, 269 leaves, 9 steps):

$$\frac{1}{10\,a^3\,d}(A+9\,B-49\,C)\,\sqrt{Cos[c+d\,x]}\;EllipticE\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{Sec[c+d\,x]}+$$
$$\frac{1}{6\,a^3\,d}(A+3\,B-13\,C)\,\sqrt{Cos[c+d\,x]}\;EllipticF\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{Sec[c+d\,x]}-$$
$$\frac{(A+9\,B-49\,C)\,\sqrt{Sec[c+d\,x]}\,Sin[c+d\,x]}{10\,a^3\,d}-\frac{(A-B+C)\,Sec[c+d\,x]^{7/2}\,Sin[c+d\,x]}{5\,d\,(a+a\,Sec[c+d\,x])^3}+$$
$$\frac{(2\,A+3\,B-8\,C)\,Sec[c+d\,x]^{5/2}\,Sin[c+d\,x]}{15\,a\,d\,(a+a\,Sec[c+d\,x])^2}+\frac{(A+3\,B-13\,C)\,Sec[c+d\,x]^{3/2}\,Sin[c+d\,x]}{6\,d\,(a^3+a^3\,Sec[c+d\,x])}$$

Result (type 5, 1400 leaves):

$$\left(2\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;Cos\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,Csc\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+(-1+e^{2\,i\,c})\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;Hypergeometric2F1\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.Sec\left[\frac{c}{2}\right]\,Sec[c+d\,x]\,(A+B\,Sec[c+d\,x]+C\,Sec[c+d\,x]^2)\right)\Big/$$
$$\left(5\,d\,(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x])\,(a+a\,Sec[c+d\,x])^3\right)+$$
$$\left(18\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;Cos\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,Csc\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+(-1+e^{2\,i\,c})\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;Hypergeometric2F1\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.Sec\left[\frac{c}{2}\right]\,Sec[c+d\,x]\,(A+B\,Sec[c+d\,x]+C\,Sec[c+d\,x]^2)\right)\Big/$$
$$\left(5\,d\,(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x])\,(a+a\,Sec[c+d\,x])^3\right)-$$

$$\left(98\sqrt{2}\,C\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(5d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\left(4A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\left(4B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)-$$

$$\left(52C\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}[c]\right)\Big/\left(3d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\frac{1}{\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3}\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Sec}[c+dx]^{3/2}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\left(-\frac{4(A+9B-49C)\,\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5d}+\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(A\,\text{Sin}\left[\frac{dx}{2}\right]+3B\,\text{Sin}\left[\frac{dx}{2}\right]-13C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+\frac{1}{15d}8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(2A\,\text{Sin}\left[\frac{dx}{2}\right]+3B\,\text{Sin}\left[\frac{dx}{2}\right]-8C\,\text{Sin}\left[\frac{dx}{2}\right]\right)-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(A\,\text{Sin}\left[\frac{dx}{2}\right]-B\,\text{Sin}\left[\frac{dx}{2}\right]+C\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5d}-\frac{8(-A-3B+13C)\,\text{Tan}\left[\frac{c}{2}\right]}{3d}+\frac{8(2A+3B-8C)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15d}-\frac{4(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5d}\right)$$

Problem 573: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 4, 231 leaves, 8 steps):

$$-\frac{1}{10 a^3 d}(A-B-9 C) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}+\frac{(A+B+3 C) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{6 a^3 d}-\frac{(A-B+C) \text{Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{5 d (a+a \text{Sec}[c+d x])^3}+\frac{(4 A+B-6 C) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{15 a d (a+a \text{Sec}[c+d x])^2}+\frac{(A-B-9 C) \sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{10 d \left(a^3+a^3 \text{Sec}[c+d x]\right)}$$

Result (type 5, 1395 leaves):

$$-\left(\left(\left(2 \sqrt{2}\, A\, e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right) \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(5 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^3\right)\right)+\right.$$

$$\left(2 \sqrt{2}\, B\, e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right) \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(5 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^3\right)+$$

$$\left(18 \sqrt{2}\, C\, e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right)\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(5 d\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\left(a+a \text{Sec}[c+d x]\right)^3\right)+$$
$$\left(4 A \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(3 d\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\left(a+a \text{Sec}[c+d x]\right)^3\right)+$$
$$\left(4 B \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(3 d\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\left(a+a \text{Sec}[c+d x]\right)^3\right)+$$
$$\left(4 C \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\right)\Big/$$
$$\left(d\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\left(a+a \text{Sec}[c+d x]\right)^3\right)+$$
$$\frac{1}{\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\left(a+a \text{Sec}[c+d x]\right)^3}$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Sec}[c+d x]^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\frac{4(A-B-9 C)\text{Cos}[d x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5 d}-\frac{1}{15 d}\right.$$
$$8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(7 A \text{Sin}\left[\frac{d x}{2}\right]-2 B \text{Sin}\left[\frac{d x}{2}\right]-3 C \text{Sin}\left[\frac{d x}{2}\right]\right)+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5\left(A \text{Sin}\left[\frac{d x}{2}\right]-B \text{Sin}\left[\frac{d x}{2}\right]+C \text{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+$$
$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(A \text{Sin}\left[\frac{d x}{2}\right]+B \text{Sin}\left[\frac{d x}{2}\right]+3 C \text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}+\frac{8(A+B+3 C)\text{Tan}\left[\frac{c}{2}\right]}{3 d}-$$
$$\left.\frac{8(7 A-2 B-3 C)\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15 d}+\frac{4(A-B+C)\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5 d}\right)$$

Problem 574: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d x]}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\left(a+a\,\text{Sec}[c+d x]\right)^3}\,dx$$

Optimal (type 4, 231 leaves, 8 steps):

$$-\frac{1}{10\,a^3\,d}(9\,A+B-C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\sqrt{\mathrm{Sec}[c+d\,x]}\,+$$

$$\frac{(3\,A+B+C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\sqrt{\mathrm{Sec}[c+d\,x]}}{6\,a^3\,d}-$$

$$\frac{(A-B+C)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{5\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^3}+$$

$$\frac{(6\,A-B-4\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{15\,a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^2}+\frac{(3\,A+B+C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{6\,d\,(a^3+a^3\,\mathrm{Sec}[c+d\,x])}$$

Result (type 5, 1401 leaves):

$$-\left(\left(\left(18\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\mathrm{Csc}\left[\frac{c}{2}\right]\right.\right.\right.$$

$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$

$$\left.\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left.\left(5\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\right)\right)-$$

$$\left(2\,\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$

$$\left.\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(5\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\right)+$$

$$\left(2\,\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$

$$\left.\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(5\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\right)+$$

$$\left(4\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\right.$$

$$\left.\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/$$
$$\left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(a+a \text{Sec}[c+d x]\right)^3\right)+$$
$$\left(4 B \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\text{Cos}[c+d x]} \text{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/$$
$$\left(3 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(a+a \text{Sec}[c+d x]\right)^3\right)+$$
$$\left(4 C \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\text{Cos}[c+d x]} \text{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/$$
$$\left(3 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(a+a \text{Sec}[c+d x]\right)^3\right)+$$
$$\frac{1}{\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(a+a \text{Sec}[c+d x]\right)^3} \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6$$
$$\text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(\frac{4 (9 A+B-C) \text{Cos}[d x] \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right]}{5 d}-\right.$$
$$\frac{8 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(9 A \text{Sin}\left[\frac{d x}{2}\right]-B \text{Sin}\left[\frac{d x}{2}\right]-C \text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}-$$
$$\frac{4 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5 \left(A \text{Sin}\left[\frac{d x}{2}\right]-B \text{Sin}\left[\frac{d x}{2}\right]+C \text{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+\frac{1}{15 d} 8 \text{Sec}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3 \left(12 A \text{Sin}\left[\frac{d x}{2}\right]-7 B \text{Sin}\left[\frac{d x}{2}\right]+2 C \text{Sin}\left[\frac{d x}{2}\right]\right)-\frac{8 (9 A-B-C) \text{Tan}\left[\frac{c}{2}\right]}{3 d}+$$
$$\left.\frac{8 (12 A-7 B+2 C) \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Tan}\left[\frac{c}{2}\right]}{15 d}-\frac{4 (A-B+C) \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Tan}\left[\frac{c}{2}\right]}{5 d}\right)$$

Problem 575: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2}{\sqrt{\text{Sec}[c+d x]} \left(a+a \text{Sec}[c+d x]\right)^3} \, dx$$

Optimal (type 4, 241 leaves, 8 steps):

$$\frac{1}{10\,a^3\,d}(49\,A-9\,B-C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}\;-$$
$$\frac{1}{6\,a^3\,d}(13\,A-3\,B-C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}\;-$$
$$\frac{(A-B+C)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^3}-\frac{(8\,A-3\,B-2\,C)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^2}-$$
$$\frac{(13\,A-3\,B-C)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{6\,d\,(a^3+a^3\,\text{Sec}[c+d\,x])}$$

Result (type 5, 1419 leaves):

$$\left(98\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)-$$
$$\left(18\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)-$$
$$\left(2\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)-$$
$$\left(52\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\text{Cos}[c+d\,x]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c]\right)\Big/$$

$$\Big(3\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\Big)+$$
$$\Big(4\,B\,\mathrm{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Csc}\Big[\frac{c}{2}\Big]\,\mathrm{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),2\Big]$$
$$\mathrm{Sec}\Big[\frac{c}{2}\Big]\,\mathrm{Sec}[c+d\,x]^{3/2}\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\,\mathrm{Sin}[c]\Big)\Big/$$
$$\Big(d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\Big)+$$
$$\Big(4\,C\,\mathrm{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Csc}\Big[\frac{c}{2}\Big]\,\mathrm{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),2\Big]$$
$$\mathrm{Sec}\Big[\frac{c}{2}\Big]\,\mathrm{Sec}[c+d\,x]^{3/2}\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\,\mathrm{Sin}[c]\Big)\Big/$$
$$\Big(3\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\Big)+$$
$$\frac{1}{(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3}$$
$$\mathrm{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,\mathrm{Sec}[c+d\,x]^{3/2}\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)$$
$$\Bigg(-\frac{4\,(39\,A-9\,B-C+10\,A\,\mathrm{Cos}[2\,c])\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}\big[\frac{c}{2}\big]\,\mathrm{Sec}\big[\frac{c}{2}\big]}{5\,d}+$$
$$\frac{8\,\mathrm{Sec}\big[\frac{c}{2}\big]\,\mathrm{Sec}\big[\frac{c}{2}+\frac{d\,x}{2}\big]\,\big(23\,A\,\mathrm{Sin}\big[\frac{d\,x}{2}\big]-9\,B\,\mathrm{Sin}\big[\frac{d\,x}{2}\big]+C\,\mathrm{Sin}\big[\frac{d\,x}{2}\big]\big)}{3\,d}+$$
$$\frac{4\,\mathrm{Sec}\big[\frac{c}{2}\big]\,\mathrm{Sec}\big[\frac{c}{2}+\frac{d\,x}{2}\big]^5\,\big(A\,\mathrm{Sin}\big[\frac{d\,x}{2}\big]-B\,\mathrm{Sin}\big[\frac{d\,x}{2}\big]+C\,\mathrm{Sin}\big[\frac{d\,x}{2}\big]\big)}{5\,d}-\frac{1}{15\,d}$$
$$8\,\mathrm{Sec}\Big[\frac{c}{2}\Big]\,\mathrm{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^3\,\Big(17\,A\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]-12\,B\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]+7\,C\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]\Big)+$$
$$\frac{32\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{d}+\frac{8\,(23\,A-9\,B+C)\,\mathrm{Tan}\big[\frac{c}{2}\big]}{3\,d}-$$
$$\frac{8\,(17\,A-12\,B+7\,C)\,\mathrm{Sec}\big[\frac{c}{2}+\frac{d\,x}{2}\big]^2\,\mathrm{Tan}\big[\frac{c}{2}\big]}{15\,d}+\frac{4\,(A-B+C)\,\mathrm{Sec}\big[\frac{c}{2}+\frac{d\,x}{2}\big]^4\,\mathrm{Tan}\big[\frac{c}{2}\big]}{5\,d}\Bigg)$$

Problem 576: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\mathrm{Sec}[c+d\,x]^{3/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 274 leaves, 9 steps):

$$-\frac{1}{10\,a^3\,d}\left(119\,A-49\,B+9\,C\right)\sqrt{\text{Cos}[c+d\,x]}\ \text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{6\,a^3\,d}\left(33\,A-13\,B+3\,C\right)\sqrt{\text{Cos}[c+d\,x]}\ \text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}+\frac{\left(33\,A-13\,B+3\,C\right)\text{Sin}[c+d\,x]}{6\,a^3\,d\sqrt{\text{Sec}[c+d\,x]}}-\frac{\left(A-B+C\right)\text{Sin}[c+d\,x]}{5\,d\sqrt{\text{Sec}[c+d\,x]}\left(a+a\,\text{Sec}[c+d\,x]\right)^3}-\frac{\left(2\,A-B\right)\text{Sin}[c+d\,x]}{3\,a\,d\sqrt{\text{Sec}[c+d\,x]}\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-\frac{\left(119\,A-49\,B+9\,C\right)\text{Sin}[c+d\,x]}{30\,d\sqrt{\text{Sec}[c+d\,x]}\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}$$

Result (type 5, 1467 leaves):

$$-\Bigg(\Bigg(\Bigg(238\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Big/\left(5\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)\Bigg)+$$

$$\Bigg(98\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Big/\left(5\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-$$

$$\Bigg(18\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Big/\left(5\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\Bigg(44\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\text{Cos}[c+d\,x]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\Big) \Big/ \left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(a+a \text{Sec}[c+d x]\right)^3\right) - \left(52 B \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\text{Cos}[c+d x]} \text{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/ \left(3 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(a+a \text{Sec}[c+d x]\right)^3\right) + \left(4 C \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\text{Cos}[c+d x]} \text{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sin}[c]\right) \Big/ \left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(a+a \text{Sec}[c+d x]\right)^3\right) + \frac{1}{\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(a+a \text{Sec}[c+d x]\right)^3} \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\left(\frac{1}{5 d} 4 \left(89 A-39 B+9 C+30 A \text{Cos}[2 c]-10 B \text{Cos}[2 c]\right) \text{Cos}[d x] \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] + \frac{16 A \text{Cos}[2 d x] \text{Sin}[2 c]}{3 d} - \frac{4 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5 \left(A \text{Sin}\left[\frac{d x}{2}\right]-B \text{Sin}\left[\frac{d x}{2}\right]+C \text{Sin}\left[\frac{d x}{2}\right]\right)}{5 d} - \frac{1}{3 d} 8 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(43 A \text{Sin}\left[\frac{d x}{2}\right]-23 B \text{Sin}\left[\frac{d x}{2}\right]+9 C \text{Sin}\left[\frac{d x}{2}\right]\right) + \frac{1}{15 d} 8 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3 \left(22 A \text{Sin}\left[\frac{d x}{2}\right]-17 B \text{Sin}\left[\frac{d x}{2}\right]+12 C \text{Sin}\left[\frac{d x}{2}\right]\right) - \frac{32 (3 A-B) \text{Cos}[c] \text{Sin}[d x]}{d} + \frac{16 A \text{Cos}[2 c] \text{Sin}[2 d x]}{3 d} - \frac{8 (43 A-23 B+9 C) \text{Tan}\left[\frac{c}{2}\right]}{3 d} + \frac{8 (22 A-17 B+12 C) \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Tan}\left[\frac{c}{2}\right]}{15 d} - \frac{4 (A-B+C) \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Tan}\left[\frac{c}{2}\right]}{5 d}\right)$$

Problem 577: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2}{\text{Sec}[c+d x]^{5/2} \left(a+a \text{Sec}[c+d x]\right)^3} \, dx$$

Optimal (type 4, 313 leaves, 10 steps):

$$\frac{1}{10\,a^3\,d}7\,(33\,A-17\,B+7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,-$$
$$\frac{1}{6\,a^3\,d}(63\,A-33\,B+13\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{7\,(33\,A-17\,B+7\,C)\,\text{Sin}[c+d\,x]}{30\,a^3\,d\,\text{Sec}[c+d\,x]^{3/2}}-\frac{(63\,A-33\,B+13\,C)\,\text{Sin}[c+d\,x]}{6\,a^3\,d\,\sqrt{\text{Sec}[c+d\,x]}}-$$
$$\frac{(A-B+C)\,\text{Sin}[c+d\,x]}{5\,d\,\text{Sec}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^3}-\frac{(12\,A-7\,B+2\,C)\,\text{Sin}[c+d\,x]}{15\,a\,d\,\text{Sec}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^2}-$$
$$\frac{(63\,A-33\,B+13\,C)\,\text{Sin}[c+d\,x]}{10\,d\,\text{Sec}[c+d\,x]^{3/2}\,(a^3+a^3\,\text{Sec}[c+d\,x])}$$

Result (type 5, 1525 leaves):

$$\left(462\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Bigg/$$
$$\left(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)-$$
$$\left(238\,\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Bigg/$$
$$\left(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)+$$
$$\left(98\,\sqrt{2}\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Bigg/$$
$$\left(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)-$$
$$\left(84\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{Csc}\left[\frac{c}{2}\right]\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\Big)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$
$$\Big(44\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\Big)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^3\right)-$$
$$\Big(52\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\sqrt{\text{Cos}[c+d x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}[c]\Big)\Big/$$
$$\left(3\,d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$
$$\frac{1}{\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^3}$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Sec}[c+d x]^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\Bigg(-\frac{1}{5d}2\left(329A-178B+78C+133A\,\text{Cos}[2c]-60B\,\text{Cos}[2c]+20C\,\text{Cos}[2c]\right)\text{Cos}[d x]$$
$$\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]-\frac{16(3A-B)\,\text{Cos}[2d x]\,\text{Sin}[2c]}{3d}+\frac{8A\,\text{Cos}[3d x]\,\text{Sin}[3c]}{5d}+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5\left(A\,\text{Sin}\left[\frac{d x}{2}\right]-B\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{5d}-\frac{1}{15d}8\,\text{Sec}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(27A\,\text{Sin}\left[\frac{d x}{2}\right]-22B\,\text{Sin}\left[\frac{d x}{2}\right]+17C\,\text{Sin}\left[\frac{d x}{2}\right]\right)+\frac{1}{3d}8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]$$
$$\left(69A\,\text{Sin}\left[\frac{d x}{2}\right]-43B\,\text{Sin}\left[\frac{d x}{2}\right]+23C\,\text{Sin}\left[\frac{d x}{2}\right]\right)+\frac{8(133A-60B+20C)\,\text{Cos}[c]\,\text{Sin}[d x]}{5d}-$$
$$\frac{16(3A-B)\,\text{Cos}[2c]\,\text{Sin}[2d x]}{3d}+\frac{8A\,\text{Cos}[3c]\,\text{Sin}[3d x]}{5d}+\frac{8(69A-43B+23C)\,\text{Tan}\left[\frac{c}{2}\right]}{3d}-$$
$$\frac{8(27A-22B+17C)\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15d}+\frac{4(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5d}\Bigg)$$

Problem 578: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\text{Sec}[c+d x]^{5/2}\sqrt{a+a\,\text{Sec}[c+d x]}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 227 leaves, 6 steps):

$$\frac{\sqrt{a}\,(48 A+40 B+35 C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{64 d}+$$
$$\frac{a\,(48 A+40 B+35 C)\,\text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{64 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a\,(48 A+40 B+35 C)\,\text{Sec}[c+d x]^{5/2}\,\text{Sin}[c+d x]}{96 d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$
$$\frac{a\,(8 B+C)\,\text{Sec}[c+d x]^{7/2}\,\text{Sin}[c+d x]}{24 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{C\,\text{Sec}[c+d x]^{7/2}\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{4 d}$$

Result (type 3, 2038 leaves):

$$-\Bigg(\Bigg(\Bigg(\left(\frac{1}{256}+\frac{i}{256}\right)\left((-1+i)+\sqrt{2}\right)$$
$$\left((144+48 i) A+48\sqrt{2} A+(120+40 i) B+40\sqrt{2} B+(105+35 i) C+35\sqrt{2} C\right)$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/$$
$$\left(\sqrt{2}\,\left(i+\sqrt{2}\right) d\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,\text{Sec}[c+d x]^{5/2}\right)\Bigg)-$$
$$\Bigg(\left(\frac{1}{256}-\frac{i}{256}\right)\left((1+i)+\sqrt{2}\right)\Big((-144+48 i) A+48\sqrt{2} A-(120-40 i) B+40\sqrt{2} B-$$
$$(105-35 i) C+35\sqrt{2} C\Big)\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/$$
$$\left(\sqrt{2}\,\left(i+\sqrt{2}\right) d\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,\text{Sec}[c+d x]^{5/2}\right)+$$
$$\Bigg(\left(96 A+48 i\sqrt{2} A+80 B+40 i\sqrt{2} B+70 C+35 i\sqrt{2} C\right)\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/$$
$$\left(128\left(i+\sqrt{2}\right) d\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,\text{Sec}[c+d x]^{5/2}\right)-$$
$$\Bigg(\left(\frac{1}{512}-\frac{i}{512}\right)\left((-1+i)+\sqrt{2}\right)$$
$$\left((144+48 i) A+48\sqrt{2} A+(120+40 i) B+40\sqrt{2} B+(105+35 i) C+35\sqrt{2} C\right)$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$
$$\sqrt{a\,(1+\text{Sec}[c+d x])}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{5/2}\right)+$$

$$\left(\left(\frac{1}{512}+\frac{\mathrm{i}}{512}\right)\left((1+\mathrm{i})+\sqrt{2}\right)\left(\left(-144+48\,\mathrm{i}\right) A+48\sqrt{2}\, A-\left(120-40\,\mathrm{i}\right) B+40\sqrt{2}\, B-\left(105-35\,\mathrm{i}\right) C+35\sqrt{2}\, C\right)\right.$$
$$\operatorname{Log}\left[2+\sqrt{2}\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]$$
$$\left.\sqrt{a\,(1+\operatorname{Sec}[c+d x])}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{5/2}\right)+$$

$$\left((8 B+7 C) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\operatorname{Sec}[c+d x])}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(48 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)+$$

$$\left((48 A+40 B+35 C) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\operatorname{Sec}[c+d x])}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(64 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)+$$

$$\left((-8 B-7 C) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\operatorname{Sec}[c+d x])}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(48 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)+$$

$$\left((-48 A-40 B-35 C) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\operatorname{Sec}[c+d x])}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(64 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)+$$

$$\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\operatorname{Sec}[c+d x])}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left.\left(16 A \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+8 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+11 C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(32 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$

$$\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\operatorname{Sec}[c+d x])}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left.\left(16 A \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+8 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+11 C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$

$$\left(32\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{5/2}\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)+$$
$$\left(C\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(8\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^{5/2}\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\right)+$$
$$\left(C\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(8\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^{5/2}\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\right)$$

Problem 579: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 179 leaves, 5 steps):

$$\frac{\sqrt{a}\,(8\,A+6\,B+5\,C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{8\,d}+\frac{a\,(8\,A+6\,B+5\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{8\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a\,(6\,B+C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{12\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{C\,\text{Sec}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 3, 1772 leaves):

$$-\left(\left(\left(\left(\frac{1}{32}+\frac{i}{32}\right)\,\left((-1+i)+\sqrt{2}\right)\,\left((24+8\,i)\,A+8\,\sqrt{2}\,A+(18+6\,i)\,B+6\,\sqrt{2}\,B+(15+5\,i)\,C+5\,\sqrt{2}\,C\right)\right.\right.\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{-\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left.\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{5/2}\right)\right)-$$

$$\left(\left(\frac{1}{32}-\frac{i}{32}\right)\left((1+i)+\sqrt{2}\right)\left((-24+8i)A+8\sqrt{2}A-(18-6i)B+6\sqrt{2}B-(15-5i)C+5\sqrt{2}C\right)\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right)d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{5/2}\right)+$$
$$\left(\left(16A+8i\sqrt{2}A+12B+6i\sqrt{2}B+10C+5i\sqrt{2}C\right)\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(16\left(i+\sqrt{2}\right)d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{5/2}\right)-$$
$$\left(\left(\frac{1}{64}-\frac{i}{64}\right)\left((-1+i)+\sqrt{2}\right)\left((24+8i)A+8\sqrt{2}A+(18+6i)B+6\sqrt{2}B+(15+5i)C+5\sqrt{2}C\right)\right.$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]$$
$$\left.\sqrt{a\,(1+\text{Sec}[c+dx])}\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right)d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{5/2}\right)+$$
$$\left(\left(\frac{1}{64}+\frac{i}{64}\right)\left((1+i)+\sqrt{2}\right)\left((-24+8i)A+8\sqrt{2}A-(18-6i)B+6\sqrt{2}B-(15-5i)C+5\sqrt{2}C\right)\right.$$
$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]$$
$$\left.\sqrt{a\,(1+\text{Sec}[c+dx])}\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right)d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{5/2}\right)+$$
$$\left(C\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(6d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right.$$
$$\left.\text{Sec}[c+dx]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^3\right)+$$
$$\left((8A+6B+5C)\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(8d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right.$$
$$\left.\text{Sec}[c+dx]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)-$$
$$\left(C\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(6d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right.$$

$$\text{Sec}[c+d x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\Bigg)+$$
$$\left((-8 A-6 B-5 C)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\Bigg(8 d\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])$$
$$\text{Sec}[c+d x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg)+$$
$$\Bigg(\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(2 B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+C\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg)\Big/\Bigg(4 d\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])$$
$$\text{Sec}[c+d x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\Bigg)+$$
$$\Bigg(\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(2 B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+C\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg)\Big/\Bigg(4 d\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])$$
$$\text{Sec}[c+d x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\Bigg)$$

Problem 580: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Sec}[c+d x]}\,\sqrt{a+a\,\text{Sec}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\,dx$$

Optimal (type 3, 131 leaves, 4 steps):

$$\frac{\sqrt{a}\,(8 A+4 B+3 C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{4 d}+$$
$$\frac{a\,(4 B+C)\,\text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{4 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{C\,\text{Sec}[c+d x]^{3/2}\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{2 d}$$

Result (type 3, 1490 leaves):

$$-\Bigg(\Bigg(\left(\frac{1}{16}+\frac{i}{16}\right)\left((-1+i)+\sqrt{2}\right)\left((24+8 i) A+8\sqrt{2} A+(12+4 i) B+4\sqrt{2} B+(9+3 i) C+3\sqrt{2} C\right)$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{5/2}\right)\Bigg) -$$

$$\Bigg(\left(\frac{1}{16}-\frac{\mathrm{i}}{16}\right)\left((1+\mathrm{i})+\sqrt{2}\right)\left((-24+8\,\mathrm{i}) A+8\sqrt{2} A-(12-4\,\mathrm{i}) B+4\sqrt{2} B-(9-3\,\mathrm{i}) C+3\sqrt{2} C\right)$$

$$\operatorname{ArcTan}\left[\frac{\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2} \operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]}{\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2} \operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$

$$\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right] \sqrt{a\left(1+\operatorname{Sec}[c+d x]\right)}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{5/2}\right)+$$

$$\Bigg(\left(16 A+8\,\mathrm{i}\sqrt{2} A+8 B+4\,\mathrm{i}\sqrt{2} B+6 C+3\,\mathrm{i}\sqrt{2} C\right) \operatorname{Log}\left[\sqrt{2}+2 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]$$

$$\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right] \sqrt{a\left(1+\operatorname{Sec}[c+d x]\right)}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\Bigg) \Big/$$

$$\left(8\left(\mathrm{i}+\sqrt{2}\right) d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{5/2}\right)-$$

$$\Bigg(\left(\frac{1}{32}-\frac{\mathrm{i}}{32}\right)\left((-1+\mathrm{i})+\sqrt{2}\right)\left((24+8\,\mathrm{i}) A+8\sqrt{2} A+(12+4\,\mathrm{i}) B+4\sqrt{2} B+(9+3\,\mathrm{i}) C+3\sqrt{2} C\right)$$

$$\operatorname{Log}\left[2-\sqrt{2} \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2} \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]$$

$$\sqrt{a\left(1+\operatorname{Sec}[c+d x]\right)}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{5/2}\right)+$$

$$\Bigg(\left(\frac{1}{32}+\frac{\mathrm{i}}{32}\right)\left((1+\mathrm{i})+\sqrt{2}\right)\left((-24+8\,\mathrm{i}) A+8\sqrt{2} A-(12-4\,\mathrm{i}) B+4\sqrt{2} B-(9-3\,\mathrm{i}) C+3\sqrt{2} C\right)$$

$$\operatorname{Log}\left[2+\sqrt{2} \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2} \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]$$

$$\sqrt{a\left(1+\operatorname{Sec}[c+d x]\right)}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{5/2}\right)+$$

$$\left((4 B+3 C) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right] \sqrt{a\left(1+\operatorname{Sec}[c+d x]\right)}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$

$$\Bigg(4 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)$$

$$\operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg)+$$

$$\left((-4 B-3 C) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right] \sqrt{a\left(1+\operatorname{Sec}[c+d x]\right)}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$

$$\Bigg(4 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)$$

$$\operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg)+$$

$$\left(C \sqrt{a \left(1+\text{Sec}[c+d x]\right)} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right) \Big/ \left(2 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{5/2} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right)+\left(C \sqrt{a \left(1+\text{Sec}[c+d x]\right)} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right) \Big/ \left(2 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{5/2} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right)$$

Problem 581: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{a+a \text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{\sqrt{\text{Sec}[c+d x]}} \, dx$$

Optimal (type 3, 119 leaves, 4 steps):

$$\frac{\sqrt{a} (2 B+C) \text{ArcSinh}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{d}+\frac{a (2 A-C) \sqrt{\text{Sec}[c+d x]} \text{Sin}[c+d x]}{d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{C \sqrt{\text{Sec}[c+d x]} \sqrt{a+a \text{Sec}[c+d x]} \text{Sin}[c+d x]}{d}$$

Result (type 3, 627 leaves):

$$\frac{1}{d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2(c+d\,x)]\right)\text{Sec}[c+d\,x]^{5/2}}\left(\frac{1}{16}+\frac{i}{16}\right)\sqrt{a\left(1+\text{Sec}[c+d\,x]\right)}$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\frac{1}{i+\sqrt{2}}2\,i\sqrt{2}\left((-3+i)+\sqrt{2}\right)\left((1+i)+\sqrt{2}\right)$$
$$(2B+C)\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]-$$
$$\frac{1}{i+\sqrt{2}}2\sqrt{2}\left((-1+i)+\sqrt{2}\right)\left((3+i)+\sqrt{2}\right)(2B+C)$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\left(1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{i+\sqrt{2}}$$
$$(4+4\,i)\left(-2\,i+\sqrt{2}\right)(2B+C)\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]+$$
$$\frac{1}{i+\sqrt{2}}i\sqrt{2}\left((-1+i)+\sqrt{2}\right)\left((3+i)+\sqrt{2}\right)(2B+C)$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]+$$
$$\frac{1}{i+\sqrt{2}}\sqrt{2}\left((-3+i)+\sqrt{2}\right)\left((1+i)+\sqrt{2}\right)(2B+C)$$
$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]-$$
$$\frac{(8-8\,i)\,C\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}+(32-32\,i)\,A\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\frac{(8-8\,i)\,C\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\Bigg)$$

Problem 582: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{a+a\,\text{Sec}[c+d\,x]}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 3, 120 leaves, 4 steps):

$$\frac{2\sqrt{a}\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+$$
$$\frac{2a(A+3B)\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{2A\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3d\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 3, 347 leaves):

$$\frac{1}{12\,d\,\sqrt{\text{Sec}[c+d\,x]}}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}$$
$$\left(-6\,i\,\sqrt{2}\,C\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]-\right.$$
$$6\,i\,\sqrt{2}\,C\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(1+\sqrt{2}\right)\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]+6\,\sqrt{2}\,C$$
$$\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-3\,\sqrt{2}\,C\,\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$
$$3\,\sqrt{2}\,C\,\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$\left.12\,A\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+24\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+4\,A\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]\right)$$

Problem 586: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 283 leaves, 7 steps):

$$\frac{a^{3/2}\,(176\,A+150\,B+133\,C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{128\,d}+$$
$$\frac{a^2\,(176\,A+150\,B+133\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{128\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(176\,A+150\,B+133\,C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{192\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(80\,A+90\,B+67\,C)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{240\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a\,(10\,B+3\,C)\,\text{Sec}[c+d\,x]^{7/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{40\,d}+$$
$$\frac{C\,\text{Sec}[c+d\,x]^{7/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 3, 2352 leaves):

$$-\left(\left(\left(\left(\frac{1}{1024}+\frac{i}{1024}\right)\,\left((-1+i)+\sqrt{2}\right)\right.\right.\right.$$
$$\left(\left(528+176\,i\right)\,A+176\,\sqrt{2}\,A+\left(450+150\,i\right)\,B+150\,\sqrt{2}\,B+\left(399+133\,i\right)\,C+133\,\sqrt{2}\,C\right)$$

$$\text{ArcTan}\Big[\frac{\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]-\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]-\sqrt{2}\,\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]}{-\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]+\sqrt{2}\,\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]-\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]}\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Bigg)\Bigg/$$

$$\Big(\sqrt{2}\,\big(\mathbb{i}+\sqrt{2}\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{7/2}\Big)\Bigg)-$$

$$\Bigg(\Big(\frac{1}{1024}-\frac{\mathbb{i}}{1024}\Big)\,\Big((1+\mathbb{i})+\sqrt{2}\Big)\,\Big((-528+176\,\mathbb{i})\,A+176\,\sqrt{2}\,A-$$

$$(450-150\,\mathbb{i})\,B+150\,\sqrt{2}\,B-(399-133\,\mathbb{i})\,C+133\,\sqrt{2}\,C\Big)$$

$$\text{ArcTan}\Big[\frac{\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]+\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]-\sqrt{2}\,\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]}{\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]+\sqrt{2}\,\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]-\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]}\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3$$

$$\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Bigg)\Bigg/$$

$$\Big(\sqrt{2}\,\big(\mathbb{i}+\sqrt{2}\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{7/2}\Big)+$$

$$\Bigg(\Big(352\,A+176\,\mathbb{i}\,\sqrt{2}\,A+300\,B+150\,\mathbb{i}\,\sqrt{2}\,B+266\,C+133\,\mathbb{i}\,\sqrt{2}\,C\Big)\,\text{Log}\Big[\sqrt{2}+2\,\text{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Bigg)\Bigg/$$

$$\Big(512\,\big(\mathbb{i}+\sqrt{2}\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{7/2}\Big)-$$

$$\Bigg(\Big(\frac{1}{2048}-\frac{\mathbb{i}}{2048}\Big)\,\Big((-1+\mathbb{i})+\sqrt{2}\Big)$$

$$\Big((528+176\,\mathbb{i})\,A+176\,\sqrt{2}\,A+(450+150\,\mathbb{i})\,B+150\,\sqrt{2}\,B+(399+133\,\mathbb{i})\,C+133\,\sqrt{2}\,C\Big)$$

$$\text{Log}\Big[2-\sqrt{2}\,\text{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]-\sqrt{2}\,\text{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3$$

$$\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Bigg)\Bigg/$$

$$\Big(\sqrt{2}\,\big(\mathbb{i}+\sqrt{2}\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{7/2}\Big)+$$

$$\Bigg(\Big(\frac{1}{2048}+\frac{\mathbb{i}}{2048}\Big)\,\Big((1+\mathbb{i})+\sqrt{2}\Big)$$

$$\Big((-528+176\,\mathbb{i})\,A+176\,\sqrt{2}\,A-(450-150\,\mathbb{i})\,B+150\,\sqrt{2}\,B-(399-133\,\mathbb{i})\,C+133\,\sqrt{2}\,C\Big)$$

$$\text{Log}\Big[2+\sqrt{2}\,\text{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]-\sqrt{2}\,\text{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3$$

$$\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Bigg)\Bigg/$$

$$\Big(\sqrt{2}\,\big(\mathbb{i}+\sqrt{2}\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{7/2}\Big)+$$

$$\Bigg(C\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Bigg)\Bigg/$$

$$\left(40\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^5\right)+$$

$$\left(\left(16\,A+30\,B+29\,C\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\right.$$

$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(192\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$

$$\left(\left(176\,A+150\,B+133\,C\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\right.$$

$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(256\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)-$$

$$\left(C\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(40\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^5\right)+$$

$$\left(\left(-16\,A-30\,B-29\,C\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\right.$$

$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(192\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$

$$\left(\left(-176\,A-150\,B-133\,C\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\right.$$

$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(256\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)+$$

$$\left(\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left.\left(2\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$

$$\left(32\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right.$$

$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\right)+$$

$$\left(\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left.\left(2\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$

$$\left(32\, d\, (A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2dx])\,\text{Sec}[c+dx]^{7/2}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4\right)+$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+dx)\right]^3 (a\,(1+\text{Sec}[c+dx]))^{3/2}\,(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2)\left(48\,A\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+38\,B\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+37\,C\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\Big/$$
$$\left(128\, d\, (A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2dx])\,\text{Sec}[c+dx]^{7/2}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2\right)+$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+dx)\right]^3 (a\,(1+\text{Sec}[c+dx]))^{3/2}\,(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2)\left(48\,A\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+38\,B\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+37\,C\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\Big/$$
$$\left(128\, d\, (A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2dx])\,\text{Sec}[c+dx]^{7/2}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2\right)$$

Problem 587: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+dx]^{3/2}\,(a+a\,\text{Sec}[c+dx])^{3/2}\,(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2)\,dx$$

Optimal (type 3, 233 leaves, 6 steps):

$$\frac{a^{3/2}\,(112A+88B+75C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{64\,d}+\frac{a^2\,(112A+88B+75C)\,\text{Sec}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{64\,d\,\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{a^2\,(48A+56B+39C)\,\text{Sec}[c+dx]^{5/2}\,\text{Sin}[c+dx]}{96\,d\,\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{a\,(8B+3C)\,\text{Sec}[c+dx]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{24\,d}+\frac{C\,\text{Sec}[c+dx]^{5/2}\,(a+a\,\text{Sec}[c+dx])^{3/2}\,\text{Sin}[c+dx]}{4\,d}$$

Result (type 3, 2084 leaves):

$$-\left(\left(\left(\frac{1}{512}+\frac{i}{512}\right)\left((-1+i)+\sqrt{2}\right)\right.\right.$$

$$\Big(\Big((336+112\,i)\,A+112\sqrt{2}\,A+(264+88\,i)\,B+88\sqrt{2}\,B+(225+75\,i)\,C+75\sqrt{2}\,C\Big)$$

$$\text{ArcTan}\Big[\frac{\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]-\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]-\sqrt{2}\,\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]}{-\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]+\sqrt{2}\,\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]-\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]}\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Big)\Big/$$

$$\Big(\sqrt{2}\,\big(i+\sqrt{2}\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{7/2}\Big)\Big)-$$

$$\Big(\Big(\frac{1}{512}-\frac{i}{512}\Big)\Big((1+i)+\sqrt{2}\Big)\Big((-336+112\,i)\,A+112\sqrt{2}\,A-(264-88\,i)\,B+88\sqrt{2}\,B-$$

$$(225-75\,i)\,C+75\sqrt{2}\,C\Big)\,\text{ArcTan}\Big[\frac{\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]+\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]-\sqrt{2}\,\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]}{\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]+\sqrt{2}\,\text{Cos}\big[\frac{1}{4}(c+d\,x)\big]-\text{Sin}\big[\frac{1}{4}(c+d\,x)\big]}\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Big)\Big/$$

$$\Big(\sqrt{2}\,\big(i+\sqrt{2}\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{7/2}\Big)+$$

$$\Big(\Big(224\,A+112\,i\sqrt{2}\,A+176\,B+88\,i\sqrt{2}\,B+150\,C+75\,i\sqrt{2}\,C\Big)\,\text{Log}\Big[\sqrt{2}+2\,\text{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Big)\Big/$$

$$\Big(256\,\big(i+\sqrt{2}\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{7/2}\Big)-$$

$$\Big(\Big(\frac{1}{1024}-\frac{i}{1024}\Big)\Big((-1+i)+\sqrt{2}\Big)$$

$$\Big((336+112\,i)\,A+112\sqrt{2}\,A+(264+88\,i)\,B+88\sqrt{2}\,B+(225+75\,i)\,C+75\sqrt{2}\,C\Big)$$

$$\text{Log}\Big[2-\sqrt{2}\,\text{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]-\sqrt{2}\,\text{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3$$

$$\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Big)\Big/$$

$$\Big(\sqrt{2}\,\big(i+\sqrt{2}\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{7/2}\Big)+$$

$$\Big(\Big(\frac{1}{1024}+\frac{i}{1024}\Big)\Big((1+i)+\sqrt{2}\Big)$$

$$\Big((-336+112\,i)\,A+112\sqrt{2}\,A-(264-88\,i)\,B+88\sqrt{2}\,B-(225-75\,i)\,C+75\sqrt{2}\,C\Big)$$

$$\text{Log}\Big[2+\sqrt{2}\,\text{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]-\sqrt{2}\,\text{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3$$

$$\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Big)\Big/$$

$$\Big(\sqrt{2}\,\big(i+\sqrt{2}\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{7/2}\Big)+$$

$$\Big((8\,B+15\,C)\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^3\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Big)\Big/$$

$$\left(96\, d\, \left(A+2\, C+2\, B\, \text{Cos}[c+d\, x]+A\, \text{Cos}[2\, c+2\, d\, x]\right)\right.$$
$$\left.\text{Sec}[c+d\, x]^{7/2} \left(\text{Cos}\left[\frac{1}{2}\, (c+d\, x)\right]-\text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]\right)^3\right)+$$
$$\left(\left(112\, A+88\, B+75\, C\right)\, \text{Sec}\left[\frac{1}{2}\, (c+d\, x)\right]^3 \left(a\, \left(1+\text{Sec}[c+d\, x]\right)\right)^{3/2}\right.$$
$$\left.\left(A+B\, \text{Sec}[c+d\, x]+C\, \text{Sec}[c+d\, x]^2\right)\right)\Big/ \left(128\, d\, \left(A+2\, C+2\, B\, \text{Cos}[c+d\, x]+A\, \text{Cos}[2\, c+2\, d\, x]\right)\right.$$
$$\left.\text{Sec}[c+d\, x]^{7/2} \left(\text{Cos}\left[\frac{1}{2}\, (c+d\, x)\right]-\text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]\right)\right)+$$
$$\left(\left(-8\, B-15\, C\right)\, \text{Sec}\left[\frac{1}{2}\, (c+d\, x)\right]^3 \left(a\, \left(1+\text{Sec}[c+d\, x]\right)\right)^{3/2} \left(A+B\, \text{Sec}[c+d\, x]+C\, \text{Sec}[c+d\, x]^2\right)\right)\Big/$$
$$\left(96\, d\, \left(A+2\, C+2\, B\, \text{Cos}[c+d\, x]+A\, \text{Cos}[2\, c+2\, d\, x]\right)\right.$$
$$\left.\text{Sec}[c+d\, x]^{7/2} \left(\text{Cos}\left[\frac{1}{2}\, (c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]\right)^3\right)+$$
$$\left(\left(-112\, A-88\, B-75\, C\right)\, \text{Sec}\left[\frac{1}{2}\, (c+d\, x)\right]^3 \left(a\, \left(1+\text{Sec}[c+d\, x]\right)\right)^{3/2}\right.$$
$$\left.\left(A+B\, \text{Sec}[c+d\, x]+C\, \text{Sec}[c+d\, x]^2\right)\right)\Big/ \left(128\, d\, \left(A+2\, C+2\, B\, \text{Cos}[c+d\, x]+A\, \text{Cos}[2\, c+2\, d\, x]\right)\right.$$
$$\left.\text{Sec}[c+d\, x]^{7/2} \left(\text{Cos}\left[\frac{1}{2}\, (c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]\right)\right)+$$
$$\left(\text{Sec}\left[\frac{1}{2}\, (c+d\, x)\right]^3 \left(a\, \left(1+\text{Sec}[c+d\, x]\right)\right)^{3/2} \left(A+B\, \text{Sec}[c+d\, x]+C\, \text{Sec}[c+d\, x]^2\right)\right.$$
$$\left.\left(16\, A\, \text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]+24\, B\, \text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]+19\, C\, \text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]\right)\right)\Big/$$
$$\left(64\, d\, \left(A+2\, C+2\, B\, \text{Cos}[c+d\, x]+A\, \text{Cos}[2\, c+2\, d\, x]\right)\, \text{Sec}[c+d\, x]^{7/2}\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\, (c+d\, x)\right]-\text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]\right)^2\right)+$$
$$\left(\text{Sec}\left[\frac{1}{2}\, (c+d\, x)\right]^3 \left(a\, \left(1+\text{Sec}[c+d\, x]\right)\right)^{3/2} \left(A+B\, \text{Sec}[c+d\, x]+C\, \text{Sec}[c+d\, x]^2\right)\right.$$
$$\left.\left(16\, A\, \text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]+24\, B\, \text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]+19\, C\, \text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]\right)\right)\Big/$$
$$\left(64\, d\, \left(A+2\, C+2\, B\, \text{Cos}[c+d\, x]+A\, \text{Cos}[2\, c+2\, d\, x]\right)\, \text{Sec}[c+d\, x]^{7/2}\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\, (c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]\right)^2\right)+$$
$$\left(C\, \text{Sec}\left[\frac{1}{2}\, (c+d\, x)\right]^2 \left(a\, \left(1+\text{Sec}[c+d\, x]\right)\right)^{3/2} \left(A+B\, \text{Sec}[c+d\, x]+C\, \text{Sec}[c+d\, x]^2\right)\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]\right)\Big/ \left(16\, d\, \left(A+2\, C+2\, B\, \text{Cos}[c+d\, x]+A\, \text{Cos}[2\, c+2\, d\, x]\right)\right.$$
$$\left.\text{Sec}[c+d\, x]^{7/2} \left(\text{Cos}\left[\frac{1}{2}\, (c+d\, x)\right]-\text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]\right)^4\right)+$$
$$\left(C\, \text{Sec}\left[\frac{1}{2}\, (c+d\, x)\right]^2 \left(a\, \left(1+\text{Sec}[c+d\, x]\right)\right)^{3/2} \left(A+B\, \text{Sec}[c+d\, x]+C\, \text{Sec}[c+d\, x]^2\right)\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg/\left(16 d\,(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\,\text{Sec}[c+d x]^{7/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)$$

Problem 588: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \sqrt{\text{Sec}[c+d x]}\,(a+a \text{Sec}[c+d x])^{3/2}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 181 leaves, 5 steps):

$$\frac{a^{3/2}(24 A+14 B+11 C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{8 d}+\frac{a^2(24 A+30 B+19 C)\,\text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{24 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{a(2 B+C)\,\text{Sec}[c+d x]^{3/2}\sqrt{a+a \text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{4 d}+\frac{C \text{Sec}[c+d x]^{3/2}(a+a \text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{3 d}$$

Result (type 3, 1796 leaves):

$$-\Bigg(\Bigg(\Bigg(\left(\frac{1}{64}+\frac{i}{64}\right)\left((-1+i)+\sqrt{2}\right)\left((72+24 i) A+24\sqrt{2} A+(42+14 i) B+14\sqrt{2} B+(33+11 i) C+11\sqrt{2} C\right)$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3(a(1+\text{Sec}[c+d x]))^{3/2}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\Bigg)\Bigg/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right) d\,(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\,\text{Sec}[c+d x]^{7/2}\right)\Bigg)-$$
$$\Bigg(\left(\frac{1}{64}-\frac{i}{64}\right)\left((1+i)+\sqrt{2}\right)\left((-72+24 i) A+24\sqrt{2} A-(42-14 i) B+14\sqrt{2} B-(33-11 i) C+\right.$$
$$\left.11\sqrt{2} C\right)\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3(a(1+\text{Sec}[c+d x]))^{3/2}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\Bigg)\Bigg/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right) d\,(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\,\text{Sec}[c+d x]^{7/2}\right)+$$

$$\left(\left(48\,A+24\,i\,\sqrt{2}\,A+28\,B+14\,i\,\sqrt{2}\,B+22\,C+11\,i\,\sqrt{2}\,C\right)\,\mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right.$$
$$\left.\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(32\,\left(i+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)-$$
$$\left(\left(\frac{1}{128}-\frac{i}{128}\right)\,\left((-1+i)+\sqrt{2}\right)\right.$$
$$\left((72+24\,i)\,A+24\,\sqrt{2}\,A+(42+14\,i)\,B+14\,\sqrt{2}\,B+(33+11\,i)\,C+11\,\sqrt{2}\,C\right)$$
$$\mathrm{Log}\left[2-\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$
$$\left.\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$
$$\left(\left(\frac{1}{128}+\frac{i}{128}\right)\,\left((1+i)+\sqrt{2}\right)\right.$$
$$\left((-72+24\,i)\,A+24\,\sqrt{2}\,A-(42-14\,i)\,B+14\,\sqrt{2}\,B-(33-11\,i)\,C+11\,\sqrt{2}\,C\right)$$
$$\mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$
$$\left.\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$
$$\left(C\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(12\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$
$$\left((8\,A+14\,B+11\,C)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\right.$$
$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(16\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)-$$
$$\left(C\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(12\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$
$$\left((-8\,A-14\,B-11\,C)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{3/2}\right.$$
$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(16\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)+$$

$$\left(\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^3 \left(a\left(1+\mathrm{Sec}[c+d x]\right)\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)\left(2 B\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]+3 C\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/\left(8 d\left(A+2 C+2 B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2 c+2 d x]\right)\mathrm{Sec}[c+d x]^{7/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+\left(\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^3 \left(a\left(1+\mathrm{Sec}[c+d x]\right)\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)\left(2 B\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]+3 C\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/\left(8 d\left(A+2 C+2 B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2 c+2 d x]\right)\mathrm{Sec}[c+d x]^{7/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)$$

Problem 589: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\left(a+a\,\mathrm{Sec}[c+d x]\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)}{\sqrt{\mathrm{Sec}[c+d x]}}\,dx$$

Optimal (type 3, 183 leaves, 5 steps):

$$\frac{a^{3/2}(8 A+12 B+7 C)\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d x]}{\sqrt{a+a\,\mathrm{Sec}[c+d x]}}\right]}{4 d}+\frac{a^2(8 A-4 B-5 C)\sqrt{\mathrm{Sec}[c+d x]}\,\mathrm{Sin}[c+d x]}{4 d\sqrt{a+a\,\mathrm{Sec}[c+d x]}}+\frac{a(4 B+3 C)\sqrt{\mathrm{Sec}[c+d x]}\sqrt{a+a\,\mathrm{Sec}[c+d x]}\,\mathrm{Sin}[c+d x]}{4 d}+\frac{C\sqrt{\mathrm{Sec}[c+d x]}\left(a+a\,\mathrm{Sec}[c+d x]\right)^{3/2}\mathrm{Sin}[c+d x]}{2 d}$$

Result (type 3, 1627 leaves):

$$-\left(\left(\left(\frac{1}{32}+\frac{i}{32}\right)\left((-1+i)+\sqrt{2}\right)\left((24+8 i)A+8\sqrt{2}A+(36+12 i)B+12\sqrt{2}B+(21+7 i)C+7\sqrt{2}C\right)\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{4}(c+d x)\right]}{-\mathrm{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\mathrm{Sec}[c+d x]\right)\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)\right)\Big/\right.$$

$$\left(\sqrt{2}\,\left(\mathrm{i}+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)\Bigg)-$$

$$\Bigg(\left(\frac{1}{32}-\frac{\mathrm{i}}{32}\right)\,\left((1+\mathrm{i})+\sqrt{2}\right)\,\left((-24+8\,\mathrm{i})\,A+8\,\sqrt{2}\,A-(36-12\,\mathrm{i})\,B+12\,\sqrt{2}\,B-(21-7\,\mathrm{i})\,C+7\,\sqrt{2}\,C\right)$$

$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{2}\,\left(\mathrm{i}+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$

$$\Bigg(\left(16\,A+8\,\mathrm{i}\,\sqrt{2}\,A+24\,B+12\,\mathrm{i}\,\sqrt{2}\,B+14\,C+7\,\mathrm{i}\,\sqrt{2}\,C\right)\,\mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$

$$\left(16\,\left(\mathrm{i}+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)-$$

$$\Bigg(\left(\frac{1}{64}-\frac{\mathrm{i}}{64}\right)\,\left((-1+\mathrm{i})+\sqrt{2}\right)\,\left((24+8\,\mathrm{i})\,A+8\,\sqrt{2}\,A+(36+12\,\mathrm{i})\,B+12\,\sqrt{2}\,B+(21+7\,\mathrm{i})\,C+7\,\sqrt{2}\,C\right)$$

$$\mathrm{Log}\left[2-\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$

$$\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{2}\,\left(\mathrm{i}+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$

$$\Bigg(\left(\frac{1}{64}+\frac{\mathrm{i}}{64}\right)\,\left((1+\mathrm{i})+\sqrt{2}\right)\,\left((-24+8\,\mathrm{i})\,A+8\,\sqrt{2}\,A-(36-12\,\mathrm{i})\,B+12\,\sqrt{2}\,B-(21-7\,\mathrm{i})\,C+7\,\sqrt{2}\,C\right)$$

$$\mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$

$$\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{2}\,\left(\mathrm{i}+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$

$$\left((4\,B+7\,C)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Bigg/$$

$$\Bigg(8\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\mathrm{Sec}[c+d\,x]^{7/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Bigg)+$$

$$\left((-4\,B-7\,C)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Bigg/$$

$$\Bigg(8\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\mathrm{Sec}[c+d\,x]^{7/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Bigg)+$$

$$\left(2\,A\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/\left(d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$
$$\left(C\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/\left(4\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{7/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)+$$
$$\left(C\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/\left(4\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{7/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)$$

Problem 590: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\mathrm{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 3, 177 leaves, 5 steps):

$$\frac{a^{3/2}\,(2\,B+3\,C)\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{d}+\frac{a^2\,(8\,A+6\,B-3\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}-\frac{a\,(2\,A-3\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{3\,d}+\frac{2\,A\,(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}$$

Result (type 3, 1406 leaves):

$$-\left(\left(\left(\frac{1}{8}+\frac{i}{8}\right)\,\left((-1+i)+\sqrt{2}\right)\,\left((6+2\,i)\,B+2\,\sqrt{2}\,B+(9+3\,i)\,C+3\,\sqrt{2}\,C\right)\,\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{-\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{7/2}\right)\right)-$$

$$\left(\left(\frac{1}{8}-\frac{i}{8}\right)\left((1+i)+\sqrt{2}\right)\left((-6+2 i) B+2\sqrt{2} B-(9-3 i) C+3\sqrt{2} C\right)\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(\sqrt{2}\left(i+\sqrt{2}\right) d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\text{Sec}[c+d x]^{7/2}\right)+$$

$$\left(\left(4 B+2 i\sqrt{2} B+6 C+3 i\sqrt{2} C\right)\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\right.$$

$$\left.\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(4\left(i+\sqrt{2}\right) d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\text{Sec}[c+d x]^{7/2}\right)-$$

$$\left(\left(\frac{1}{16}-\frac{i}{16}\right)\left((-1+i)+\sqrt{2}\right)\left((6+2 i) B+2\sqrt{2} B+(9+3 i) C+3\sqrt{2} C\right)\right.$$

$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3$$

$$\left.\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(\sqrt{2}\left(i+\sqrt{2}\right) d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\text{Sec}[c+d x]^{7/2}\right)+$$

$$\left(\left(\frac{1}{16}+\frac{i}{16}\right)\left((1+i)+\sqrt{2}\right)\left((-6+2 i) B+2\sqrt{2} B-(9-3 i) C+3\sqrt{2} C\right)\right.$$

$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3$$

$$\left.\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(\sqrt{2}\left(i+\sqrt{2}\right) d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\text{Sec}[c+d x]^{7/2}\right)+$$

$$\left(C\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(2 d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\right.$$

$$\left.\text{Sec}[c+d x]^{7/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)-$$

$$\left(C\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(2 d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\right.$$

$$\left.\text{Sec}[c+d x]^{7/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)+$$

$$\left(A\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right.$$

$$\left.\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)\Big/\left(3 d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\text{Sec}[c+d x]^{7/2}\right)+$$

$$\left((3A+2B)\,\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2 (a(1+\mathrm{Sec}[c+dx]))^{3/2}\left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\Big/\left(d\,(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx])\,\mathrm{Sec}[c+dx]^{7/2}\right)$$

Problem 591: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sec}[c+dx])^{3/2}\left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)}{\mathrm{Sec}[c+dx]^{5/2}}\,dx$$

Optimal (type 3, 172 leaves, 5 steps):

$$\frac{2a^{3/2}\,C\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+dx]}{\sqrt{a+a\,\mathrm{Sec}[c+dx]}}\right]}{d}+\frac{2a^2\,(12A+20B+15C)\sqrt{\mathrm{Sec}[c+dx]}\,\mathrm{Sin}[c+dx]}{15\,d\sqrt{a+a\,\mathrm{Sec}[c+dx]}}+\frac{2a\,(3A+5B)\sqrt{a+a\,\mathrm{Sec}[c+dx]}\,\mathrm{Sin}[c+dx]}{15\,d\sqrt{\mathrm{Sec}[c+dx]}}+\frac{2A\,(a+a\,\mathrm{Sec}[c+dx])^{3/2}\,\mathrm{Sin}[c+dx]}{5\,d\,\mathrm{Sec}[c+dx]^{3/2}}$$

Result (type 3, 387 leaves):

$$\frac{1}{60\,d\sqrt{\mathrm{Sec}[c+dx]}}\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\mathrm{Sec}[c+dx])}\left(-30\,i\sqrt{2}\,C\,\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]-\left(-1+\sqrt{2}\right)\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]}{\left(1+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]-\right.$$
$$30\,i\sqrt{2}\,C\,\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]-\left(1+\sqrt{2}\right)\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]}{\left(-1+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]+$$
$$30\sqrt{2}\,C\,\mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-$$
$$15\sqrt{2}\,C\,\mathrm{Log}\left[2-\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-$$
$$15\sqrt{2}\,C\,\mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+$$
$$120\,A\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]+180\,B\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]+120\,C\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]+$$
$$\left.30\,A\,\mathrm{Sin}\left[\frac{3}{2}(c+dx)\right]+20\,B\,\mathrm{Sin}\left[\frac{3}{2}(c+dx)\right]+6\,A\,\mathrm{Sin}\left[\frac{5}{2}(c+dx)\right]\right)$$

Problem 595: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+dx]^{5/2}\,(a+a\,\mathrm{Sec}[c+dx])^{5/2}\left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)dx$$

Optimal (type 3, 333 leaves, 8 steps):

$$\frac{a^{5/2}\,(1304\,A+1132\,B+1015\,C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{512\,d}+\frac{a^3\,(1304\,A+1132\,B+1015\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{512\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,(1304\,A+1132\,B+1015\,C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{768\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,(680\,A+628\,B+545\,C)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{960\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{1}{480\,d}a^2\,(120\,A+156\,B+115\,C)\,\text{Sec}[c+d\,x]^{7/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+\frac{a\,(12\,B+5\,C)\,\text{Sec}[c+d\,x]^{7/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{60\,d}+\frac{C\,\text{Sec}[c+d\,x]^{7/2}\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{6\,d}$$

Result (type 3, 1361 leaves):

$$-\Bigg(\Bigg(\Bigg(\left(\frac{1}{8192}+\frac{i}{8192}\right)\left((-1+i)+\sqrt{2}\right)\Big((3912+1304\,i)\,A+1304\,\sqrt{2}\,A+(3396+1132\,i)\,B+1132\,\sqrt{2}\,B+(3045+1015\,i)\,C+1015\,\sqrt{2}\,C\Big)\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{5/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Bigg)\Bigg/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{9/2}\right)\Bigg)-$$

$$\Bigg(\left(\frac{1}{8192}-\frac{i}{8192}\right)\left((1+i)+\sqrt{2}\right)\Big((-3912+1304\,i)\,A+1304\,\sqrt{2}\,A-(3396-1132\,i)\,B+1132\,\sqrt{2}\,B-(3045-1015\,i)\,C+1015\,\sqrt{2}\,C\Big)\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{5/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\Bigg)\Bigg/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{9/2}\right)+$$

$$\left(\left(2608\,A+1304\,i\,\sqrt{2}\,A+2264\,B+1132\,i\,\sqrt{2}\,B+2030\,C+1015\,i\,\sqrt{2}\,C\right)\,\mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right.$$
$$\left.\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(4096\,\left(i+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{9/2}\right)-$$
$$\left(\left(\frac{1}{16\,384}-\frac{i}{16\,384}\right)\,\left((-1+i)+\sqrt{2}\right)\right.$$
$$\left((3912+1304\,i)\,A+1304\,\sqrt{2}\,A+(3396+1132\,i)\,B+1132\,\sqrt{2}\,B+(3045+1015\,i)\,C+1015\,\sqrt{2}\,C\right)$$
$$\mathrm{Log}\left[2-\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$
$$\left.\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{9/2}\right)+$$
$$\left(\left(\frac{1}{16\,384}+\frac{i}{16\,384}\right)\,\left((1+i)+\sqrt{2}\right)\,\left((-3912+1304\,i)\,A+1304\,\sqrt{2}\,A-\right.\right.$$
$$\left.(3396-1132\,i)\,B+1132\,\sqrt{2}\,B-(3045-1015\,i)\,C+1015\,\sqrt{2}\,C\right)$$
$$\mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$
$$\left.\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{9/2}\right)+$$
$$\frac{1}{491\,520\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)}$$
$$\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\mathrm{Sec}[c+d\,x]^{3/2}\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(-96\,720\,A\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-78\,120\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-47\,250\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$
$$164\,240\,A\,\mathrm{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+167\,944\,B\,\mathrm{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+184\,490\,C\,\mathrm{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]-$$
$$7560\,A\,\mathrm{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+13\,980\,B\,\mathrm{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+28\,275\,C\,\mathrm{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+$$
$$101\,160\,A\,\mathrm{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]+98\,484\,B\,\mathrm{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]+88\,305\,C\,\mathrm{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]+$$
$$6520\,A\,\mathrm{Sin}\left[\frac{9}{2}\,(c+d\,x)\right]+5660\,B\,\mathrm{Sin}\left[\frac{9}{2}\,(c+d\,x)\right]+5075\,C\,\mathrm{Sin}\left[\frac{9}{2}\,(c+d\,x)\right]+$$
$$\left.19\,560\,A\,\mathrm{Sin}\left[\frac{11}{2}\,(c+d\,x)\right]+16\,980\,B\,\mathrm{Sin}\left[\frac{11}{2}\,(c+d\,x)\right]+15\,225\,C\,\mathrm{Sin}\left[\frac{11}{2}\,(c+d\,x)\right]\right)$$

Problem 596: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 281 leaves, 7 steps):

$$\frac{a^{5/2}\left(400 A+326 B+283 C\right) \text{ArcSinh}\left[\frac{\sqrt{a} \text{ Tan}[c+d x]}{\sqrt{a+a \text{ Sec}[c+d x]}}\right]}{128 d}+\frac{a^3\left(400 A+326 B+283 C\right) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{128 d \sqrt{a+a \text{ Sec}[c+d x]}}+\frac{a^3\left(1040 A+950 B+787 C\right) \text{Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{960 d \sqrt{a+a \text{ Sec}[c+d x]}}+\frac{1}{240 d}a^2\left(80 A+110 B+79 C\right) \text{Sec}[c+d x]^{5/2} \sqrt{a+a \text{ Sec}[c+d x]} \text{ Sin}[c+d x]+\frac{a\left(2 B+C\right) \text{Sec}[c+d x]^{5/2}\left(a+a \text{ Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]}{8 d}+\frac{C \text{ Sec}[c+d x]^{5/2}\left(a+a \text{ Sec}[c+d x]\right)^{5/2} \text{Sin}[c+d x]}{5 d}$$

Result (type 3, 2352 leaves):

$$-\left(\left(\left(\left(\frac{1}{2048}+\frac{i}{2048}\right)\left((-1+i)+\sqrt{2}\right)\left(\left(1200+400 i\right) A+400 \sqrt{2} A+\left(978+326 i\right) B+326 \sqrt{2} B+\left(849+283 i\right) C+283 \sqrt{2} C\right) \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2} \text{ Sin}\left[\frac{1}{4}(c+d x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2} \text{ Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(A+B \text{ Sec}[c+d x]+C \text{ Sec}[c+d x]^2\right)\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right) d\left(A+2 C+2 B \text{ Cos}[c+d x]+A \text{ Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{9/2}\right)\right)-\left(\left(\frac{1}{2048}-\frac{i}{2048}\right)\left((1+i)+\sqrt{2}\right)\left(\left(-1200+400 i\right) A+400 \sqrt{2} A-\left(978-326 i\right) B+326 \sqrt{2} B-\left(849-283 i\right) C+283 \sqrt{2} C\right) \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2} \text{ Sin}\left[\frac{1}{4}(c+d x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2} \text{ Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(A+B \text{ Sec}[c+d x]+C \text{ Sec}[c+d x]^2\right)\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right) d\left(A+2 C+2 B \text{ Cos}[c+d x]+A \text{ Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{9/2}\right)+\left(\left(800 A+400 i \sqrt{2} A+652 B+326 i \sqrt{2} B+566 C+283 i \sqrt{2} C\right) \text{Log}\left[\sqrt{2}+2 \text{ Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(A+B \text{ Sec}[c+d x]+C \text{ Sec}[c+d x]^2\right)\right)\Big/\left(1024\left(i+\sqrt{2}\right) d\left(A+2 C+2 B \text{ Cos}[c+d x]+A \text{ Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{9/2}\right)-$$

$$\left(\left(\frac{1}{4096}-\frac{i}{4096}\right)\left((-1+i)+\sqrt{2}\right)\left(\left((1200+400\,i)\,A+400\sqrt{2}\,A+(978+326\,i)\,B+326\sqrt{2}\,B+(849+283\,i)\,C+283\sqrt{2}\,C\right)\right.\right.$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5$$
$$\left.(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\left(\left(\frac{1}{4096}+\frac{i}{4096}\right)\left((1+i)+\sqrt{2}\right)\left(\left((-1200+400\,i)\,A+400\sqrt{2}\,A-(978-326\,i)\,B+326\sqrt{2}\,B-(849-283\,i)\,C+283\sqrt{2}\,C\right)\right.\right.$$
$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5$$
$$\left.(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\left(C\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(80\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\text{Sec}[c+d\,x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\right)+$$
$$\left((16\,A+46\,B+59\,C)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(384\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\text{Sec}[c+d\,x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\right)+$$
$$\left((400\,A+326\,B+283\,C)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(512\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\text{Sec}[c+d\,x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)-$$
$$\left(C\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(80\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\text{Sec}[c+d\,x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\right)+$$
$$\left((-16\,A-46\,B-59\,C)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(384\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$

$$\text{Sec}[c+d x]^{9/2} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3\Big) +$$

$$\left(\left(-400 A-326 B-283 C\right) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{5/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(512 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{9/2} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right) +$$

$$\left(\text{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{5/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(2 B \text{Sin}\left[\frac{1}{2} (c+d x)\right]+5 C \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right) \Big/ \left(64 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{9/2} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4\right) +$$

$$\left(\text{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{5/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(2 B \text{Sin}\left[\frac{1}{2} (c+d x)\right]+5 C \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right) \Big/ \left(64 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{9/2} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4\right) +$$

$$\left(\text{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{5/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(80 A \text{Sin}\left[\frac{1}{2} (c+d x)\right]+86 B \text{Sin}\left[\frac{1}{2} (c+d x)\right]+75 C \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right) \Big/ \left(256 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{9/2} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right) +$$

$$\left(\text{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{5/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(80 A \text{Sin}\left[\frac{1}{2} (c+d x)\right]+86 B \text{Sin}\left[\frac{1}{2} (c+d x)\right]+75 C \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right) \Big/ \left(256 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{9/2} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right)$$

Problem 597: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \sqrt{\text{Sec}[c+d x]}\ (a+a\,\text{Sec}[c+d x])^{5/2}\ (A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\, dx$$

Optimal (type 3, 233 leaves, 6 steps):

$$\frac{a^{5/2}\ (304 A+200 B+163 C)\ \text{ArcSinh}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{64 d}+\frac{a^3\ (432 A+392 B+299 C)\ \text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{192 d \sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a^2\ (16 A+24 B+17 C)\ \text{Sec}[c+d x]^{3/2} \sqrt{a+a\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{32 d}+\frac{a\ (8 B+5 C)\ \text{Sec}[c+d x]^{3/2}\ (a+a\,\text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{24 d}+\frac{C\,\text{Sec}[c+d x]^{3/2}\ (a+a\,\text{Sec}[c+d x])^{5/2}\,\text{Sin}[c+d x]}{4 d}$$

Result (type 3, 2084 leaves):

$$-\Bigg(\Bigg(\Big(\frac{1}{1024}+\frac{i}{1024}\Big)\ \Big((-1+i)+\sqrt{2}\Big)\ \Big((912+304 i)\ A+304 \sqrt{2}\ A+(600+200 i)\ B+200 \sqrt{2}\ B+(489+163 i)\ C+163 \sqrt{2}\ C\Big)\ \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\ (c+d x)\right]-\text{Sin}\left[\frac{1}{4}\ (c+d x)\right]-\sqrt{2}\ \text{Sin}\left[\frac{1}{4}\ (c+d x)\right]}{-\text{Cos}\left[\frac{1}{4}\ (c+d x)\right]+\sqrt{2}\ \text{Cos}\left[\frac{1}{4}\ (c+d x)\right]-\text{Sin}\left[\frac{1}{4}\ (c+d x)\right]}\right]\ \text{Sec}\left[\frac{1}{2}\ (c+d x)\right]^5\ (a\ (1+\text{Sec}[c+d x]))^{5/2}\ (A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\Bigg)\Bigg/\Big(\sqrt{2}\ \big(i+\sqrt{2}\big)\ d\ (A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\ \text{Sec}[c+d x]^{9/2}\Big)\Bigg)-$$

$$\Bigg(\Big(\frac{1}{1024}-\frac{i}{1024}\Big)\ \Big((1+i)+\sqrt{2}\Big)\ \Big((-912+304 i)\ A+304 \sqrt{2}\ A-(600-200 i)\ B+200 \sqrt{2}\ B-(489-163 i)\ C+163 \sqrt{2}\ C\Big)\ \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\ (c+d x)\right]+\text{Sin}\left[\frac{1}{4}\ (c+d x)\right]-\sqrt{2}\ \text{Sin}\left[\frac{1}{4}\ (c+d x)\right]}{\text{Cos}\left[\frac{1}{4}\ (c+d x)\right]+\sqrt{2}\ \text{Cos}\left[\frac{1}{4}\ (c+d x)\right]-\text{Sin}\left[\frac{1}{4}\ (c+d x)\right]}\right]\ \text{Sec}\left[\frac{1}{2}\ (c+d x)\right]^5\ (a\ (1+\text{Sec}[c+d x]))^{5/2}\ (A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\Bigg)\Bigg/\Big(\sqrt{2}\ \big(i+\sqrt{2}\big)\ d\ (A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\ \text{Sec}[c+d x]^{9/2}\Big)+$$

$$\Bigg(\Big(608 A+304 i \sqrt{2}\ A+400 B+200 i \sqrt{2}\ B+326 C+163 i \sqrt{2}\ C\Big)\ \text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^5 \left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Big) \Big/$$
$$\left(512\left(\mathrm{i}+\sqrt{2}\right) d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\text{Sec}[c+d x]^{9/2}\right)-$$
$$\Bigg(\left(\frac{1}{2048}-\frac{\mathrm{i}}{2048}\right)\left(\left(-1+\mathrm{i}\right)+\sqrt{2}\right)$$
$$\left(\left(912+304\,\mathrm{i}\right) A+304\sqrt{2}\,A+\left(600+200\,\mathrm{i}\right) B+200\sqrt{2}\,B+\left(489+163\,\mathrm{i}\right) C+163\sqrt{2}\,C\right)$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\left(c+d x\right)\right]\right]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^5$$
$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/$$
$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\text{Sec}[c+d x]^{9/2}\right)+$$
$$\Bigg(\left(\frac{1}{2048}+\frac{\mathrm{i}}{2048}\right)\left(\left(1+\mathrm{i}\right)+\sqrt{2}\right)$$
$$\left(\left(-912+304\,\mathrm{i}\right) A+304\sqrt{2}\,A-\left(600-200\,\mathrm{i}\right) B+200\sqrt{2}\,B-\left(489-163\,\mathrm{i}\right) C+163\sqrt{2}\,C\right)$$
$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\left(c+d x\right)\right]\right]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^5$$
$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/$$
$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\text{Sec}[c+d x]^{9/2}\right)+$$
$$\left(\left(8 B+23 C\right)\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\Bigg(192\,d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)$$
$$\text{Sec}[c+d x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]-\text{Sin}\left[\frac{1}{2}\left(c+d x\right)\right]\right)^3\Bigg)+$$
$$\Bigg(\left(176 A+200 B+163 C\right)\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}$$
$$\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/\Bigg(256\,d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)$$
$$\text{Sec}[c+d x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]-\text{Sin}\left[\frac{1}{2}\left(c+d x\right)\right]\right)\Bigg)+$$
$$\left(\left(-8 B-23 C\right)\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\Bigg(192\,d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)$$
$$\text{Sec}[c+d x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]+\text{Sin}\left[\frac{1}{2}\left(c+d x\right)\right]\right)^3\Bigg)+$$
$$\Bigg(\left(-176 A-200 B-163 C\right)\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}$$
$$\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Bigg)\Big/\Bigg(256\,d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)$$
$$\text{Sec}[c+d x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]+\text{Sin}\left[\frac{1}{2}\left(c+d x\right)\right]\right)\Bigg)+$$
$$\Bigg(\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$

$$\left(16\,A\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+40\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+43\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(128\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{9/2}\right.$$
$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)+$$
$$\left(\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\right.$$
$$\left.\left(16\,A\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+40\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+43\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$\left(128\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{9/2}\right.$$
$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)+$$
$$\left(C\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\right.$$
$$\left.\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/\left(32\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{9/2}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\right)+$$
$$\left(C\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\right.$$
$$\left.\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/\left(32\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{9/2}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\right)$$

Problem 598: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)}{\sqrt{\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 233 leaves, 6 steps):

$$\frac{a^{5/2}\,(40\,A+38\,B+25\,C)\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{8\,d}+\frac{a^3\,(24\,A-54\,B-49\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{24\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(24\,A+42\,B+31\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{24\,d}+$$
$$\frac{a\,(6\,B+5\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{12\,d}+$$
$$\frac{C\,\sqrt{\mathrm{Sec}[c+d\,x]}\,(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}\,\mathrm{Sin}[c+d\,x]}{3\,d}$$

Result (type 3, 1894 leaves):

$$-\Bigg(\Bigg(\left(\left(\frac{1}{128}+\frac{i}{128}\right)\left((-1+i)+\sqrt{2}\right)\left((120+40 i) A+40 \sqrt{2} A+(114+38 i) B+38 \sqrt{2} B+(75+25 i) C+25 \sqrt{2} C\right) \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2} \text{Sin}\left[\frac{1}{4}(c+d x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2} \text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\text{Sec}[c+d x]))^{5/2}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(\sqrt{2}\left(i+\sqrt{2}\right) d(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \text{Sec}[c+d x]^{9/2}\right)\Bigg)-$$

$$\left(\left(\frac{1}{128}-\frac{i}{128}\right)\left((1+i)+\sqrt{2}\right)\left((-120+40 i) A+40 \sqrt{2} A-(114-38 i) B+38 \sqrt{2} B-(75-25 i) C+25 \sqrt{2} C\right) \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2} \text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2} \text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\text{Sec}[c+d x]))^{5/2}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(\sqrt{2}\left(i+\sqrt{2}\right) d(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \text{Sec}[c+d x]^{9/2}\right)+$$

$$\left(\left(80 A+40 i \sqrt{2} A+76 B+38 i \sqrt{2} B+50 C+25 i \sqrt{2} C\right) \text{Log}\left[\sqrt{2}+2 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\text{Sec}[c+d x]))^{5/2}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(64\left(i+\sqrt{2}\right) d(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \text{Sec}[c+d x]^{9/2}\right)-$$

$$\left(\left(\frac{1}{256}-\frac{i}{256}\right)\left((-1+i)+\sqrt{2}\right)\left((120+40 i) A+40 \sqrt{2} A+(114+38 i) B+38 \sqrt{2} B+(75+25 i) C+25 \sqrt{2} C\right) \text{Log}\left[2-\sqrt{2} \text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2} \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\text{Sec}[c+d x]))^{5/2}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(\sqrt{2}\left(i+\sqrt{2}\right) d(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \text{Sec}[c+d x]^{9/2}\right)+$$

$$\left(\left(\frac{1}{256}+\frac{i}{256}\right)\left((1+i)+\sqrt{2}\right)\left((-120+40 i) A+40 \sqrt{2} A-(114-38 i) B+38 \sqrt{2} B-(75-25 i) C+25 \sqrt{2} C\right) \text{Log}\left[2+\sqrt{2} \text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2} \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\text{Sec}[c+d x]))^{5/2}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(\sqrt{2}\left(\mathbb{i}+\sqrt{2}\right) d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{9/2}\right)+$$

$$\left(C \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\operatorname{Sec}[c+d x]\right)\right)^{5/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$
$$\left(24 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\right.$$
$$\left.\operatorname{Sec}[c+d x]^{9/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)+$$

$$\left(\left(8 A+22 B+25 C\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\operatorname{Sec}[c+d x]\right)\right)^{5/2}\right.$$
$$\left.\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/ \left(32 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\right.$$
$$\left.\operatorname{Sec}[c+d x]^{9/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)-$$

$$\left(C \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\operatorname{Sec}[c+d x]\right)\right)^{5/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$
$$\left(24 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\right.$$
$$\left.\operatorname{Sec}[c+d x]^{9/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)+$$

$$\left(\left(-8 A-22 B-25 C\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\operatorname{Sec}[c+d x]\right)\right)^{5/2}\right.$$
$$\left.\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/ \left(32 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\right.$$
$$\left.\operatorname{Sec}[c+d x]^{9/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)+$$

$$\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\operatorname{Sec}[c+d x]\right)\right)^{5/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left.\left(2 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+5 C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/$$
$$\left(16 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{9/2}\right.$$
$$\left.\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$

$$\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\operatorname{Sec}[c+d x]\right)\right)^{5/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left.\left(2 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+5 C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/$$
$$\left(16 d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{9/2}\right.$$
$$\left.\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$

$$\left(A \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(a\left(1+\operatorname{Sec}[c+d x]\right)\right)^{5/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left.\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right) \Big/ \left(d\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{9/2}\right)$$

Problem 599: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)}{\text{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 3, 233 leaves, 6 steps):

$$\frac{a^{5/2}\,(8\,A+20\,B+19\,C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{4\,d}+\frac{a^3\,(56\,A+12\,B-27\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{12\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{a^2\,(8\,A-12\,B-21\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{12\,d}-\frac{a\,(4\,A-3\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{6\,d}+\frac{2\,A\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 3, 1736 leaves):

$$-\Bigg(\Bigg(\left(\frac{1}{64}+\frac{i}{64}\right)\left((-1+i)+\sqrt{2}\right)\left((24+8\,i)\,A+8\,\sqrt{2}\,A+(60+20\,i)\,B+20\,\sqrt{2}\,B+(57+19\,i)\,C+19\,\sqrt{2}\,C\right)$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\Bigg)\Bigg/$$
$$\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{9/2}\right)\Bigg)-$$
$$\Bigg(\left(\frac{1}{64}-\frac{i}{64}\right)\left((1+i)+\sqrt{2}\right)\left((-24+8\,i)\,A+8\,\sqrt{2}\,A-(60-20\,i)\,B+20\,\sqrt{2}\,B-(57-19\,i)\,C+\right.$$
$$\left.19\,\sqrt{2}\,C\right)\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\Bigg)\Bigg/$$
$$\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\Bigg(\left(16\,A+8\,i\,\sqrt{2}\,A+40\,B+20\,i\,\sqrt{2}\,B+38\,C+19\,i\,\sqrt{2}\,C\right)\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big)\Big/$$

$$\left(32\left(\mathrm{i}+\sqrt{2}\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\Bigg(\left(\frac{1}{128}-\frac{\mathrm{i}}{128}\right)\left(\left(-1+\mathrm{i}\right)+\sqrt{2}\right)$$

$$\left(\left(24+8\,\mathrm{i}\right)A+8\sqrt{2}\,A+\left(60+20\,\mathrm{i}\right)B+20\sqrt{2}\,B+\left(57+19\,\mathrm{i}\right)C+19\sqrt{2}\,C\right)$$

$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5$$

$$\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)+$$

$$\Bigg(\left(\frac{1}{128}+\frac{\mathrm{i}}{128}\right)\left(\left(1+\mathrm{i}\right)+\sqrt{2}\right)$$

$$\left(\left(-24+8\,\mathrm{i}\right)A+8\sqrt{2}\,A-\left(60-20\,\mathrm{i}\right)B+20\sqrt{2}\,B-\left(57-19\,\mathrm{i}\right)C+19\sqrt{2}\,C\right)$$

$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5$$

$$\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)+$$

$$\left(\left(4\,B+11\,C\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\Bigg(16\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\text{Sec}[c+d\,x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg)+$$

$$\left(\left(-4\,B-11\,C\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\Bigg(16\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\text{Sec}[c+d\,x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg)+$$

$$\Bigg(A\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]\Bigg)\Big/\left(6\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)+$$

$$\Bigg(\left(5\,A+2\,B\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)\Big/\left(2\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)+$$

$$\Bigg(C\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)\Big/\Bigg(8\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\text{Sec}[c+d\,x]^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\Bigg)+$$

$$\left(\text{C Sec}\left[\frac{1}{2}(c+dx)\right]^4 \left(a\,(1+\text{Sec}[c+dx])\right)^{5/2} \left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right) \text{Tan}\left[\frac{1}{2}(c+dx)\right]\right) \Big/ \left(8\,d\,(A+2\,C+2\,B\,\text{Cos}[c+dx]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+dx]^{9/2} \left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2\right)$$

Problem 600: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sec}[c+dx])^{5/2}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)}{\text{Sec}[c+dx]^{5/2}}\,dx$$

Optimal (type 3, 223 leaves, 6 steps):

$$\frac{a^{5/2}(2\,B+5\,C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{d}+\frac{a^3(64\,A+70\,B+15\,C)\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{15\,d\sqrt{a+a\,\text{Sec}[c+dx]}}-\frac{a^2(16\,A+10\,B-15\,C)\sqrt{\text{Sec}[c+dx]}\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{15\,d}+\frac{2\,a\,(A+B)\,(a+a\,\text{Sec}[c+dx])^{3/2}\,\text{Sin}[c+dx]}{3\,d\sqrt{\text{Sec}[c+dx]}}+\frac{2\,A\,(a+a\,\text{Sec}[c+dx])^{5/2}\,\text{Sin}[c+dx]}{5\,d\,\text{Sec}[c+dx]^{3/2}}$$

Result (type 3, 1519 leaves):

$$-\left(\left(\left(\frac{1}{16}+\frac{i}{16}\right)\left((-1+i)+\sqrt{2}\right)\left((6+2\,i)\,B+2\sqrt{2}\,B+(15+5\,i)\,C+5\sqrt{2}\,C\right) \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{-\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^5 \left(a\,(1+\text{Sec}[c+dx])\right)^{5/2} \left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right) \Big/ \left(\sqrt{2}\left(i+\sqrt{2}\right) d\,(A+2\,C+2\,B\,\text{Cos}[c+dx]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+dx]^{9/2}\right)\right)-$$

$$\left(\left(\frac{1}{16}-\frac{i}{16}\right)\left((1+i)+\sqrt{2}\right)\left((-6+2\,i)\,B+2\sqrt{2}\,B-(15-5\,i)\,C+5\sqrt{2}\,C\right) \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^5 \left(a\,(1+\text{Sec}[c+dx])\right)^{5/2} \left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right) \Big/$$

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d \left(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx]\right) \mathrm{Sec}[c+dx]^{9/2}\right)+$$

$$\left(\left(4B+2\,\mathrm{i}\sqrt{2}\,B+10C+5\,\mathrm{i}\sqrt{2}\,C\right) \mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right] \mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^5 \left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{5/2} \left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(8\left(\mathrm{i}+\sqrt{2}\right) d \left(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx]\right) \mathrm{Sec}[c+dx]^{9/2}\right)-$$

$$\left(\left(\frac{1}{32}-\frac{\mathrm{i}}{32}\right)\left(\left(-1+\mathrm{i}\right)+\sqrt{2}\right)\left(\left(6+2\,\mathrm{i}\right)B+2\sqrt{2}\,B+\left(15+5\,\mathrm{i}\right)C+5\sqrt{2}\,C\right) \mathrm{Log}\left[2-\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right] \mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^5 \left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{5/2} \left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d \left(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx]\right) \mathrm{Sec}[c+dx]^{9/2}\right)+$$

$$\left(\left(\frac{1}{32}+\frac{\mathrm{i}}{32}\right)\left(\left(1+\mathrm{i}\right)+\sqrt{2}\right)\left(\left(-6+2\,\mathrm{i}\right)B+2\sqrt{2}\,B-\left(15-5\,\mathrm{i}\right)C+5\sqrt{2}\,C\right) \mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right] \mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^5 \left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{5/2} \left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d \left(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx]\right) \mathrm{Sec}[c+dx]^{9/2}\right)+$$

$$\left(C\,\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^5 \left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{5/2} \left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(4d\left(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx]\right) \mathrm{Sec}[c+dx]^{9/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)-$$

$$\left(C\,\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^5 \left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{5/2} \left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(4d\left(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx]\right) \mathrm{Sec}[c+dx]^{9/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)+$$

$$\left(\left(5A+2B\right)\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^5 \left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{5/2} \left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right) \mathrm{Sin}\left[\frac{3}{2}(c+dx)\right]\right)\Big/\left(12d\left(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx]\right)\mathrm{Sec}[c+dx]^{9/2}\right)+$$

$$\left(A\,\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^5 \left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{5/2} \left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right) \mathrm{Sin}\left[\frac{5}{2}(c+dx)\right]\right)\Big/\left(20d\left(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx]\right)\mathrm{Sec}[c+dx]^{9/2}\right)+$$

$$\left(\left(5A+5B+2C\right)\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^4 \left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{5/2} \left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right) \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\Big/\left(2d\left(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx]\right)\mathrm{Sec}[c+dx]^{9/2}\right)$$

Problem 601: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{7/2}}\,dx$$

Optimal (type 3, 222 leaves, 6 steps):

$$\frac{2\,a^{5/2}\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a^3\,(160\,A+224\,B+245\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{105\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,a^2\,(40\,A+56\,B+35\,C)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{105\,d\,\sqrt{\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,a\,(5\,A+7\,B)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{35\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{2\,A\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\,\text{Sin}[c+d\,x]}{7\,d\,\text{Sec}[c+d\,x]^{5/2}}$$

Result (type 3, 428 leaves):

$$\frac{1}{420\,d\,\sqrt{\text{Sec}[c+d\,x]}}\,a^2\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}$$
$$\left(-210\,i\,\sqrt{2}\,C\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]-\right.$$
$$210\,i\,\sqrt{2}\,C\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(1+\sqrt{2}\right)\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]+$$
$$210\,\sqrt{2}\,C\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$
$$105\,\sqrt{2}\,C\,\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$
$$105\,\sqrt{2}\,C\,\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$1575\,A\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2100\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2100\,C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$385\,A\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+350\,B\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+140\,C\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+$$
$$\left.105\,A\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+42\,B\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+15\,A\,\text{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]\right)$$

Problem 605: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 241 leaves, 8 steps):

$$-\frac{(8A-14B+9C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{8\sqrt{a}\,d}+\frac{\sqrt{2}\,(A-B+C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{\sqrt{a}\,d}+\frac{(8A-2B+7C)\,\text{Sec}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{8d\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{(6B-C)\,\text{Sec}[c+dx]^{5/2}\,\text{Sin}[c+dx]}{12d\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{C\,\text{Sec}[c+dx]^{7/2}\,\text{Sin}[c+dx]}{3d\sqrt{a+a\,\text{Sec}[c+dx]}}$$

Result (type 3, 2012 leaves):

$$-\Bigg(\Bigg(\left(\frac{1}{16}-\frac{i}{16}\right)\left((1+i)-i\sqrt{2}\right)\left((24+8i)A+8\sqrt{2}A-(42+14i)B-14\sqrt{2}B+(27+9i)C+9\sqrt{2}C\right)$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{-\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]$$
$$\text{Cos}\left[\frac{1}{2}(c+dx)\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\Bigg)\Bigg/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\right.$$
$$\left.\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{3/2}\sqrt{a\,(1+\text{Sec}[c+dx])}\right)\Bigg)+$$
$$\Bigg(\left(\frac{1}{16}-\frac{i}{16}\right)\left((1+i)+\sqrt{2}\right)\left((-24+8i)A+8\sqrt{2}A+(42-14i)B-14\sqrt{2}B-(27-9i)C+9\sqrt{2}C\right)$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]$$
$$\text{Cos}\left[\frac{1}{2}(c+dx)\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\Bigg)\Bigg/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right)d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right.$$
$$\left.\text{Sec}[c+dx]^{3/2}\sqrt{a\,(1+\text{Sec}[c+dx])}\right)-$$
$$\left(4\,(A-B+C)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]\right]\right.$$
$$\left.\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\text{Sec}[c+dx]^{3/2}\sqrt{a\,(1+\text{Sec}[c+dx])}\right)+$$
$$\left(4\,(A-B+C)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]\right]\right.$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/$$
$$\left(d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{3/2}\sqrt{a\left(1+\mathrm{Sec}[c+d\,x]\right)}\right)+$$
$$\Big(\left(-16\,A-8\,\mathrm{i}\,\sqrt{2}\,A+28\,B+14\,\mathrm{i}\,\sqrt{2}\,B-18\,C-9\,\mathrm{i}\,\sqrt{2}\,C\right)\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]$$
$$\mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/$$
$$\Big(8\left(\mathrm{i}+\sqrt{2}\right)d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{3/2}$$
$$\sqrt{a\left(1+\mathrm{Sec}[c+d\,x]\right)}\Big)+\left(\left(\frac{1}{32}+\frac{\mathrm{i}}{32}\right)\left(\left(1+\mathrm{i}\right)-\mathrm{i}\,\sqrt{2}\right)\right.$$
$$\left(\left(24+8\,\mathrm{i}\right)A+8\,\sqrt{2}\,A-\left(42+14\,\mathrm{i}\right)B-14\,\sqrt{2}\,B+\left(27+9\,\mathrm{i}\right)C+9\,\sqrt{2}\,C\right)\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]$$
$$\mathrm{Log}\left[2-\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/$$
$$\Big(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right)d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$
$$\mathrm{Sec}[c+d\,x]^{3/2}\sqrt{a\left(1+\mathrm{Sec}[c+d\,x]\right)}\Big)-$$
$$\Big(\left(\frac{1}{32}+\frac{\mathrm{i}}{32}\right)\left(\left(1+\mathrm{i}\right)+\sqrt{2}\right)\left(\left(-24+8\,\mathrm{i}\right)A+8\,\sqrt{2}\,A+\left(42-14\,\mathrm{i}\right)B-14\,\sqrt{2}\,B-\left(27-9\,\mathrm{i}\right)C+9\,\sqrt{2}\,C\right)$$
$$\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Big)\Big/\Big(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right)d$$
$$\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{3/2}\sqrt{a\left(1+\mathrm{Sec}[c+d\,x]\right)}\Big)+$$
$$\left(C\,\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\Big(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{3/2}$$
$$\sqrt{a\left(1+\mathrm{Sec}[c+d\,x]\right)}\left(\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\mathrm{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)^3\Big)+$$
$$\left(\left(8\,A-2\,B+7\,C\right)\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\Big(4\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{3/2}$$
$$\sqrt{a\left(1+\mathrm{Sec}[c+d\,x]\right)}\left(\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\mathrm{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\Big)-$$
$$\left(C\,\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\Big(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{3/2}$$
$$\sqrt{a\left(1+\mathrm{Sec}[c+d\,x]\right)}\left(\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\mathrm{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)^3\Big)+$$
$$\left(\left(-8\,A+2\,B-7\,C\right)\mathrm{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(4 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{3/2} \sqrt{a \left(1+\operatorname{Sec}[c+d x]\right)} \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)+$$
$$\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right] \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(2 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(2 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{3/2} \sqrt{a \left(1+\operatorname{Sec}[c+d x]\right)} \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$
$$\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right] \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(2 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(2 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right) \operatorname{Sec}[c+d x]^{3/2} \sqrt{a \left(1+\operatorname{Sec}[c+d x]\right)} \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)$$

Problem 606: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}[c+d x]^{3/2} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\, dx$$

Optimal (type 3, 195 leaves, 7 steps):

$$\frac{(8 A-4 B+7 C) \operatorname{ArcSinh}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right]}{4 \sqrt{a}\, d}-\frac{\sqrt{2} (A-B+C) \operatorname{ArcTanh}\left[\frac{\sqrt{a} \sqrt{\operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{\sqrt{2} \sqrt{a+a \operatorname{Sec}[c+d x]}}\right]}{\sqrt{a}\, d}+$$
$$\frac{(4 B-C) \operatorname{Sec}[c+d x]^{3/2} \operatorname{Sin}[c+d x]}{4 d \sqrt{a+a \operatorname{Sec}[c+d x]}}+\frac{C \operatorname{Sec}[c+d x]^{5/2} \operatorname{Sin}[c+d x]}{2 d \sqrt{a+a \operatorname{Sec}[c+d x]}}$$

Result (type 3, 1732 leaves):

$$-\left(\left(\left(\frac{1}{8}+\frac{i}{8}\right) \left((-1+i)+\sqrt{2}\right) \left((24+8 i) A+8 \sqrt{2} A-(12+4 i) B-4 \sqrt{2} B+(21+7 i) C+7 \sqrt{2} C\right)\right.\right.$$
$$\operatorname{ArcTan}\left[\frac{\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2} \operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]}{-\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2} \operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$
$$\left.\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right] \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right)\Big/\left(\sqrt{2} \left(i+\sqrt{2}\right) d\right.$$

$$\left(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x]\right)\,Sec[c+d\,x]^{3/2}\,\sqrt{a\,\left(1+Sec[c+d\,x]\right)}\,\Bigg)\Bigg)-$$

$$\Bigg(\left(\frac{1}{8}-\frac{i}{8}\right)\,\left((1+i)+\sqrt{2}\right)\,\left((-24+8\,i)\,A+8\,\sqrt{2}\,A+(12-4\,i)\,B-4\,\sqrt{2}\,B-(21-7\,i)\,C+7\,\sqrt{2}\,C\right)$$

$$ArcTan\left[\frac{Cos\left[\frac{1}{4}\,(c+d\,x)\right]+Sin\left[\frac{1}{4}\,(c+d\,x)\right]-\sqrt{2}\,Sin\left[\frac{1}{4}\,(c+d\,x)\right]}{Cos\left[\frac{1}{4}\,(c+d\,x)\right]+\sqrt{2}\,Cos\left[\frac{1}{4}\,(c+d\,x)\right]-Sin\left[\frac{1}{4}\,(c+d\,x)\right]}\right]$$

$$Cos\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(A+B\,Sec[c+d\,x]+C\,Sec[c+d\,x]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x]\right)\right.$$

$$\left.Sec[c+d\,x]^{3/2}\,\sqrt{a\,\left(1+Sec[c+d\,x]\right)}\right)+$$

$$\left(4\,(A-B+C)\,Cos\left[\frac{1}{2}\,(c+d\,x)\right]\,Log\left[Cos\left[\frac{1}{4}\,(c+d\,x)\right]-Sin\left[\frac{1}{4}\,(c+d\,x)\right]\right]\right.$$

$$\left.\left(A+B\,Sec[c+d\,x]+C\,Sec[c+d\,x]^2\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x]\right)\,Sec[c+d\,x]^{3/2}\,\sqrt{a\,\left(1+Sec[c+d\,x]\right)}\right)-$$

$$\left(4\,(A-B+C)\,Cos\left[\frac{1}{2}\,(c+d\,x)\right]\,Log\left[Cos\left[\frac{1}{4}\,(c+d\,x)\right]+Sin\left[\frac{1}{4}\,(c+d\,x)\right]\right]\right.$$

$$\left.\left(A+B\,Sec[c+d\,x]+C\,Sec[c+d\,x]^2\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x]\right)\,Sec[c+d\,x]^{3/2}\,\sqrt{a\,\left(1+Sec[c+d\,x]\right)}\right)+$$

$$\Bigg(\left(16\,A+8\,i\,\sqrt{2}\,A-8\,B-4\,i\,\sqrt{2}\,B+14\,C+7\,i\,\sqrt{2}\,C\right)\,Cos\left[\frac{1}{2}\,(c+d\,x)\right]$$

$$Log\left[\sqrt{2}+2\,Sin\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\left(A+B\,Sec[c+d\,x]+C\,Sec[c+d\,x]^2\right)\Bigg)\Big/$$

$$\left(4\,\left(i+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x]\right)\right.$$

$$\left.Sec[c+d\,x]^{3/2}\,\sqrt{a\,\left(1+Sec[c+d\,x]\right)}\right)-$$

$$\Bigg(\left(\frac{1}{16}-\frac{i}{16}\right)\,\left((-1+i)+\sqrt{2}\right)\,\left((24+8\,i)\,A+8\,\sqrt{2}\,A-(12+4\,i)\,B-4\,\sqrt{2}\,B+(21+7\,i)\,C+7\,\sqrt{2}\,C\right)$$

$$Cos\left[\frac{1}{2}\,(c+d\,x)\right]\,Log\left[2-\sqrt{2}\,Cos\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,Sin\left[\frac{1}{2}\,(c+d\,x)\right]\right]$$

$$\left(A+B\,Sec[c+d\,x]+C\,Sec[c+d\,x]^2\right)\Bigg)\Big/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\right.$$

$$\left.\left(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x]\right)\,Sec[c+d\,x]^{3/2}\,\sqrt{a\,\left(1+Sec[c+d\,x]\right)}\right)+$$

$$\Bigg(\left(\frac{1}{16}+\frac{i}{16}\right)\,\left((1+i)+\sqrt{2}\right)\,\left((-24+8\,i)\,A+8\,\sqrt{2}\,A+(12-4\,i)\,B-4\,\sqrt{2}\,B-(21-7\,i)\,C+7\,\sqrt{2}\,C\right)$$

$$Cos\left[\frac{1}{2}\,(c+d\,x)\right]\,Log\left[2+\sqrt{2}\,Cos\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,Sin\left[\frac{1}{2}\,(c+d\,x)\right]\right]$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big)\Big/\Big(\sqrt{2}\,\left(\text{i}+\sqrt{2}\right)\,d$$
$$\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\Big)+$$
$$\left(\left(4\,B-C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\Big(2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}$$
$$\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\Big)+$$
$$\left(C\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\Big/$$
$$\Big(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}$$
$$\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)^2\Big)+$$
$$\left(C\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\Big/$$
$$\Big(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}$$
$$\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)^2\Big)+$$
$$\left(\left(-4\,B+C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\Big(2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}$$
$$\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\Big)$$

Problem 607: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\,dx$$

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

$$\frac{\left(2\,B-C\right)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+$$
$$\frac{\sqrt{2}\,\left(A-B+C\right)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{C\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 644 leaves):

$$\left(\left(\frac{1}{8}+\frac{i}{8}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\frac{1}{i+\sqrt{2}}2\,i\,\sqrt{2}\left((-3+i)+\sqrt{2}\right)\left((1+i)+\sqrt{2}\right)(2\,B-C)\right.$$

$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]-\frac{1}{i+\sqrt{2}}2\sqrt{2}\left((-1+i)+\sqrt{2}\right)$$

$$\left((3+i)+\sqrt{2}\right)(2\,B-C)\,\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\left(1+\sqrt{2}\right)\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]-$$

$$(16-16\,i)(A-B+C)\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right]+$$

$$(16-16\,i)(A-B+C)\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right]+$$

$$\frac{(4+4\,i)\left(-2\,i+\sqrt{2}\right)(2\,B-C)\,\mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{i+\sqrt{2}}+$$

$$\frac{1}{i+\sqrt{2}}i\,\sqrt{2}\left((-1+i)+\sqrt{2}\right)\left((3+i)+\sqrt{2}\right)(2\,B-C)$$

$$\mathrm{Log}\left[2-\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\frac{1}{i+\sqrt{2}}\sqrt{2}\left((-3+i)+\sqrt{2}\right)$$

$$\left((1+i)+\sqrt{2}\right)(2\,B-C)\,\mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+$$

$$\left.\left.\frac{(8-8\,i)\,C}{\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]}-\frac{(8-8\,i)\,C}{\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]}\right)\right)\Bigg/$$

$$\left(d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2(c+d\,x)]\right)\mathrm{Sec}[c+d\,x]^{3/2}\sqrt{a\left(1+\mathrm{Sec}[c+d\,x]\right)}\right)$$

Problem 608: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\sqrt{\mathrm{Sec}[c+d\,x]}\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 138 leaves, 6 steps):

$$\frac{2\,C\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}-$$

$$\frac{\sqrt{2}(A-B+C)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{\sqrt{2}\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{2\,A\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{d\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 3, 477 leaves):

$$\frac{1}{2\,d\,\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}}\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\,\sqrt{\text{Sec}[c+d\,x]}$$
$$\left(-2\,\mathrm{i}\,\sqrt{2}\,C\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\left(-1+\sqrt{2}\right)\,\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]}{\left(1+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]}\right]-\right.$$
$$2\,\mathrm{i}\,\sqrt{2}\,C\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\left(1+\sqrt{2}\right)\,\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]}{\left(-1+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]}\right]+$$
$$4\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right]-$$
$$4\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right]+4\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right]-$$
$$4\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right]+4\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right]-$$
$$4\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right]+2\,\sqrt{2}\,C\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]-$$
$$\sqrt{2}\,C\,\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]-$$
$$\left.\sqrt{2}\,C\,\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]+8\,A\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)$$

Problem 612: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d\,x]}\,\left(a\,A+\left(A\,b+a\,B\right)\,\text{Sec}[c+d\,x]+b\,B\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 152 leaves, 6 steps):

$$\frac{\left(2\,A\,b+2\,a\,B-b\,B\right)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+$$
$$\frac{\sqrt{2}\,\left(a-b\right)\,\left(A-B\right)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{b\,B\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 638 leaves):

$$\frac{1}{d\sqrt{a\left(1+\text{Sec}[c+d\,x]\right)}}\left(\frac{1}{16}+\frac{i}{16}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\sqrt{\text{Sec}[c+d\,x]}$$
$$\left(\frac{1}{i+\sqrt{2}}2\,i\sqrt{2}\left(\left(-3+i\right)+\sqrt{2}\right)\left(\left(1+i\right)+\sqrt{2}\right)\left(2\,A\,b+2\,a\,B-b\,B\right)\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\left(-1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\left(1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]}\right]-\frac{1}{i+\sqrt{2}}2\sqrt{2}\left(\left(-1+i\right)+\sqrt{2}\right)$$
$$\left(\left(3+i\right)+\sqrt{2}\right)\left(2\,A\,b+2\,a\,B-b\,B\right)\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\left(1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\left(-1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]}\right]-$$
$$\left(16-16\,i\right)\left(a-b\right)\left(A-B\right)\text{Log}\left[\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]\right]+$$
$$\left(16-16\,i\right)\left(a-b\right)\left(A-B\right)\text{Log}\left[\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]\right]+\frac{1}{i+\sqrt{2}}$$
$$\left(4+4\,i\right)\left(-2\,i+\sqrt{2}\right)\left(2\,A\,b+2\,a\,B-b\,B\right)\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]+$$
$$\frac{1}{i+\sqrt{2}}i\sqrt{2}\left(\left(-1+i\right)+\sqrt{2}\right)\left(\left(3+i\right)+\sqrt{2}\right)\left(2\,A\,b+2\,a\,B-b\,B\right)$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]+\frac{1}{i+\sqrt{2}}\sqrt{2}\left(\left(-3+i\right)+\sqrt{2}\right)$$
$$\left(\left(1+i\right)+\sqrt{2}\right)\left(2\,A\,b+2\,a\,B-b\,B\right)\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]+$$
$$\left.\frac{\left(8-8\,i\right)b\,B}{\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]}-\frac{\left(8-8\,i\right)b\,B}{\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]}\right)$$

Problem 613: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}\,dx$$

Optimal (type 3, 260 leaves, 8 steps):

$$\frac{\left(8\,A-12\,B+19\,C\right)\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{4\,a^{3/2}\,d}-$$
$$\frac{\left(5\,A-9\,B+13\,C\right)\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{2\sqrt{2}\,a^{3/2}\,d}-\frac{\left(A-B+C\right)\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{2\,d\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}-$$
$$\frac{\left(2\,A-6\,B+7\,C\right)\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{4\,a\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{\left(A-B+2\,C\right)\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{2\,a\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 1996 leaves):

$$-\left(\left(\left(\left(\frac{1}{4}+\frac{i}{4}\right)\left((-1+i)+\sqrt{2}\right)\left((24+8 i) A+8\sqrt{2} A-(36+12 i) B-12\sqrt{2} B+(57+19 i) C+19\sqrt{2} C\right)\right.\right.\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$

$$\left.\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right) d\right.$$

$$\left.\left.\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)\right)-$$

$$\left(\left(\frac{1}{4}-\frac{i}{4}\right)\left((1+i)+\sqrt{2}\right)\left((-24+8 i) A+8\sqrt{2} A+(36-12 i) B-12\sqrt{2} B-(57-19 i) C+\right.\right.$$

$$\left.19\sqrt{2} C\right)\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$

$$\left.\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(\sqrt{2}\left(i+\sqrt{2}\right) d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\right.$$

$$\left.\sqrt{\text{Sec}[c+d x]}\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)+$$

$$\left(2(5 A-9 B+13 C)\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right]\right.$$

$$\left.\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)-$$

$$\left(2(5 A-9 B+13 C)\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right]\right.$$

$$\left.\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)+$$

$$\left(\left(16 A+8 i\sqrt{2} A-24 B-12 i\sqrt{2} B+38 C+19 i\sqrt{2} C\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\right.$$

$$\left.\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(2\left(i+\sqrt{2}\right) d\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\right.$$

$$\left.\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)-\left(\left(\frac{1}{8}-\frac{i}{8}\right)\left((-1+i)+\sqrt{2}\right)\right.$$

$$\left((24+8 i) A+8\sqrt{2} A-(36+12 i) B-12\sqrt{2} B+(57+19 i) C+19\sqrt{2} C\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3$$

$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Big)\Big/$$

$$\left(\sqrt{2}\left(\mathbb{i}+\sqrt{2}\right) d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{\text{Sec}[c+d x]}\right.$$

$$\left.\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)+\left(\left(\frac{1}{8}+\frac{\mathbb{i}}{8}\right)\left(\left(1+\mathbb{i}\right)+\sqrt{2}\right)\right.$$

$$\left(\left(-24+8\,\mathbb{i}\right)A+8\sqrt{2}\,A+\left(36-12\,\mathbb{i}\right)B-12\sqrt{2}\,B-\left(57-19\,\mathbb{i}\right)C+19\sqrt{2}\,C\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3$$

$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Big)\Big/$$

$$\left(\sqrt{2}\left(\mathbb{i}+\sqrt{2}\right) d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\right.$$

$$\left.\sqrt{\text{Sec}[c+d x]}\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)+$$

$$\left(\left(-A+B-C\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\Big(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{\text{Sec}[c+d x]}$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2\Big)+$$

$$\left(\left(A-B+C\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\Big(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{\text{Sec}[c+d x]}$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2\Big)+$$

$$\left(\left(4B-5C\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\Big(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{\text{Sec}[c+d x]}$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Big)+$$

$$\left(2C\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Big/$$

$$\Big(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{\text{Sec}[c+d x]}$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\Big)+$$

$$\left(2C\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Big/$$

$$\Big(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{\text{Sec}[c+d x]}$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\Big)+$$

$$\left(\left(-4B+5C\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\Big(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{\text{Sec}[c+d x]}$$

$$\left(a\,(1+\text{Sec}[c+d\,x])\right)^{3/2}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Bigg)\Bigg)$$

Problem 614: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 202 leaves, 7 steps):

$$\frac{(2\,B-3\,C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{a^{3/2}\,d}+\frac{(A-5\,B+9\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}-\frac{(A-B+C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{2\,d\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}+\frac{(A-B+3\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{2\,a\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 1669 leaves):

$$-\Bigg(\Bigg(\left(1-i\right)\left(\left(1+i\right)-i\,\sqrt{2}\right)\left(\left(-6-2\,i\right)B-2\,\sqrt{2}\,B+\left(9+3\,i\right)C+3\,\sqrt{2}\,C\right)$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{-\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]$$

$$\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)d\right.$$

$$\left.(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{\text{Sec}[c+d\,x]}\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{3/2}\right)\Bigg)+$$

$$\Bigg(\left(1-i\right)\left(\left(1+i\right)+\sqrt{2}\right)\left(\left(6-2\,i\right)B-2\,\sqrt{2}\,B-\left(9-3\,i\right)C+3\,\sqrt{2}\,C\right)$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]$$

$$\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{2}\,\left(i+\sqrt{2}\right)d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$

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

$$\Bigg(2\,(A-5\,B+9\,C)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$

$$\left(d\,(A+2C+2B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2c+2d x])\sqrt{\mathrm{Sec}[c+d x]}\,(a\,(1+\mathrm{Sec}[c+d x]))^{3/2}\right)+$$

$$\left(2\,(A-5B+9C)\,\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^3\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{4}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{4}(c+d x)\right]\right]\right.$$
$$\left.(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2c+2d x])\sqrt{\mathrm{Sec}[c+d x]}\,(a\,(1+\mathrm{Sec}[c+d x]))^{3/2}\right)+$$

$$\left(2\left(4B+2\,i\sqrt{2}\,B-6C-3\,i\sqrt{2}\,C\right)\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^3\mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right.$$
$$\left.(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2)\right)\Big/\left(\left(i+\sqrt{2}\right)d\right.$$
$$\left.(A+2C+2B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2c+2d x])\sqrt{\mathrm{Sec}[c+d x]}\,(a\,(1+\mathrm{Sec}[c+d x]))^{3/2}\right)+$$

$$\left(\left(\frac{1}{2}+\frac{i}{2}\right)\left((1+i)-i\sqrt{2}\right)\left((-6-2\,i)\,B-2\sqrt{2}\,B+(9+3\,i)\,C+3\sqrt{2}\,C\right)\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^3\right.$$
$$\left.\mathrm{Log}\left[2-\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right](A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2)\right)\Big/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,(A+2C+2B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2c+2d x])\right.$$
$$\left.\sqrt{\mathrm{Sec}[c+d x]}\,(a\,(1+\mathrm{Sec}[c+d x]))^{3/2}\right)-$$

$$\left(\left(\frac{1}{2}+\frac{i}{2}\right)\left((1+i)+\sqrt{2}\right)\left((6-2\,i)\,B-2\sqrt{2}\,B-(9-3\,i)\,C+3\sqrt{2}\,C\right)\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^3\right.$$
$$\left.\mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right](A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2)\right)\Big/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,(A+2C+2B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2c+2d x])\right.$$
$$\left.\sqrt{\mathrm{Sec}[c+d x]}\,(a\,(1+\mathrm{Sec}[c+d x]))^{3/2}\right)+$$

$$\left((A-B+C)\,\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^3(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2c+2d x])\sqrt{\mathrm{Sec}[c+d x]}\right.$$
$$\left.(a\,(1+\mathrm{Sec}[c+d x]))^{3/2}\left(\mathrm{Cos}\left[\frac{1}{4}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2\right)+$$

$$\left((-A+B-C)\,\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^3(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2c+2d x])\sqrt{\mathrm{Sec}[c+d x]}\right.$$
$$\left.(a\,(1+\mathrm{Sec}[c+d x]))^{3/2}\left(\mathrm{Cos}\left[\frac{1}{4}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2\right)+$$

$$\left(4C\,\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^3(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2c+2d x])\sqrt{\mathrm{Sec}[c+d x]}\right.$$
$$\left.(a\,(1+\mathrm{Sec}[c+d x]))^{3/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)-$$

$$\left(4C\,\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^3(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2c+2d x])\sqrt{\mathrm{Sec}[c+d x]}\right.$$

$$\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{3/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg)$$

Problem 615: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 149 leaves, 6 steps):

$$\frac{2\,C\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{a^{3/2}\,d}+\frac{(3\,A+B-5\,C)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}-\frac{(A-B+C)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{2\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}}$$

Result (type 3, 1259 leaves):

$$-\Bigg(\Bigg(2\left((-1+i)+\sqrt{2}\right)\left((1+i)+\sqrt{2}\right)C$$

$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{-\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$

$$\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$

$$\left(d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{3/2}\right)\Bigg)-$$

$$\Bigg(2\left((-1+i)+\sqrt{2}\right)\left((1+i)+\sqrt{2}\right)C$$

$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$

$$\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$

$$\left(d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{3/2}\right)-$$

$$\Bigg(2\,(3\,A+B-5\,C)\,\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right]$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\Bigg)\Bigg/$$

$$\left(d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\sqrt{\text{Sec}[c+d x]}\,(a\,(1+\text{Sec}[c+d x]))^{3/2}\right)+$$
$$\left(2\,(3A+B-5C)\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right]\right.$$
$$\left.(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\sqrt{\text{Sec}[c+d x]}\,(a\,(1+\text{Sec}[c+d x]))^{3/2}\right)+$$
$$\left(4\sqrt{2}\,C\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\,(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\sqrt{\text{Sec}[c+d x]}\,(a\,(1+\text{Sec}[c+d x]))^{3/2}\right)+$$
$$\left(\mathrm{i}\,\left((-1+\mathrm{i})+\sqrt{2}\right)\,\left((1+\mathrm{i})+\sqrt{2}\right)\,C\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\right.$$
$$\left.\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\,(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\sqrt{\text{Sec}[c+d x]}\,(a\,(1+\text{Sec}[c+d x]))^{3/2}\right)+$$
$$\left(\mathrm{i}\,\left((-1+\mathrm{i})+\sqrt{2}\right)\,\left((1+\mathrm{i})+\sqrt{2}\right)\,C\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\right.$$
$$\left.\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\,(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\sqrt{\text{Sec}[c+d x]}\,(a\,(1+\text{Sec}[c+d x]))^{3/2}\right)+$$
$$\left((-A+B-C)\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\,(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\sqrt{\text{Sec}[c+d x]}\right.$$
$$\left.(a\,(1+\text{Sec}[c+d x]))^{3/2}\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2\right)+$$
$$\left((A-B+C)\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3\,(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\right)\Big/$$
$$\left(d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,\sqrt{\text{Sec}[c+d x]}\right.$$
$$\left.(a\,(1+\text{Sec}[c+d x]))^{3/2}\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2\right)$$

Problem 616: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{\sqrt{\text{Sec}[c+d x]}\,(a+a\,\text{Sec}[c+d x])^{3/2}}\,dx$$

Optimal (type 3, 161 leaves, 4 steps):

$$-\frac{(7A-3B-C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{2\sqrt{2}\,a^{3/2}\,d}-$$
$$\frac{(A-B+C)\,\sqrt{\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{2\,d\,(a+a\,\text{Sec}[c+d x])^{3/2}}+\frac{(5A-B+C)\,\sqrt{\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{2\,a\,d\,\sqrt{a+a\,\text{Sec}[c+d x]}}$$

Result (type 3, 578 leaves):

$$\left(2\,(7A-3B-C)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^3 \text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/ \left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\sqrt{\text{Sec}[c+dx]}\,(a\,(1+\text{Sec}[c+dx]))^{3/2}\right) - \left(2\,(7A-3B-C)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^3 \text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/ \left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\sqrt{\text{Sec}[c+dx]}\,(a\,(1+\text{Sec}[c+dx]))^{3/2}\right) + \left((A-B+C)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^3\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/ \left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\sqrt{\text{Sec}[c+dx]}\,(a\,(1+\text{Sec}[c+dx]))^{3/2}\left(\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]\right)^2\right) + \left((-A+B-C)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^3\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/ \left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\sqrt{\text{Sec}[c+dx]}\,(a\,(1+\text{Sec}[c+dx]))^{3/2}\left(\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]\right)^2\right) + \left(16A\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^3\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\Big/ \left(d\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\sqrt{\text{Sec}[c+dx]}\,(a\,(1+\text{Sec}[c+dx]))^{3/2}\right)$$

Problem 619: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+dx]^{5/2}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)}{(a+a\,\text{Sec}[c+dx])^{5/2}}\,dx$$

Optimal (type 3, 254 leaves, 8 steps):

$$\frac{(2B-5C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{a^{5/2}\,d} + \frac{(3A-43B+115C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{16\sqrt{2}\,a^{5/2}\,d} - \frac{(A-B+C)\,\text{Sec}[c+dx]^{7/2}\,\text{Sin}[c+dx]}{4d\,(a+a\,\text{Sec}[c+dx])^{5/2}} + \frac{(A+7B-15C)\,\text{Sec}[c+dx]^{5/2}\,\text{Sin}[c+dx]}{16ad\,(a+a\,\text{Sec}[c+dx])^{3/2}} + \frac{(3A-11B+35C)\,\text{Sec}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{16a^2 d\,\sqrt{a+a\,\text{Sec}[c+dx]}}$$

Result (type 3, 1923 leaves):

$$-\left(\left(\left((1-i)\sqrt{2}\left((1+i)-i\sqrt{2}\right)\left((-6-2i)B-2\sqrt{2}B+(15+5i)C+5\sqrt{2}C\right)\right.\right.\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{-\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]$$
$$\left.\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left.\left(\left(i+\sqrt{2}\right)d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)\right)+$$
$$\left((1-i)\sqrt{2}\left((1+i)+\sqrt{2}\right)\left((6-2i)B-2\sqrt{2}B-(15-5i)C+5\sqrt{2}C\right)\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]$$
$$\left.\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(\left(i+\sqrt{2}\right)d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)+$$
$$\left((-3A+43B-115C)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]\right]\right.$$
$$\left.\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(2d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)+$$
$$\left((3A-43B+115C)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]\right]\right.$$
$$\left.\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(2d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)+$$
$$\left(4\left(4B+2i\sqrt{2}B-10C-5i\sqrt{2}C\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right.$$
$$\left.\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$
$$\left(\left(i+\sqrt{2}\right)d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)+$$
$$\left((1+i)\left((1+i)-i\sqrt{2}\right)\left((-6-2i)B-2\sqrt{2}B+(15+5i)C+5\sqrt{2}C\right)\right.$$
$$\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]$$
$$\left.\sqrt{\text{Sec}[c+dx]}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/$$

$$\left(\sqrt{2}\,\left(\mathrm{i}+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\right)-$$

$$\left(\left(1+\mathrm{i}\right)\,\left(\left(1+\mathrm{i}\right)+\sqrt{2}\right)\,\left(\left(6-2\,\mathrm{i}\right)\,B-2\,\sqrt{2}\,B-\left(15-5\,\mathrm{i}\right)\,C+5\,\sqrt{2}\,C\right)\right.$$

$$\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]$$

$$\left.\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(\sqrt{2}\,\left(\mathrm{i}+\sqrt{2}\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$

$$\left(\left(A-B+C\right)\,\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(4\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\mathrm{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\mathrm{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^4\right)+$$

$$\left(\left(3\,A-11\,B+19\,C\right)\,\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(4\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\mathrm{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\mathrm{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^2\right)+$$

$$\left(\left(-A+B-C\right)\,\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(4\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\mathrm{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\mathrm{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^4\right)+$$

$$\left(\left(-3\,A+11\,B-19\,C\right)\,\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(4\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\mathrm{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\mathrm{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^2\right)+$$

$$\left(8\,C\,\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\right)-$$

$$\left(8\,C\,\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\right)$$

Problem 620: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+a \text{Sec}[c+d x])^{5/2}} \, dx$$

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

$$\frac{2 C \text{ArcSinh}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{a^{5/2} d}+\frac{(5 A+3 B-43 C) \text{ArcTanh}\left[\frac{\sqrt{a} \sqrt{\text{Sec}[c+d x]} \text{Sin}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sec}[c+d x]}}\right]}{16 \sqrt{2} a^{5/2} d}-\frac{(A-B+C) \text{Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{4 d (a+a \text{Sec}[c+d x])^{5/2}}+\frac{(5 A+3 B-11 C) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{16 a d (a+a \text{Sec}[c+d x])^{3/2}}$$

Result (type 3, 1521 leaves):

$$-\left(\left(4 \left((-1+i)+\sqrt{2}\right) \left((1+i)+\sqrt{2}\right) C \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4} (c+d x)\right]-\text{Sin}\left[\frac{1}{4} (c+d x)\right]-\sqrt{2} \text{Sin}\left[\frac{1}{4} (c+d x)\right]}{-\text{Cos}\left[\frac{1}{4} (c+d x)\right]+\sqrt{2} \text{Cos}\left[\frac{1}{4} (c+d x)\right]-\text{Sin}\left[\frac{1}{4} (c+d x)\right]}\right] \text{Cos}\left[\frac{1}{2} (c+d x)\right]^5 \sqrt{\text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) (a (1+\text{Sec}[c+d x]))^{5/2}\right)\right)-$$

$$\left(4 \left((-1+i)+\sqrt{2}\right) \left((1+i)+\sqrt{2}\right) C \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4} (c+d x)\right]+\text{Sin}\left[\frac{1}{4} (c+d x)\right]-\sqrt{2} \text{Sin}\left[\frac{1}{4} (c+d x)\right]}{\text{Cos}\left[\frac{1}{4} (c+d x)\right]+\sqrt{2} \text{Cos}\left[\frac{1}{4} (c+d x)\right]-\text{Sin}\left[\frac{1}{4} (c+d x)\right]}\right] \text{Cos}\left[\frac{1}{2} (c+d x)\right]^5 \sqrt{\text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) (a (1+\text{Sec}[c+d x]))^{5/2}\right)+$$

$$\left((-5 A-3 B+43 C) \text{Cos}\left[\frac{1}{2} (c+d x)\right]^5 \text{Log}\left[\text{Cos}\left[\frac{1}{4} (c+d x)\right]-\text{Sin}\left[\frac{1}{4} (c+d x)\right]\right] \sqrt{\text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(2 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) (a (1+\text{Sec}[c+d x]))^{5/2}\right)+$$

$$\left((5 A+3 B-43 C) \text{Cos}\left[\frac{1}{2} (c+d x)\right]^5 \text{Log}\left[\text{Cos}\left[\frac{1}{4} (c+d x)\right]+\text{Sin}\left[\frac{1}{4} (c+d x)\right]\right]\right.$$

$$\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big)\Big/$$
$$\left(2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\Big(8\,\sqrt{2}\,C\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]$$
$$\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\Big(2\,i\,\left((-1+i)+\sqrt{2}\right)\,\left((1+i)+\sqrt{2}\right)\,C\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]$$
$$\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\Big(2\,i\,\left((-1+i)+\sqrt{2}\right)\,\left((1+i)+\sqrt{2}\right)\,C\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$
$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]$$
$$\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\left((-A+B-C)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\Big(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$
$$\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^4\Big)+$$
$$\left((5\,A+3\,B-11\,C)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\Big(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$
$$\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^2\Big)+$$
$$\left((A-B+C)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\Big(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$
$$\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^4\Big)+$$
$$\left((-5\,A-3\,B+11\,C)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\Big(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\left(a\left(1+\operatorname{Sec}[c+d\,x]\right)\right)^{5/2}\left(\operatorname{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\operatorname{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^2\Bigg)$$

Problem 622: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\operatorname{Sec}[c+d\,x]+C\operatorname{Sec}[c+d\,x]^2}{\sqrt{\operatorname{Sec}[c+d\,x]}\,\left(a+a\operatorname{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 211 leaves, 5 steps):

$$-\frac{(75A-19B-5C)\operatorname{ArcTanh}\left[\frac{\sqrt{a}\sqrt{\operatorname{Sec}[c+d\,x]}\operatorname{Sin}[c+d\,x]}{\sqrt{2}\sqrt{a+a\operatorname{Sec}[c+d\,x]}}\right]}{16\sqrt{2}\,a^{5/2}\,d}-\frac{(A-B+C)\sqrt{\operatorname{Sec}[c+d\,x]}\operatorname{Sin}[c+d\,x]}{4\,d\left(a+a\operatorname{Sec}[c+d\,x]\right)^{5/2}}-\frac{(13A-5B-3C)\sqrt{\operatorname{Sec}[c+d\,x]}\operatorname{Sin}[c+d\,x]}{16\,a\,d\left(a+a\operatorname{Sec}[c+d\,x]\right)^{3/2}}+\frac{(49A-9B+C)\sqrt{\operatorname{Sec}[c+d\,x]}\operatorname{Sin}[c+d\,x]}{16\,a^2\,d\sqrt{a+a\operatorname{Sec}[c+d\,x]}}$$

Result (type 3, 836 leaves):

$$\left((75 A-19 B-5 C) \cos\left[\frac{1}{2}(c+d x)\right]^5 \log\left[\cos\left[\frac{1}{4}(c+d x)\right]-\sin\left[\frac{1}{4}(c+d x)\right]\right] \sqrt{\sec[c+d x]} \left(A+B \sec[c+d x]+C \sec[c+d x]^2\right)\right) \Big/ \left(2 d (A+2 C+2 B \cos[c+d x]+A \cos[2 c+2 d x]) (a (1+\sec[c+d x]))^{5/2}\right)+$$

$$\left((-75 A+19 B+5 C) \cos\left[\frac{1}{2}(c+d x)\right]^5 \log\left[\cos\left[\frac{1}{4}(c+d x)\right]+\sin\left[\frac{1}{4}(c+d x)\right]\right] \sqrt{\sec[c+d x]} \left(A+B \sec[c+d x]+C \sec[c+d x]^2\right)\right) \Big/ \left(2 d (A+2 C+2 B \cos[c+d x]+A \cos[2 c+2 d x]) (a (1+\sec[c+d x]))^{5/2}\right)+$$

$$\left((-A+B-C) \cos\left[\frac{1}{2}(c+d x)\right]^5 \sqrt{\sec[c+d x]} \left(A+B \sec[c+d x]+C \sec[c+d x]^2\right)\right) \Big/ \left(4 d (A+2 C+2 B \cos[c+d x]+A \cos[2 c+2 d x]) (a (1+\sec[c+d x]))^{5/2} \left(\cos\left[\frac{1}{4}(c+d x)\right]-\sin\left[\frac{1}{4}(c+d x)\right]\right)^4\right)+$$

$$\left((21 A-13 B+5 C) \cos\left[\frac{1}{2}(c+d x)\right]^5 \sqrt{\sec[c+d x]} \left(A+B \sec[c+d x]+C \sec[c+d x]^2\right)\right) \Big/ \left(4 d (A+2 C+2 B \cos[c+d x]+A \cos[2 c+2 d x]) (a (1+\sec[c+d x]))^{5/2} \left(\cos\left[\frac{1}{4}(c+d x)\right]-\sin\left[\frac{1}{4}(c+d x)\right]\right)^2\right)+$$

$$\left((A-B+C) \cos\left[\frac{1}{2}(c+d x)\right]^5 \sqrt{\sec[c+d x]} \left(A+B \sec[c+d x]+C \sec[c+d x]^2\right)\right) \Big/ \left(4 d (A+2 C+2 B \cos[c+d x]+A \cos[2 c+2 d x]) (a (1+\sec[c+d x]))^{5/2} \left(\cos\left[\frac{1}{4}(c+d x)\right]+\sin\left[\frac{1}{4}(c+d x)\right]\right)^4\right)+$$

$$\left((-21 A+13 B-5 C) \cos\left[\frac{1}{2}(c+d x)\right]^5 \sqrt{\sec[c+d x]} \left(A+B \sec[c+d x]+C \sec[c+d x]^2\right)\right) \Big/ \left(4 d (A+2 C+2 B \cos[c+d x]+A \cos[2 c+2 d x]) (a (1+\sec[c+d x]))^{5/2} \left(\cos\left[\frac{1}{4}(c+d x)\right]+\sin\left[\frac{1}{4}(c+d x)\right]\right)^2\right)+$$

$$\left(32 A \cos\left[\frac{1}{2}(c+d x)\right]^5 \sqrt{\sec[c+d x]} \left(A+B \sec[c+d x]+C \sec[c+d x]^2\right) \sin\left[\frac{1}{2}(c+d x)\right]\right) \Big/ \left(d (A+2 C+2 B \cos[c+d x]+A \cos[2 c+2 d x]) (a (1+\sec[c+d x]))^{5/2}\right)$$

Problem 623: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B \sec[c+d x]+C \sec[c+d x]^2}{\sec[c+d x]^{3/2} (a+a \sec[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 261 leaves, 6 steps):

$$\frac{(163\,A-75\,B+19\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}-$$

$$\frac{(A-B+C)\,\text{Sin}[c+d\,x]}{4\,d\,\sqrt{\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^{5/2}}-\frac{(17\,A-9\,B+C)\,\text{Sin}[c+d\,x]}{16\,a\,d\,\sqrt{\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}+$$

$$\frac{(95\,A-39\,B+15\,C)\,\text{Sin}[c+d\,x]}{48\,a^2\,d\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{(299\,A-147\,B+27\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{48\,a^2\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 943 leaves) :

$$\left(\left(-163\,A+75\,B-19\,C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\left(\left(163\,A-75\,B+19\,C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\left(\left(A-B+C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^4\right)+$$
$$\left(\left(-29\,A+21\,B-13\,C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^2\right)+$$
$$\left(\left(-A+B-C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^4\right)+$$
$$\left(\left(29\,A-21\,B+13\,C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^2\right)-$$
$$\left(16\,\left(5\,A-2\,B\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\Big/\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\left(16\,A\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{3}{2}\,\left(c+d\,x\right)\right]\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)$$

Problem 624: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Sec}[c+d\,x]^{5/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 313 leaves, 7 steps):

$$-\frac{(283\,A-163\,B+75\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}-\frac{(A-B+C)\,\text{Sin}[c+d\,x]}{4\,d\,\text{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}-\frac{(21\,A-13\,B+5\,C)\,\text{Sin}[c+d\,x]}{16\,a\,d\,\text{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}+\frac{(157\,A-85\,B+45\,C)\,\text{Sin}[c+d\,x]}{80\,a^2\,d\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{(787\,A-475\,B+195\,C)\,\text{Sin}[c+d\,x]}{240\,a^2\,d\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{(2671\,A-1495\,B+735\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{240\,a^2\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 1053 leaves):

$$\left(\left(283\,A-163\,B+75\,C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right]\right.$$
$$\left.\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\left(\left(-283\,A+163\,B-75\,C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right]\right.$$
$$\left.\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\left(\left(-A+B-C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^4\right)+$$
$$\left(\left(37\,A-29\,B+21\,C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^2\right)+$$
$$\left(\left(A-B+C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^4\right)+$$
$$\left(\left(-37\,A+29\,B-21\,C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]\right)^2\right)+$$
$$\left(16\,\left(10\,A-5\,B+2\,C\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\Big/\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)-$$
$$\left(8\,\left(5\,A-2\,B\right)\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\right.\right.$$
$$\left.\left.\frac{3}{2}\,\left(c+d\,x\right)\right]\right)\Big/\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\left(8\,A\,\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{5}{2}\,\left(c+d\,x\right)\right]\right)\Big/$$
$$\left(5\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)$$

Problem 625: Result more than twice size of optimal antiderivative.

$$\int (a + a \operatorname{Sec}[c + d x])^{2/3} \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) dx$$

Optimal (type 6, 446 leaves, 10 steps):

$$\frac{3 C (a + a \operatorname{Sec}[c + d x])^{2/3} \operatorname{Tan}[c + d x]}{5 d} + \left(3 \sqrt{2} A \operatorname{AppellF1}\left[\frac{7}{6}, \frac{1}{2}, 1, \frac{13}{6}, \frac{1}{2} (1 + \operatorname{Sec}[c + d x]), 1 + \operatorname{Sec}[c + d x]\right] (a + a \operatorname{Sec}[c + d x])^{2/3} \operatorname{Tan}[c + d x]\right) \Big/ \left(7 d \sqrt{1 - \operatorname{Sec}[c + d x]}\right) + \frac{3 (5 B + 2 C) (a + a \operatorname{Sec}[c + d x])^{2/3} \operatorname{Tan}[c + d x]}{10 d (1 + \operatorname{Sec}[c + d x])} - \left(3^{3/4} (5 B + 2 C) \operatorname{EllipticF}\left[\operatorname{ArcCos}\left[\frac{2^{1/3} - \left(1 - \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}}{2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}}\right], \frac{1}{4} \left(2 + \sqrt{3}\right)\right] (a + a \operatorname{Sec}[c + d x])^{2/3} \left(2^{1/3} - (1 + \operatorname{Sec}[c + d x])^{1/3}\right) \sqrt{\frac{2^{2/3} + 2^{1/3} (1 + \operatorname{Sec}[c + d x])^{1/3} + (1 + \operatorname{Sec}[c + d x])^{2/3}}{\left(2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}\right)^2}} \operatorname{Tan}[c + d x]\right) \Big/ \left(10 \times 2^{1/3} d (1 - \operatorname{Sec}[c + d x]) (1 + \operatorname{Sec}[c + d x]) \sqrt{-\frac{(1 + \operatorname{Sec}[c + d x])^{1/3} \left(2^{1/3} - (1 + \operatorname{Sec}[c + d x])^{1/3}\right)}{\left(2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}\right)^2}}\right)$$

Result (type 6, 7349 leaves):

$$\left(\operatorname{Cos}[c + d x]^2 \left((1 + \operatorname{Cos}[c + d x]) \operatorname{Sec}[c + d x]\right)^{2/3} (a (1 + \operatorname{Sec}[c + d x]))^{2/3} \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) \left(\frac{3}{5} \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right] \left(5 B \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right] + 2 C \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right) + \frac{6}{5} C \operatorname{Tan}[c + d x]\right)\right) \Big/ \left(d (A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]) (1 + \operatorname{Sec}[c + d x])^{2/3}\right) + \left(2^{2/3} \operatorname{Cos}[c + d x]^3 \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right]^2 \operatorname{Sec}[c + d x]\right)^{5/3} (a (1 + \operatorname{Sec}[c + d x]))^{2/3} \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) \left(A \operatorname{Cos}[c + d x] \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^2 (1 + \operatorname{Sec}[c + d x])^{2/3} + \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^2 \left(A (1 + \operatorname{Sec}[c + d x])^{2/3} + \frac{1}{2} B (1 + \operatorname{Sec}[c + d x])^{2/3} + \frac{1}{5} C (1 + \operatorname{Sec}[c + d x])^{2/3}\right)\right) \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right] \left(-10 (5 B + 2 C) \operatorname{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2\right] \left(3 \operatorname{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 2, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2\right] - 2 \operatorname{AppellF1}\left[\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^4 + \right.$$

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\left(-2\,(20 A+5 B+2 C)\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+$$
$$5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\left.\left.\left.\left.\left(60 A+(5 B+2 C)\left(3+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)\right)\right)\right)\Big/$$
$$\Big(5 d\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,(1+\text{Sec}[c+d x])^{2/3}$$
$$\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$
$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$\left.\left.2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$
$$\left(\left(\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{5/3}\right.\right.$$
$$\left(-10\,(5 B+2 C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4+$$
$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-2\,(20 A+\right.$$
$$5 B+2 C)\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(60 A+(5 B+2 C)\left(3+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)\right)\right)\right)\Big/$$
$$\left(5\times 2^{1/3}\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$

$$\frac{3}{2},\ \frac{5}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)$$

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

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

$$\frac{5}{3},\ 1,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)-$$

$$\Big(2^{2/3}\ \left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\ \text{Sec}[c+d\,x]\right)^{5/3}\ \text{Sin}[c+d\,x]\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$

$$\Big(-10\ (5\,B+2\,C)\ \text{AppellF1}\left[\frac{3}{2},\ \frac{2}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$

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

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

$$9\ \text{AppellF1}\left[\frac{1}{2},\ \frac{2}{3},\ 1,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\ \Big(-2\ \Big(20\,A+$$

$$5\,B+2\,C\Big)\ \Big(3\ \text{AppellF1}\left[\frac{5}{2},\ \frac{2}{3},\ 2,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-$$

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

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+5\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{2}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\ \Big(60\,A+(5\,B+2\,C)\ \Big(3+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(5\ \Big(-9\ \text{AppellF1}\left[\frac{1}{2},\ \frac{2}{3},\ 1,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

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

$$\frac{3}{2},\ \frac{5}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)$$

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

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

$$\frac{5}{3},\ 1,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)-$$

$$\Big(2^{2/3}\ \text{Cos}[c+d\,x]\ \left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\ \text{Sec}[c+d\,x]\right)^{5/3}\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$

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

$$\frac{5}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\ \text{Tan}\Big[$$

$$\frac{1}{2}\,(c+d\,x)\Big]-9\ \Big(-\frac{1}{3}\ \text{AppellF1}\left[\frac{3}{2},\ \frac{2}{3},\ 2,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{2}{9}\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\left(3\left(-\frac{6}{5}\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{2}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)-$$

$$2\left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\left[\right.\right.$$

$$\left.\left.\left.\left.\left.\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\right)\right)$$

$$\left(-10\left(5\,B+2\,C\right)\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4+$$

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(-2\left(20\,A+\right.\right.$$

$$\left.5\,B+2\,C\right)\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]-\right.$$

$$\left.2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(60\,A+\left(5\,B+2\,C\right)\left(3+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\right)\right)\right)\right)\Big/$$

$$\left(5\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.\right.$$

$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2$$

$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$

$$\left.\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)-$$

$$\left(2^{2/3}\,\text{Cos}\left[c+d\,x\right]\left(\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Sec}\left[c+d\,x\right]\right)^{5/3}\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right.$$

$$
\left(2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-15\left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(3\left(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{10}{21}\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)-2\left(-\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{25}{21}\text{AppellF1}\left[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\right)
$$

$$
\left(-10\,(5B+2C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(-2\,(20A+5B+2C)\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(60A+(5B+2C)\left(3+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\right)\Big/
$$

$$
\left(5\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.
$$

$$
\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.
$$

$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$

$$\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)^2\Big)+$$

$$\Big(2^{2/3}\,\text{Cos}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{5/3}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\Big(-20\,(5\,B+2\,C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

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

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-10\,(5\,B+2\,C)$$

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

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

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

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)-10\,(5\,B+2\,C)$$

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

$$\Big(3\,\Big(-\frac{6}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)-$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\text{AppellF1}\Big[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\Big[$$

$$\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\Big)+$$

$$9\,\Big(-\frac{1}{3}\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{9}\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\ \Big(-2\,(20\,A+5\,B+2\,C)$$

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

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

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(60\,A+(5\,B+2\,C)\left(3+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big)+$$

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\Big(5\,(5\,B+2\,C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-2\,(20\,A+5\,B+2\,C)$$

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

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

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-2\,(20\,A+5\,B+2\,C)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\Big(3\,\Big(-\frac{10}{7}\,\text{AppellF1}\left[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{10}{21}\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+\right.\right.$$

$$\left.\left.d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)-$$

$$2\,\Big(-\frac{5}{7}\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{25}{21}\,\text{AppellF1}\left[\frac{7}{2},\frac{8}{3},1,\right.$$

$$\left.\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\Big)+5\,\Big(-\frac{3}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\Big[$$

$$\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\left(60\,A+(5\,B+2\,C)\left(3+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big)\Big)\Big)\Big/$$

$$\Big(5\,\Big(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

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

$$\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)$$

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

$$2\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{2}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-2\,\text{AppellF1}\Big[\frac{5}{2},$$

$$\frac{5}{3},\,1,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)+$$

$$\Big(2^{2/3}\,\text{Cos}[c+d\,x]\,\Big(\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Sec}[c+d\,x]\Big)^{2/3}\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]$$

$$\Big(-10\,(5\,B+2\,C)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\Big(3\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,2,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-2\,\text{AppellF1}\Big[$$

$$\frac{3}{2},\,\frac{5}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^4+$$

$$9\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{2}{3},\,1,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\Big(-2\,\Big(20\,A+$$

$$5\,B+2\,C\Big)\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{2}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$2\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{3},\,1,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2+5\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\Big(60\,A+(5\,B+2\,C)\,\Big(3+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)\Big)\Big)$$

$$\Big(-\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\text{Sec}[c+d\,x]\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2$$

$$\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\Big)\Big)\Big/$$

$$\Big(3\,\Big(-9\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{2}{3},\,1,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+$$

$$2\,\Big(3\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,2,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-2\,\text{AppellF1}\Big[$$

$$\frac{3}{2},\,\frac{5}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)$$

$$\Big(-15\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+$$

$$2\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{2}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-2\,\text{AppellF1}\Big[\frac{5}{2},$$

$$\frac{5}{3},\,1,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)\Big)$$

Problem 626: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{(a+a\,\text{Sec}[c+d\,x])^{1/3}}\,dx$$

Optimal (type 6, 390 leaves, 9 steps):

$$\frac{3\,C\,\mathrm{Tan}[c+d\,x]}{2\,d\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{1/3}}+$$
$$\left(3\,\sqrt{2}\,A\,\mathrm{AppellF1}\left[\frac{1}{6},\frac{1}{2},1,\frac{7}{6},\frac{1}{2}\,(1+\mathrm{Sec}[c+d\,x]),1+\mathrm{Sec}[c+d\,x]\right]\mathrm{Tan}[c+d\,x]\right)\Big/$$
$$\left(d\,\sqrt{1-\mathrm{Sec}[c+d\,x]}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)-$$
$$\left(3^{3/4}\,(2\,B-C)\,\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\mathrm{Sec}[c+d\,x])^{1/3}+(1+\mathrm{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}$$
$$\left.\mathrm{Tan}[c+d\,x]\right)\Big/\left(2\times 2^{1/3}\,d\,(1-\mathrm{Sec}[c+d\,x])\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{1/3}\right.$$
$$\left.\sqrt{-\frac{(1+\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\right)$$

Result (type 6, 7485 leaves):

$$\left(3\,C\,\mathrm{Cos}[c+d\,x]^2\,\left((1+\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]\right)^{2/3}\right.$$
$$\left.(1+\mathrm{Sec}[c+d\,x])^{1/3}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{1/3}\right)+$$
$$\left(2^{2/3}\,\mathrm{Cos}[c+d\,x]^3\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Sec}[c+d\,x]\right)^{5/3}\,(1+\mathrm{Sec}[c+d\,x])^{1/3}\right.$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\left(A\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,(1+\mathrm{Sec}[c+d\,x])^{2/3}+\right.$$
$$\left.\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(B\,(1+\mathrm{Sec}[c+d\,x])^{2/3}-\frac{1}{2}\,C\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\right)\right)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$
$$\left(10\,(2\,A-2\,B+C)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right.$$
$$\left(3\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-\right.$$
$$\left.2\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4-$$
$$9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$
$$\left(-5\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right.$$
$$\left(2\,(A+2\,B-C)+(4\,A+2\,B-C)\,\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2+2\,(2\,A+2\,B-C)$$

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

$$\Big(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a\,(1+\text{Sec}[c+d\,x]))^{1/3}$$

$$\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\Big(\Big(\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{5/3}$$

$$\Big(10\,(2\,A-2\,B+C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\Big(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right](2\,(A+2\,B-C)+(4\,A+2\,B-C)\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(2\,A+2\,B-C)$$

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

$$\Big(2^{1/3}\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\Big(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\Big(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\Big[\frac{5}{2},$$

$$\frac{5}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big) -$$

$$\Big(2^{2/3}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]\right)^{5/3} \text{Sin}[c+d x] \text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\Big(10(2A-2B+C) \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

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

$$9 \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\Big(-5 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \Big(2(A+2B-C) +$$

$$(4A+2B-C) \text{Cos}[c+d x]\Big) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 + 2(2A+2B-C) \Big(3 \text{AppellF1}\Big[$$

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

$$1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)\Big) \Big/$$

$$\Big(\Big(-9 \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +$$

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

$$\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)$$

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

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

$$\frac{5}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big) -$$

$$\Big(2^{2/3} \text{Cos}[c+d x] \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]\right)^{5/3} \text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\Big(10(2A-2B+C) \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

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

$$9 \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

$$\Big(2(A+2B-C) + (4A+2B-C) \text{Cos}[c+d x]\Big) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 + 2(2A+2B-C)$$

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

$$\Bigg(2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-9\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{9}\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(3\left(-\frac{6}{5}\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-2\left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\Bigg(\Big(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)^2$$

$$\Big(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Bigg)-$$

$$\Bigg(2^{2/3}\,\text{Cos}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{5/3}\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\Bigg(10\,(2 A-2 B+C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4-$$

$$9\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{2}{3},\,1,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\Big(-5\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\big(2\,(A+2\,B-C)+(4\,A+2\,B-C)\,\text{Cos}[c+d\,x]\big)\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2+2\,(2\,A+2\,B-C)$$

$$\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{2}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-2\,\text{AppellF1}\Big[$$

$$\frac{5}{2},\,\frac{5}{3},\,1,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)$$

$$\Big(2\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{2}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$2\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{3},\,1,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]-15\,\Big(-\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{2}{3},\,2,\,\frac{7}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$

$$\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{3},\,1,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)+2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2$$

$$\Big(3\,\Big(-\frac{10}{7}\,\text{AppellF1}\Big[\frac{7}{2},\,\frac{2}{3},\,3,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{10}{21}\,\text{AppellF1}\Big[\frac{7}{2},\,\frac{5}{3},\,2,\,\frac{9}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)-$$

$$2\,\Big(-\frac{5}{7}\,\text{AppellF1}\Big[\frac{7}{2},\,\frac{5}{3},\,2,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{25}{21}\,\text{AppellF1}\Big[\frac{7}{2},\,\frac{8}{3},\,1,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+$$

$$d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big(-9\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{2}{3},\,1,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+$$

$$2\,\Big(3\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,2,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-2\,\text{AppellF1}\Big[$$

$$\frac{3}{2},\,\frac{5}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)$$

$$\Big(-15\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+$$

$$2\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{2}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-2\,\text{AppellF1}\Big[\frac{5}{2},$$

$$\frac{5}{3},\,1,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)+$$

$$\Big(2^{2/3}\,\text{Cos}[c+d\,x]\,\Big(\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Sec}[c+d\,x]\Big)^{5/3}\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]$$

$$\Big(20\,(2\,A-2\,B+C)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\Big(3\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,2,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$2\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{5}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^3+10\,(2\,A-2\,B+C)$$

$$\Big(3\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,2,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$2\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{5}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^4\,\Big(-\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{2}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{3},\,1,$$

$$\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)-$$

$$9\,\Big(-\frac{1}{3}\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,2,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{2}{9}\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{5}{3},\,1,\,\frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)$$

$$\Big(-5\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\big(2\,(A+2\,B-C)+(4\,A+2\,B-C)\,\text{Cos}[c+d\,x]\big)\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2+2\,(2\,A+2\,B-C)$$

$$\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{2}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-2\,\text{AppellF1}\Big[$$

$$\frac{5}{2},\,\frac{5}{3},\,1,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)+$$

$$10\,(2\,A-2\,B+C)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^4$$

$$\Big(3\,\Big(-\frac{6}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{2}{3},\,3,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{3},\,2,\,\frac{7}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)-$$

$$2\,\Big(-\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)-$$

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\Bigg(5\,(4 A+2 B-C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Sin}[c+d x]+2\,(2 A+2 B-C)\,\Bigg(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\left(2\,(A+2 B-C)+(4 A+2 B-C)\,\text{Cos}[c+d x]\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$5\,\left(2\,(A+2 B-C)+(4 A+2 B-C)\,\text{Cos}[c+d x]\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\Bigg(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)+$$

$$2\,(2 A+2 B-C)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg(3\Bigg(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$\frac{10}{21}\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)-2\Bigg(-\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{25}{21}\text{AppellF1}\left[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\Bigg(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$2\,\Bigg(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)$$

$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$

$$\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$

$$\left(5\times 2^{2/3}\,\text{Cos}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{2/3}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right.$$

$$\left(10\,(2\,A-2\,B+C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4-$$

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\left(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

$$\left(2\,(A+2\,B-C)+(4\,A+2\,B-C)\,\text{Cos}[c+d\,x]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(2\,A+2\,B-C)$$

$$\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)$$

$$\left(-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\right.$$

$$\left.\left.\left.\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\right)\right)\right)\Big/$$

$$\left(3\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.\right.$$

$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$

$$\left.\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)$$

Problem 627: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{(a+a\,\text{Sec}[c+d\,x])^{4/3}}\,dx$$

Optimal (type 6, 402 leaves, 9 steps):

$$-\frac{3 (A-B+C) \operatorname{Tan}[c+d x]}{5 d (a+a \operatorname{Sec}[c+d x])^{4/3}}+\left(3 \sqrt{2} A \operatorname{AppellF1}\left[\frac{1}{6}, \frac{1}{2}, 1, \frac{7}{6}, \frac{1}{2} (1+\operatorname{Sec}[c+d x]), 1+\operatorname{Sec}[c+d x]\right] \operatorname{Tan}[c+d x]\right) \Big/ \left(a d \sqrt{1-\operatorname{Sec}[c+d x]} (a+a \operatorname{Sec}[c+d x])^{1/3}\right)+$$

$$\left(3^{3/4} (A-B-4 C) \operatorname{EllipticF}\left[\operatorname{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}}\right], \frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$

$$\left(2^{1/3}-(1+\operatorname{Sec}[c+d x])^{1/3}\right) \sqrt{\frac{2^{2/3}+2^{1/3} (1+\operatorname{Sec}[c+d x])^{1/3}+(1+\operatorname{Sec}[c+d x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}\right)^2}}$$

$$\left.\operatorname{Tan}[c+d x]\right) \Big/ \left(5 \times 2^{1/3} a d (1-\operatorname{Sec}[c+d x]) (a+a \operatorname{Sec}[c+d x])^{1/3}\right.$$

$$\left.\sqrt{-\frac{(1+\operatorname{Sec}[c+d x])^{1/3}\left(2^{1/3}-(1+\operatorname{Sec}[c+d x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}\right)^2}}\right)$$

Result (type 6, 7586 leaves):

$$\left(\operatorname{Cos}[c+d x]^2 ((1+\operatorname{Cos}[c+d x]) \operatorname{Sec}[c+d x])^{2/3}\right.$$

$$(1+\operatorname{Sec}[c+d x])^{4/3} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$

$$\left(-\frac{6}{5} \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\left(A \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+\right.$$

$$\left.\left.\frac{3}{5} \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(A \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right) \Big/$$

$$\left(d (A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]) (a (1+\operatorname{Sec}[c+d x]))^{4/3}\right)+$$

$$\left(2 \times 2^{2/3} \operatorname{Cos}[c+d x]^3 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]\right)^{5/3}\right.$$

$$(1+\operatorname{Sec}[c+d x])^{4/3} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$

$$\left(A \operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 (1+\operatorname{Sec}[c+d x])^{2/3}+\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right.$$

$$\left.\left(-\frac{1}{5} A (1+\operatorname{Sec}[c+d x])^{2/3}+\frac{1}{5} B (1+\operatorname{Sec}[c+d x])^{2/3}+\frac{4}{5} C (1+\operatorname{Sec}[c+d x])^{2/3}\right)\right)$$

$$\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\left(10 (6 A-B-4 C) \operatorname{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

$$\left.-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(3 \operatorname{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 2, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$

$$\left.2 \operatorname{AppellF1}\left[\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^4-$$

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$(3A+2B+8C+(9A+B+4C)\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(4A+B+4C)$$
$$\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Big/$$
$$\left(5\,d\,(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x])\,(a\,(1+\text{Sec}[c+d\,x]))^{4/3}\right.$$
$$\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$
$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$
$$\left.\left.2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\left(\left(2^{2/3}\,\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{5/3}\right.\right.$$
$$\left(10\,(6A-B-4C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4-$$
$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\,(3A+2B+8C+\right.$$
$$(9A+B+4C)\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(4A+B+4C)\,\left(3\,\text{AppellF1}\left[\right.\right.$$
$$\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},$$
$$\left.\left.\left.\left.1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Big/$$
$$\left(5\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$

$$\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)$$

$$\Bigg(-15 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +$$

$$2 \Bigg(3 \text{AppellF1}\left[\frac{5}{2}, \frac{2}{3}, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - 2 \text{AppellF1}\left[\frac{5}{2},\right.$$

$$\left.\frac{5}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg) -$$

$$\Bigg(2 \times 2^{2/3} \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]\right)^{5/3} \text{Sin}[c+d x] \text{ Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\Bigg(10 (6 A-B-4 C) \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\Bigg(3 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 2, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - 2 \text{AppellF1}\Bigg[$$

$$\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg]\Bigg) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^4 -$$

$$9 \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\Bigg(-5 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \Big(3 A+2 B+8 C+$$

$$(9 A+B+4 C) \text{Cos}[c+d x]\Big) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 + 2 (4 A+B+4 C) \Bigg(3 \text{AppellF1}\Bigg[$$

$$\frac{5}{2}, \frac{2}{3}, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg] - 2 \text{AppellF1}\Bigg[\frac{5}{2}, \frac{5}{3},$$

$$1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg]\Bigg) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)\Bigg) \Bigg/$$

$$\Bigg(5 \Bigg(-9 \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +$$

$$2 \Bigg(3 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 2, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - 2 \text{AppellF1}\Bigg[$$

$$\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg]\Bigg) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)$$

$$\Bigg(-15 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +$$

$$2 \Bigg(3 \text{AppellF1}\left[\frac{5}{2}, \frac{2}{3}, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - 2 \text{AppellF1}\Bigg[\frac{5}{2},$$

$$\frac{5}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg]\Bigg) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg) -$$

$$\Bigg(2 \times 2^{2/3} \text{Cos}[c+d x] \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]\right)^{5/3} \text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\Bigg(10 (6 A-B-4 C) \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\Bigg(3 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 2, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - 2 \text{AppellF1}\Bigg[$$

$$\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg]\Bigg) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^4 -$$

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\left(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$(3 A+2 B+8 C+(9 A+B+4 C)\,\text{Cos}[c+d x])\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2+2\,(4 A+B+4 C)$$
$$\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)$$
$$\left(2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.\right.$$
$$\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Tan}\left[\right.$$
$$\left.\frac{1}{2}(c+d x)\right]-9\left(-\frac{1}{3}\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{9}\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\left(3\left(-\frac{6}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-$$
$$2\left(-\frac{3}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\right.\right.$$
$$\left.\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\Big/$$
$$\left(5\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2$$
$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$
$$\left(2\times 2^{2/3}\,\text{Cos}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{5/3}\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right.$$

$$\left(10\,(6A-B-4C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^4-$$
$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$
$$\left(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$
$$(3A+2B+8C+(9A+B+4C)\,\text{Cos}[c+dx])\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2+2\,(4A+B+4C)$$
$$\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\left.\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)$$
$$\left(2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.\right.$$
$$\left.\left.\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}\right.$$
$$\left.(c+dx)\right]-15\left(-\frac{3}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2$$
$$\left(3\left(-\frac{10}{7}\,\text{AppellF1}\left[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{10}{21}\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)-$$
$$2\left(-\frac{5}{7}\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{25}{21}\,\text{AppellF1}\left[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+\right.\right.$$
$$\left.\left.\left.\left.\left.dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\right)\right)\right)\Big/$$
$$\left(5\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)$$
$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$

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

$$\Big(2\times 2^{2/3}\,\text{Cos}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{5/3}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\Big(20\,(6A-B-4C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+10\,(6A-B-4C)$$

$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$

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

$$9\Big(-\frac{1}{3}\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{9}\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)$$

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

$$(3A+2B+8C+(9A+B+4C)\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(4A+B+4C)$$

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

$$10\,(6A-B-4C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4$$

$$\Big(3\Big(-\frac{6}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\bigg) -$$

$$2\left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\left[\right.\right.$$

$$\left.\left.\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\bigg)\bigg) -$$

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\left(5\,(9\,A+B+4\,C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sin}[c+d\,x]+2\,(4\,A+B+4\,C)\,\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\bigg)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$

$$5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$(3\,A+2\,B+8\,C+(9\,A+B+4\,C)\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$

$$5\,(3\,A+2\,B+8\,C+(9\,A+B+4\,C)\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\bigg)+$$

$$2\,(4\,A+B+4\,C)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(3\left(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+\right.\right.\right.\right.$$

$$\left.d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{10}{21}\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\bigg)-2\left(-\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\right.\right.$$

$$\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{25}{21}\text{AppellF1}\left[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\bigg)\bigg)\bigg)\bigg)\bigg)\bigg)\bigg/$$

$$\left(5\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.\right.$$

$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\Bigg(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2\times 2^{2/3}\,\text{Cos}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{2/3}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\Bigg(10\,(6\,A-B-4\,C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\Bigg(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$(3\,A+2\,B+8\,C+(9\,A+B+4\,C)\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(4\,A+B+4\,C)$$

$$\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\Bigg(-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\Bigg(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\Bigg(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)\Bigg)$$

Problem 628: Result more than twice size of optimal antiderivative.

$$\int \frac{A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2}{(a + a\,\text{Sec}[c + d\,x])^{7/3}}\,dx$$

Optimal (type 6, 466 leaves, 10 steps):

$$-\frac{3\,(A - B + C)\,\text{Tan}[c + d\,x]}{11\,d\,(a + a\,\text{Sec}[c + d\,x])^{7/3}} - \frac{3\,(4\,A - 4\,B - 7\,C)\,\text{Tan}[c + d\,x]}{55\,a^2\,d\,(1 + \text{Sec}[c + d\,x])\,(a + a\,\text{Sec}[c + d\,x])^{1/3}} - \left(3\,\sqrt{2}\,A\,\text{AppellF1}\left[-\frac{5}{6}, \frac{1}{2}, 1, \frac{1}{6}, \frac{1}{2}\,(1 + \text{Sec}[c + d\,x]), 1 + \text{Sec}[c + d\,x]\right]\,\text{Tan}[c + d\,x]\right)\Big/ \left(5\,a^2\,d\,\sqrt{1 - \text{Sec}[c + d\,x]}\,(1 + \text{Sec}[c + d\,x])\,(a + a\,\text{Sec}[c + d\,x])^{1/3}\right) + \left(3^{3/4}\,(4\,A - 4\,B - 7\,C)\,\text{EllipticF}\left[\text{ArcCos}\left[\frac{2^{1/3} - \left(1 - \sqrt{3}\right)\,(1 + \text{Sec}[c + d\,x])^{1/3}}{2^{1/3} - \left(1 + \sqrt{3}\right)\,(1 + \text{Sec}[c + d\,x])^{1/3}}\right], \frac{1}{4}\left(2 + \sqrt{3}\right)\right]\,\left(2^{1/3} - (1 + \text{Sec}[c + d\,x])^{1/3}\right)\,\sqrt{\frac{2^{2/3} + 2^{1/3}\,(1 + \text{Sec}[c + d\,x])^{1/3} + (1 + \text{Sec}[c + d\,x])^{2/3}}{\left(2^{1/3} - \left(1 + \sqrt{3}\right)\,(1 + \text{Sec}[c + d\,x])^{1/3}\right)^2}}\,\text{Tan}[c + d\,x]\right)\Big/ \left(55 \times 2^{1/3}\,a^2\,d\,(1 - \text{Sec}[c + d\,x])\,(a + a\,\text{Sec}[c + d\,x])^{1/3}\,\sqrt{-\frac{(1 + \text{Sec}[c + d\,x])^{1/3}\,\left(2^{1/3} - (1 + \text{Sec}[c + d\,x])^{1/3}\right)}{\left(2^{1/3} - \left(1 + \sqrt{3}\right)\,(1 + \text{Sec}[c + d\,x])^{1/3}\right)^2}}\right)$$

Result (type 6, 7682 leaves):

$$\left(\text{Cos}[c + d\,x]^2\,\left((1 + \text{Cos}[c + d\,x])\,\text{Sec}[c + d\,x]\right)^{2/3}\,(1 + \text{Sec}[c + d\,x])^{7/3}\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)\left(-\frac{6}{55}\,\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]\left(20\,A\,\text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right] - 9\,B\,\text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right] - 2\,C\,\text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right]\right) - \frac{3}{22}\,\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]^5\left(A\,\text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right] - B\,\text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right] + C\,\text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right]\right) + \frac{3}{55}\,\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]^3\left(25\,A\,\text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right] - 14\,B\,\text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right] + 3\,C\,\text{Sin}\left[\frac{1}{2}\,(c + d\,x)\right]\right)\right)\right)\Big/ \left(d\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])\,(a\,(1 + \text{Sec}[c + d\,x]))^{7/3}\right) + \left(2 \times 2^{2/3}\,\text{Cos}[c + d\,x]^3\,\left(\text{Cos}\left[\frac{1}{2}\,(c + d\,x)\right]^2\,\text{Sec}[c + d\,x]\right)^{5/3}\,(1 + \text{Sec}[c + d\,x])^{7/3}\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)\left(A\,\text{Cos}[c + d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]^2\,(1 + \text{Sec}[c + d\,x])^{2/3} + \text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]^2\left(-\frac{3}{11}\,A\,(1 + \text{Sec}[c + d\,x])^{2/3} + \frac{4}{55}\,B\,(1 + \text{Sec}[c + d\,x])^{2/3} + \frac{7}{55}\,C\,(1 + \text{Sec}[c + d\,x])^{2/3}\right)\right)\,\text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]\left(10\,(70\,A - 4\,B - 7\,C)\,\text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^4-$$
$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$
$$\Big(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$
$$(25\,A+8\,B+14\,C+(95\,A+4\,B+7\,C)\,\text{Cos}[c+dx])\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2+2\,(40\,A+4\,B+7\,C)$$
$$\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big)\Big)\Big/$$
$$\Big(55\,d\,(A+2\,C+2\,B\,\text{Cos}[c+dx]+A\,\text{Cos}[2\,c+2\,dx])\,(a\,(1+\text{Sec}[c+dx]))^{7/3}$$
$$\Big(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-\right.$$
$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)$$
$$\Big(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+$$
$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-\right.$$
$$\left.\left.2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)$$
$$\Big(\Big(2^{2/3}\,\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\text{Sec}[c+dx]\right)^{5/3}$$
$$\Big(10\,(70\,A-4\,B-7\,C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$
$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^4-$$
$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Big(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\right.$$
$$\left.1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Big(25\,A+8\,B+14\,C+(95\,A+4\,B+7\,C)$$
$$\text{Cos}[c+dx])\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2+2\,(40\,A+4\,B+7\,C)\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\right.\right.$$
$$\left.2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\right.$$
$$\left.\left.\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)\Big)\Big)\Big/$$

$$\Bigg(55\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)-$$

$$\Bigg(2\times 2^{2/3}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{5/3}\text{Sin}[c+d\,x]\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg(10\,(70\,A-4\,B-7\,C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(25\,A+8\,B+14\,C+(95\,A+4\,B+7\,C)\,\text{Cos}[c+d\,x]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(40\,A+4\,B+7\,C)\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(55\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-$$

$$\Bigg(2\times 2^{2/3}\,\text{Cos}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{5/3}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\Bigg(10\,(70\,A-4\,B-7\,C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\left(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(25\,A+8\,B+14\,C+(95\,A+4\,B+7\,C)\,\text{Cos}[c+d\,x]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(40\,A+4\,B+7\,C)\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)$$

$$\Bigg(2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-9\left(-\frac{1}{3}\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{9}\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\left(3\left(-\frac{6}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)-\right.$$

$$\left.2\left(-\frac{3}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(55\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2$$

$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.\right.$$

$$\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)\Big)-$$

$$\Big(2\times 2^{2/3}\,\text{Cos}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{5/3}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\Big(10\,(70\,A-4\,B-7\,C)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\Big(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Big(25\,A+8\,B+$$

$$14\,C+(95\,A+4\,B+7\,C)\,\text{Cos}[c+d\,x]\Big)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(40\,A+4\,B+7\,C)$$

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

$$\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)\Big)$$

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

$$\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\Big[\frac{1}{2}$$

$$(c+d\,x)\Big]-15\,\Big(-\frac{3}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\Big(3\,\Big(-\frac{10}{7}\,\text{AppellF1}\left[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{10}{21}\,\text{AppellF1}\Big[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)-$$

$$2\,\Big(-\frac{5}{7}\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{25}{21}\,\text{AppellF1}\Big[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\text{Tan}\Big[\frac{1}{2}(c+$$

$$d\,x)\Big]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(55\,\Big(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

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

$$\frac{3}{2},\ \frac{5}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big)$$

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

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

$$\frac{5}{3},\ 1,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big)^2\Big)+$$

$$\Big(2\times 2^{2/3}\ \text{Cos}[c+d\ x]\ \left(\text{Cos}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \text{Sec}[c+d\ x]\right)^{5/3}\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]$$

$$\Big(20\ (70\ A-4\ B-7\ C)\ \text{AppellF1}\left[\frac{3}{2},\ \frac{2}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\right]$$

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

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

$$\text{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^3+10\ (70\ A-4\ B-7\ C)$$

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

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

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

$$-\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]+\frac{2}{5}\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{5}{3},\ 1,$$

$$\frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]\Big)-$$

$$9\ \Big(-\frac{1}{3}\ \text{AppellF1}\left[\frac{3}{2},\ \frac{2}{3},\ 2,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]+\frac{2}{9}\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{5}{3},\ 1,\ \frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]\Big)$$

$$\Big(-5\ \text{AppellF1}\left[\frac{3}{2},\ \frac{2}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\right]\ \Big(25\ A+$$

$$8\ B+14\ C+(95\ A+4\ B+7\ C)\ \text{Cos}[c+d\ x]\Big)\ \text{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2+2\ (40\ A+4\ B+7\ C)$$

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

$$\frac{5}{2},\ \frac{5}{3},\ 1,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big)+$$

$$10\ (70\ A-4\ B-7\ C)\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{2}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^4$$

$$\Big(3\Big(-\frac{6}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)-2\Big(-\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\text{AppellF1}\Big[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)\Big)-$$

$$9\,\text{AppellF1}\Big[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]$$

$$\Big(5\,(95\,A+4\,B+7\,C)\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Sin}[c+d\,x]+2\,(40\,A+4\,B+7\,C)\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]-2\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-$$

$$5\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\big(25\,A+8\,B+14\,C+(95\,A+4\,B+7\,C)\,\text{Cos}[c+d\,x]\big)\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-$$

$$5\,\big(25\,A+8\,B+14\,C+(95\,A+4\,B+7\,C)\,\text{Cos}[c+d\,x]\big)\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big(-\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)+$$

$$2\,(40\,A+4\,B+7\,C)\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\Big(3\Big(-\frac{10}{7}\,\text{AppellF1}\Big[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\frac{10}{21}\,\text{AppellF1}\Big[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)-2\Big(-\frac{5}{7}\,\text{AppellF1}\Big[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\frac{25}{21}\,\text{AppellF1}\Big[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(55\Big(-9\,\text{AppellF1}\Big[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+$$

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

$$\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)$$

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

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

$$\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$

$$\Big(2\times 2^{2/3}\,\text{Cos}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{2/3}\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\Big(10\,(70\,A-4\,B-7\,C)\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]$$

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

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

$$9\,\text{AppellF1}\Big[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]$$

$$\Big(-5\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\Big(25\,A+8\,B+$$

$$14\,C+(95\,A+4\,B+7\,C)\,\text{Cos}[c+d x]\Big)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2+2\,(40\,A+4\,B+7\,C)$$

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

$$\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)$$

$$\Big(-\text{Cos}\left[\frac{1}{2}(c+d x)\right]\text{Sec}[c+d x]\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Sec}[c+d x]\,\text{Tan}[c+d x]\Big)\Big)\Big/$$

$$\Big(33\Big(-9\,\text{AppellF1}\Big[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+$$

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

$$\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)$$

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

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

$$\frac{5}{3}, 1, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)\Big)\Big)$$

Problem 629: Result more than twice size of optimal antiderivative.

$$\int (a+a \operatorname{Sec}[c+d x])^{4/3} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 6, 839 leaves, 12 steps):

$$\frac{3 a (7 B+4 C) (a+a \operatorname{Sec}[c+d x])^{1/3} \operatorname{Tan}[c+d x]}{28 d}+$$
$$\left(3 \sqrt{2}\, a A \operatorname{AppellF1}\left[\frac{11}{6}, \frac{1}{2}, 1, \frac{17}{6}, \frac{1}{2}(1+\operatorname{Sec}[c+d x]), 1+\operatorname{Sec}[c+d x]\right] (1+\operatorname{Sec}[c+d x]) (a+a \operatorname{Sec}[c+d x])^{1/3} \operatorname{Tan}[c+d x]\right) \Big/$$
$$\left(11 d \sqrt{1-\operatorname{Sec}[c+d x]}\right)+\frac{3 C (a+a \operatorname{Sec}[c+d x])^{4/3} \operatorname{Tan}[c+d x]}{7 d}-$$
$$\frac{15 \left(1+\sqrt{3}\right) a (7 B+4 C) (a+a \operatorname{Sec}[c+d x])^{1/3} \operatorname{Tan}[c+d x]}{28 d (1+\operatorname{Sec}[c+d x])^{2/3} \left(2^{1/3}-\left(1+\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}\right)}+$$
$$\left(15 \times 3^{1/4} a (7 B+4 C) \operatorname{EllipticE}\left[\operatorname{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}}\right], \frac{1}{4}\left(2+\sqrt{3}\right)\right] (a+a \operatorname{Sec}[c+d x])^{1/3} \left(2^{1/3}-(1+\operatorname{Sec}[c+d x])^{1/3}\right) \sqrt{\frac{2^{2/3}+2^{1/3} (1+\operatorname{Sec}[c+d x])^{1/3}+(1+\operatorname{Sec}[c+d x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}\right)^2}} \operatorname{Tan}[c+d x]\right) \Big/ \left(14 \times 2^{2/3} d\right.$$
$$\left.(1-\operatorname{Sec}[c+d x]) (1+\operatorname{Sec}[c+d x])^{2/3} \sqrt{-\frac{(1+\operatorname{Sec}[c+d x])^{1/3} \left(2^{1/3}-(1+\operatorname{Sec}[c+d x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}\right)^2}}\right)+$$
$$\left(5 \times 3^{3/4} \left(1-\sqrt{3}\right) a (7 B+4 C) \operatorname{EllipticF}\left[\operatorname{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}}\right],\right.\right.$$
$$\left.\frac{1}{4}\left(2+\sqrt{3}\right)\right] (a+a \operatorname{Sec}[c+d x])^{1/3} \left(2^{1/3}-(1+\operatorname{Sec}[c+d x])^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3} (1+\operatorname{Sec}[c+d x])^{1/3}+(1+\operatorname{Sec}[c+d x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}\right)^2}} \operatorname{Tan}[c+d x]\right) \Big/ \left(28 \times 2^{2/3} d\right.$$
$$\left.(1-\operatorname{Sec}[c+d x]) (1+\operatorname{Sec}[c+d x])^{2/3} \sqrt{-\frac{(1+\operatorname{Sec}[c+d x])^{1/3} \left(2^{1/3}-(1+\operatorname{Sec}[c+d x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right) (1+\operatorname{Sec}[c+d x])^{1/3}\right)^2}}\right)$$

Result (type 6, 5459 leaves):

$$\Bigg(\text{Cos}[c+d x]^2 \left(\left(1+\text{Cos}[c+d x]\right) \text{Sec}[c+d x]\right)^{1/3} \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{4/3} \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right) \left(\frac{3}{14} \left(28 A+35 B+20 C\right) \text{Sin}[c+d x]+\frac{3}{14} \text{Sec}[c+d x] \left(7 B\,\text{Sin}[c+d x]+8 C\,\text{Sin}[c+d x]\right)+\frac{6}{7} C\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]\right)\Bigg) \Big/ \left(d \left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right) \left(1+\text{Sec}[c+d x]\right)^{4/3}\right) - \Bigg(\text{Cos}[c+d x]^2 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{4/3} \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right) \Bigg(4 A \left(1+\text{Sec}[c+d x]\right)^{1/3}+\frac{5}{2} B \left(1+\text{Sec}[c+d x]\right)^{1/3}+\frac{10}{7} C \left(1+\text{Sec}[c+d x]\right)^{1/3}+\text{Cos}[c+d x] \left(-6 A \left(1+\text{Sec}[c+d x]\right)^{1/3}-\frac{15}{2} B \left(1+\text{Sec}[c+d x]\right)^{1/3}-\frac{30}{7} C \left(1+\text{Sec}[c+d x]\right)^{1/3}\right)\Bigg) \text{Tan}\left[\frac{1}{2} (c+d x)\right] \Bigg(\Bigg(9 \left(28 A-5 \left(7 B+4 C\right)\right) \text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]\Bigg) \Big/ \Bigg(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+2 \Bigg(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\Bigg)+\Bigg(\left(28 A+35 B+20 C\right) \Bigg(6 \Bigg(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]\Bigg) \text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right] \left(-9+8\,\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\Bigg)\Bigg) \Big/ \Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+2 \Bigg(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\Bigg)\Bigg)\Bigg) \Big/ \Bigg(7\times 2^{2/3} d \left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]^2 \text{Sec}[c+d x]\right)^{2/3} \left(1+\text{Sec}[c+d x]\right)^{4/3} \left(-1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^4\right)$$

$$\left(\frac{1}{7\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]\right)^{2/3}\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^4\right)^2}\right.$$

$$2^{1/3}\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^4\left(\left(9(28 A-5(7 B+4 C))\right.\right.$$
$$\left.\operatorname{AppellF1}\left[\frac{1}{2}, \frac{1}{3}, 1, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \Big/$$
$$\left(9 \operatorname{AppellF1}\left[\frac{1}{2}, \frac{1}{3}, 1, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(-3 \operatorname{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, 2, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\operatorname{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.\left.\frac{4}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+\left(\left(28 A+\right.\right.$$
$$\left.35 B+20 C\right)\left(6\left(3 \operatorname{AppellF1}\left[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.$$
$$\left.\operatorname{AppellF1}\left[\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$
$$\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5 \operatorname{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, 1,\right.$$
$$\left.\left.\left.\frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right) \Big/$$
$$\left(15 \operatorname{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(-3 \operatorname{AppellF1}\left[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\operatorname{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\left.\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$
$$\left(1 \Big/\left(14 \times 2^{2/3}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]\right)^{2/3}\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^4\right)\right)\right)$$
$$\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\left(9(28 A-5(7 B+4 C))\right.\right.$$
$$\left.\operatorname{AppellF1}\left[\frac{1}{2}, \frac{1}{3}, 1, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \Big/$$
$$\left(9 \operatorname{AppellF1}\left[\frac{1}{2}, \frac{1}{3}, 1, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(-3 \operatorname{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, 2, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\operatorname{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.\left.\frac{4}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+\left(\left(28 A+\right.\right.$$
$$\left.35 B+20 C\right)\left(6\left(3 \operatorname{AppellF1}\left[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.$$
$$\left.\operatorname{AppellF1}\left[\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$
$$\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5 \operatorname{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, 1,\right.$$

$$\frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\left(-9+8\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(15\,\text{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] +$$

$$2\left(-3\,\text{AppellF1}\left[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] + \text{AppellF1}\Big[\right.$$

$$\left.\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\right)\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)\Bigg) -$$

$$\left(1\Bigg/\left(7\times 2^{2/3}\left(\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Sec}[c+dx]\right)^{2/3}\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^4\right)\right)\right)$$

$$\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\Bigg(\Bigg(9\,(28A-5\,(7B+4C))$$

$$\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, 2, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$

$$\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right] + \frac{1}{9}\text{AppellF1}\Big[\frac{3}{2}, \frac{4}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,$$

$$\left.-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\Bigg)\Bigg/$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2}, \frac{1}{3}, 1, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] +$$

$$2\left(-3\,\text{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, 2, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] + \text{AppellF1}\Big[\right.$$

$$\left.\frac{3}{2}, \frac{4}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\right)\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg) -$$

$$\Bigg(9\,(28A-5\,(7B+4C))\,\text{AppellF1}\left[\frac{1}{2}, \frac{1}{3}, 1, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$

$$\Bigg(2\left(-3\,\text{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, 2, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] +\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2}, \frac{4}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)$$

$$\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right] + 9\left(-\frac{1}{3}\text{AppellF1}\Big[\frac{3}{2}, \frac{1}{3}, 2, \frac{5}{2},\right.$$

$$\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right] +$$

$$\frac{1}{9}\text{AppellF1}\left[\frac{3}{2}, \frac{4}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$

$$\left.\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right) + 2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\left(-\frac{3}{5}\text{AppellF1}\Big[\right.$$

$$\frac{5}{2}, \frac{4}{3}, 2, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$

$$\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right] + \frac{4}{5}\text{AppellF1}\Big[\frac{5}{2}, \frac{7}{3}, 1, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,$$

$$-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right] - 3\left(-\frac{6}{5}\text{AppellF1}\Big[\right.$$

$$\frac{5}{2}, \frac{1}{3}, 3, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5}\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\Bigg(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)^2-$$

$$\Bigg((28A+35B+20C)\Bigg(6\Bigg(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)$$

$$\Bigg(2\Bigg(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+15\Bigg(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5}\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)+2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg(-\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-3\Bigg(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2},\frac{1}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{21}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2$$

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

$$\Bigg(\left(28\,A+35\,B+20\,C\right)\Bigg(40\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+6$$

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

$$\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-6$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sin}[c+d\,x]\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+6$$

$$\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Cos}[c+d\,x]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+5\Bigg(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{1}{5}\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+6$$

$$\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg(\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$

$$\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\Bigg(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2},\frac{1}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{5}{21}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$

$$\frac{1}{21\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{5/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4\right)}$$

$$2^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(\left(9\,(28\,A-5\,(7\,B+4\,C))\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+\left((28\,A+35\,B+20\,C)\left(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Big/\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\right)\right)\right)$$

Problem 630: Result more than twice size of optimal antiderivative.

$$\int (a + a \operatorname{Sec}[c + d x])^{1/3} \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) dx$$

Optimal (type 6, 786 leaves, 11 steps):

$$\frac{3 C (a + a \operatorname{Sec}[c + d x])^{1/3} \operatorname{Tan}[c + d x]}{4 d} + \left(3 \sqrt{2} A \operatorname{AppellF1}\left[\frac{5}{6}, \frac{1}{2}, 1, \frac{11}{6}, \frac{1}{2} (1 + \operatorname{Sec}[c + d x]), 1 + \operatorname{Sec}[c + d x]\right] (a + a \operatorname{Sec}[c + d x])^{1/3} \operatorname{Tan}[c + d x]\right) \Big/ \left(5 d \sqrt{1 - \operatorname{Sec}[c + d x]}\right) - \frac{3 \left(1 + \sqrt{3}\right) (4 B + C) (a + a \operatorname{Sec}[c + d x])^{1/3} \operatorname{Tan}[c + d x]}{4 d (1 + \operatorname{Sec}[c + d x])^{2/3} \left(2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}\right)} + \left(3 \times 3^{1/4} (4 B + C) \operatorname{EllipticE}\left[\operatorname{ArcCos}\left[\frac{2^{1/3} - \left(1 - \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}}{2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}}\right], \frac{1}{4} \left(2 + \sqrt{3}\right)\right] (a + a \operatorname{Sec}[c + d x])^{1/3} \left(2^{1/3} - (1 + \operatorname{Sec}[c + d x])^{1/3}\right) \sqrt{\frac{2^{2/3} + 2^{1/3} (1 + \operatorname{Sec}[c + d x])^{1/3} + (1 + \operatorname{Sec}[c + d x])^{2/3}}{\left(2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}\right)^2}} \operatorname{Tan}[c + d x]\right) \Big/ \left(2 \times 2^{2/3} d (1 - \operatorname{Sec}[c + d x]) (1 + \operatorname{Sec}[c + d x])^{2/3} \sqrt{-\frac{(1 + \operatorname{Sec}[c + d x])^{1/3} \left(2^{1/3} - (1 + \operatorname{Sec}[c + d x])^{1/3}\right)}{\left(2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}\right)^2}}\right) + \left(3^{3/4} \left(1 - \sqrt{3}\right) (4 B + C) \operatorname{EllipticF}\left[\operatorname{ArcCos}\left[\frac{2^{1/3} - \left(1 - \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}}{2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}}\right], \frac{1}{4} \left(2 + \sqrt{3}\right)\right] (a + a \operatorname{Sec}[c + d x])^{1/3} \left(2^{1/3} - (1 + \operatorname{Sec}[c + d x])^{1/3}\right) \sqrt{\frac{2^{2/3} + 2^{1/3} (1 + \operatorname{Sec}[c + d x])^{1/3} + (1 + \operatorname{Sec}[c + d x])^{2/3}}{\left(2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}\right)^2}} \operatorname{Tan}[c + d x]\right) \Big/ \left(4 \times 2^{2/3} d (1 - \operatorname{Sec}[c + d x]) (1 + \operatorname{Sec}[c + d x])^{2/3} \sqrt{-\frac{(1 + \operatorname{Sec}[c + d x])^{1/3} \left(2^{1/3} - (1 + \operatorname{Sec}[c + d x])^{1/3}\right)}{\left(2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}\right)^2}}\right)$$

Result (type 6, 5345 leaves):

$$\left(\operatorname{Cos}[c + d x]^2 \left((1 + \operatorname{Cos}[c + d x]) \operatorname{Sec}[c + d x]\right)^{1/3} (a (1 + \operatorname{Sec}[c + d x]))^{1/3} \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) \left(\frac{3}{2} (4 B + C) \operatorname{Sin}[c + d x] + \frac{3}{2} C \operatorname{Tan}[c + d x]\right)\right) \Big/ \left(d (A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]) (1 + \operatorname{Sec}[c + d x])^{1/3}\right) -$$

$$\Big(\text{Cos}[c+d x]^2 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{1/3} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\left(2 A \left(1+\text{Sec}[c+d x]\right)^{1/3}+2 B \left(1+\text{Sec}[c+d x]\right)^{1/3}+\frac{1}{2} C \left(1+\text{Sec}[c+d x]\right)^{1/3}+\right.$$

$$\left.\text{Cos}[c+d x] \left(-6 B \left(1+\text{Sec}[c+d x]\right)^{1/3}-\frac{3}{2} C \left(1+\text{Sec}[c+d x]\right)^{1/3}\right)\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]$$

$$\left(\left(9 (8 A-4 B-C) \text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]\right)\Big/\right.$$

$$\left(9 \text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+\right.$$

$$2 \left(-3 \text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)+$$

$$\left((4 B+C) \left(6 \left(3 \text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]-\right.\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]\right)$$

$$\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2+5 \text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\right.$$

$$\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right] \left(-9+8 \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right)\right)\Big/$$

$$\left(15 \text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+\right.$$

$$2 \left(-3 \text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\right.\right.$$

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

$$\left(2^{2/3} d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]^2 \text{Sec}[c+d x]\right)^{2/3}\right.$$

$$\left(1+\text{Sec}[c+d x]\right)^{1/3}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^4\right)$$

$$\left(\frac{1}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]^2 \text{Sec}[c+d x]\right)^{2/3} \left(-1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^4\right)^2}\right.$$

$$2^{1/3} \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]^4$$

$$\left(\left(9 (8 A-4 B-C) \text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]\right)\Big/\right.$$

$$\left(9 \text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+\right.$$

$$2 \left(-3 \text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$

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

$$\Big(\big(4\ B+C\big)\ \Big(6\ \Big(3\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{1}{3},\ 2,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]-$$

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

$$\text{Cos}[c+d\ x]\ \text{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2+5\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{1}{3},\ 1,$$

$$\frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \Big(-9+8\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big)\Big)\Big)\Big/$$

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

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

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

$$\Big(1\Big/\Big(2\times 2^{2/3}\ \Big(\text{Cos}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \text{Sec}[c+d\ x]\Big)^{2/3}\ \Big(-1+\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^4\Big)\Big)\Big)$$

$$\text{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2$$

$$\Big(\Big(9\ \big(8\ A-4\ B-C\big)\ \text{AppellF1}\Big[\frac{1}{2},\ \frac{1}{3},\ 1,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\Big)\Big/$$

$$\Big(9\ \text{AppellF1}\Big[\frac{1}{2},\ \frac{1}{3},\ 1,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]+$$

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

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

$$\Big(\big(4\ B+C\big)\ \Big(6\ \Big(3\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{1}{3},\ 2,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]-$$

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

$$\text{Cos}[c+d\ x]\ \text{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2+5\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{1}{3},\ 1,$$

$$\frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \Big(-9+8\ \text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big)\Big)\Big)\Big/$$

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

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

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

$$\Big(1\Big/\Big(2^{2/3}\ \Big(\text{Cos}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \text{Sec}[c+d\ x]\Big)^{2/3}\ \Big(-1+\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^4\Big)\Big)\Big)$$

$$\text{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]$$

$$\Bigg(\Bigg(9\,(8\,A-4\,B-C)\,\Big(-\frac{1}{3}\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{1}{3},\,2,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{1}{9}\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{4}{3},\,1,\,\frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\Bigg)\Big/$$

$$\Bigg(9\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{1}{3},\,1,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+$$

$$2\,\Big(-3\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{1}{3},\,2,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+\text{AppellF1}\Big[$$

$$\frac{3}{2},\,\frac{4}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Bigg)-$$

$$\Bigg(9\,(8\,A-4\,B-C)\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{1}{3},\,1,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\Bigg(2\,\Big(-3\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{1}{3},\,2,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2},\,\frac{4}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+9\,\Big(-\frac{1}{3}\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{1}{3},\,2,\,\frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$

$$\frac{1}{9}\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{4}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)+2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\Big(-\frac{3}{5}\,\text{AppellF1}\Big[$$

$$\frac{5}{2},\,\frac{4}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{4}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{7}{3},\,1,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]-3\,\Big(-\frac{6}{5}\,\text{AppellF1}\Big[$$

$$\frac{5}{2},\,\frac{1}{3},\,3,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{1}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{4}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\Big)\Bigg)\Bigg)\Big/$$

$$\Bigg(9\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{1}{3},\,1,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+2$$

$$\Big(-3\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{1}{3},\,2,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+\text{AppellF1}\Big[$$

$$\frac{3}{2},\,\frac{4}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Bigg)^2-$$

$$\Bigg(\Big((4\,B+C)\,\Big(6\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{1}{3},\,2,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

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

$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+15\Big(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

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

$$\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-3\Big(-\frac{10}{7}\text{AppellF1}\Big[$$

$$\frac{7}{2},\frac{1}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{21}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big)\Big)\Big/$$

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

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

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

$$\Big((4B+C)\Big(40\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+6\Big(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-6\Big(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Sin}[c+d x]\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+6\Big(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+5\Big(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5}\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)+6\,\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big(\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+3\Big(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2},\frac{1}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{21}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big)\Big)\Big)\Big/\Big(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\Big(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+\frac{1}{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{5/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4\right)}2^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big(\Big(9\,(8A-4B-C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\Big/\Big(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)+$$
$$\Bigg((4 B+C)\Bigg(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$
$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg)\Big/$$
$$\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$
$$2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)$$
$$\left(-\text{Cos}\left[\frac{1}{2}(c+d x)\right]\text{Sec}[c+d x]\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\,\text{Tan}[c+d x]\right)\Bigg)\Bigg)$$

Problem 631: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{(a+a\,\text{Sec}[c+d x])^{2/3}}\,dx$$

Optimal (type 6, 803 leaves, 11 steps):

$$-\frac{3\,(A-B+C)\,\mathrm{Tan}[c+d\,x]}{d\,(a+a\,\mathrm{Sec}[c+d\,x])^{2/3}}+$$
$$\left(3\sqrt{2}\,A\,\mathrm{AppellF1}\left[\frac{5}{6},\frac{1}{2},1,\frac{11}{6},\frac{1}{2}\,(1+\mathrm{Sec}[c+d\,x]),1+\mathrm{Sec}[c+d\,x]\right](a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\right.$$
$$\left.\mathrm{Tan}[c+d\,x]\right)\Big/\left(5\,a\,d\,\sqrt{1-\mathrm{Sec}[c+d\,x]}\right)-$$
$$\frac{3\,\left(1+\sqrt{3}\right)(A-B+2\,C)\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\,\mathrm{Tan}[c+d\,x]}{a\,d\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}+$$
$$\left(3\times 2^{1/3}\times 3^{1/4}\,(A-B+2\,C)\,\mathrm{EllipticE}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\mathrm{Sec}[c+d\,x])^{1/3}+(1+\mathrm{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(a\,d\,(1-\mathrm{Sec}[c+d\,x])\right.$$
$$\left.(1+\mathrm{Sec}[c+d\,x])^{2/3}\sqrt{-\frac{(1+\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\right)+$$
$$\left(3^{3/4}\left(1-\sqrt{3}\right)(A-B+2\,C)\,\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\mathrm{Sec}[c+d\,x])^{1/3}+(1+\mathrm{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(2^{2/3}\,a\,d\right.$$
$$\left.(1-\mathrm{Sec}[c+d\,x])\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\sqrt{-\frac{(1+\mathrm{Sec}[c+d\,x])^{1/3}\left(2^{1/3}-(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}\right)^2}}\right)$$

Result (type 6, 5389 leaves):

$$\left(\mathrm{Cos}[c+d\,x]^2\,\left((1+\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]\right)^{1/3}\right.$$
$$(1+\mathrm{Sec}[c+d\,x])^{2/3}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(-6\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]\left(A\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]-B\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]+C\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+\right.$$
$$\left.\left.6\,(A-B+2\,C)\,\mathrm{Sin}[c+d\,x]\right)\right)\Big/$$
$$\left(d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{2/3}\right)-$$
$$\left(2\times 2^{1/3}\,\mathrm{Cos}[c+d\,x]^2\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\Big(4\,A\,(1+\text{Sec}[c+d\,x])^{1/3}-2\,B\,(1+\text{Sec}[c+d\,x])^{1/3}+4\,C\,(1+\text{Sec}[c+d\,x])^{1/3}+\text{Cos}[c+d\,x]\,\Big(-6\,A\,(1+\text{Sec}[c+d\,x])^{1/3}+6\,B\,(1+\text{Sec}[c+d\,x])^{1/3}-12\,C\,(1+\text{Sec}[c+d\,x])^{1/3}\Big)\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\,\Bigg(\Big(9\,(A+B-2\,C)\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\Big/$$

$$\Big(9\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+2\,\Big(-3\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)+$$

$$\Bigg((A-B+2\,C)\,\Big(6\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]-\text{AppellF1}\Big[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\,\text{Cos}[c+d\,x]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2+5\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\Big(-9+8\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)\Big)\Bigg)\Big/$$

$$\Big(15\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+2\,\Big(-3\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)\Bigg)\Bigg)\Big/$$

$$\Bigg(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\Big(\text{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Sec}[c+d\,x]\Big)^{2/3}\,(a\,(1+\text{Sec}[c+d\,x]))^{2/3}\,\Big(-1+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^4\Big)$$

$$\Bigg(\frac{1}{\Big(\text{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Sec}[c+d\,x]\Big)^{2/3}\,\Big(-1+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^4\Big)^2}\,4\times 2^{1/3}\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^4$$

$$\Bigg(\Big(9\,(A+B-2\,C)\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\Big/$$

$$\Big(9\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+2\,\Big(-3\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)+$$

$$\Big((A-B+2\,C)\,\Big(6\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]-$$

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

$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\right.$$

$$\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\Big)\Big/$$

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

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

$$\left.\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)-$$

$$\frac{1}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{2/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4\right)}2^{1/3}\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\Big(\Big(9(A+B-2C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\Big/$$

$$\Big(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

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

$$\left.\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)+$$

$$\Big((A-B+2C)\Big(6\Big(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

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

$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\right.$$

$$\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\Big)\Big/$$

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

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

$$\left.\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)-$$

$$\frac{1}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{2/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4\right)}2\times 2^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\Big(\Big(9(A+B-2C)\Big(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{9}\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big/$$

$$\Big(9\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+$$
$$2\Big(-3\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+\text{AppellF1}\Big[$$
$$\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)-$$
$$\Big(9\,(A+B-2\,C)\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]$$
$$\Big(2\Big(-3\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+$$
$$\text{AppellF1}\Big[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)$$
$$\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+9\Big(-\frac{1}{3}\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},$$
$$\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+$$
$$\frac{1}{9}\text{AppellF1}\Big[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]$$
$$\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)+2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big(-\frac{3}{5}\text{AppellF1}\Big[$$
$$\frac{5}{2},\frac{4}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2$$
$$\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\frac{4}{5}\text{AppellF1}\Big[\frac{5}{2},\frac{7}{3},1,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,$$
$$-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-3\Big(-\frac{6}{5}\text{AppellF1}\Big[$$
$$\frac{5}{2},\frac{1}{3},3,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2$$
$$\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+\frac{1}{5}\text{AppellF1}\Big[\frac{5}{2},\frac{4}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,$$
$$-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)\Big)\Big)\Big)\Big/$$
$$\Big(9\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+2$$
$$\Big(-3\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+\text{AppellF1}\Big[$$
$$\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)^2-$$
$$\Big(\Big(A-B+2\,C\Big)\Big(6\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]-$$
$$\text{AppellF1}\Big[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)$$
$$\text{Cos}[c+d\,x]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2+5\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},$$
$$1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big(-9+8\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)\Big)$$

$$\Big(2\,\Big(-3\,\text{AppellF1}\big[\tfrac{5}{2},\tfrac{1}{3},2,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]+\text{AppellF1}\big[\tfrac{5}{2},\tfrac{4}{3},1,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\Big)\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]+15\,\Big(-\tfrac{3}{5}\,\text{AppellF1}\big[\tfrac{5}{2},\tfrac{1}{3},2,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]+\tfrac{1}{5}\,\text{AppellF1}\big[\tfrac{5}{2},\tfrac{4}{3},1,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]\Big)+2\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\,\Big(-\tfrac{5}{7}\,\text{AppellF1}\big[\tfrac{7}{2},\tfrac{4}{3},2,\tfrac{9}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]+\tfrac{20}{21}\,\text{AppellF1}\big[\tfrac{7}{2},\tfrac{7}{3},1,\tfrac{9}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]-3\,\Big(-\tfrac{10}{7}\,\text{AppellF1}\big[\tfrac{7}{2},\tfrac{1}{3},3,\tfrac{9}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]+\tfrac{5}{21}\,\text{AppellF1}\big[\tfrac{7}{2},\tfrac{4}{3},2,\tfrac{9}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(15\,\text{AppellF1}\big[\tfrac{3}{2},\tfrac{1}{3},1,\tfrac{5}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]+2\,\Big(-3\,\text{AppellF1}\big[\tfrac{5}{2},\tfrac{1}{3},2,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]+\text{AppellF1}\big[\tfrac{5}{2},\tfrac{4}{3},1,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\Big)\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\Big)^2+$$

$$\Big((A-B+2\,C)\,\Big(40\,\text{AppellF1}\big[\tfrac{3}{2},\tfrac{1}{3},1,\tfrac{5}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]+6\,\Big(3\,\text{AppellF1}\big[\tfrac{5}{2},\tfrac{1}{3},2,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]-\text{AppellF1}\big[\tfrac{5}{2},\tfrac{4}{3},1,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\Big)\,\text{Cos}[c+d\,x]\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^4\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]-6\,\Big(3\,\text{AppellF1}\big[\tfrac{5}{2},\tfrac{1}{3},2,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]-\text{AppellF1}\big[\tfrac{5}{2},\tfrac{4}{3},1,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]\Big)\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\,\text{Sin}[c+d\,x]\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2+6\,\Big(3\,\text{AppellF1}\big[\tfrac{5}{2},\tfrac{1}{3},2,\tfrac{7}{2},\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2,-\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]^2\big]-$$

$$\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\,\text{Cos}[c+d x]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+5\left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

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

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+6$$

$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+3\left(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2},\frac{1}{3},3,\right.\right.$$

$$\left.\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{21}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\Bigg/$$

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)+$$

$$\frac{1}{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{5/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4\right)}$$

$$4\times$$

$$2^{1/3}$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(\left(9\,(A+B-2C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Bigg/\right.$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$

$$\left((A-B+2C)\left(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)$$

$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\right.$$

$$\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$2\Bigg(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\Big[$$

$$\left.\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)$$

$$\Bigg(-\text{Cos}\left[\frac{1}{2}(c+d x)\right]\text{Sec}[c+d x]\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Sec}[c+d x]\,\text{Tan}[c+d x]\Bigg)\Bigg)\Bigg)$$

Problem 632: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{(a+a\,\text{Sec}[c+d x])^{5/3}}\,dx$$

Optimal (type 6, 856 leaves, 12 steps):

$$-\frac{3\,(A-B+C)\,\text{Tan}[c+d\,x]}{7\,d\,(a+a\,\text{Sec}[c+d\,x])^{5/3}}-\frac{3\,(2\,A-2\,B-5\,C)\,\text{Tan}[c+d\,x]}{7\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^{2/3}}-$$

$$\left(3\,\sqrt{2}\,A\,\text{AppellF1}\left[-\frac{1}{6},\frac{1}{2},1,\frac{5}{6},\frac{1}{2}\,(1+\text{Sec}[c+d\,x]),1+\text{Sec}[c+d\,x]\right]\text{Tan}[c+d\,x]\right)\Big/$$

$$\left(a\,d\,\sqrt{1-\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^{2/3}\right)-$$

$$\frac{3\,\left(1+\sqrt{3}\right)\,(2\,A-2\,B-5\,C)\,(1+\text{Sec}[c+d\,x])^{1/3}\,\text{Tan}[c+d\,x]}{7\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^{2/3}\,\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}\right)}+$$

$$\left(3\times2^{1/3}\times3^{1/4}\,(2\,A-2\,B-5\,C)\,\text{EllipticE}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}}\right],\right.\right.$$

$$\left.\frac{1}{4}\,\left(2+\sqrt{3}\right)\right]\,(1+\text{Sec}[c+d\,x])^{1/3}\,\left(2^{1/3}-(1+\text{Sec}[c+d\,x])^{1/3}\right)$$

$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\text{Sec}[c+d\,x])^{1/3}+(1+\text{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}\right)^2}}\,\text{Tan}[c+d\,x]\right)\Big/\left(7\,a\,d\,(1-\text{Sec}[c+d\,x])\right.$$

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

$$\left(3^{3/4}\,\left(1-\sqrt{3}\right)\,(2\,A-2\,B-5\,C)\,\text{EllipticF}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}}\right],\right.\right.$$

$$\left.\frac{1}{4}\,\left(2+\sqrt{3}\right)\right]\,(1+\text{Sec}[c+d\,x])^{1/3}\,\left(2^{1/3}-(1+\text{Sec}[c+d\,x])^{1/3}\right)$$

$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\,(1+\text{Sec}[c+d\,x])^{1/3}+(1+\text{Sec}[c+d\,x])^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,(1+\text{Sec}[c+d\,x])^{1/3}\right)^2}}\,\text{Tan}[c+d\,x]\right)\Big/\left(7\times2^{2/3}\,a\,d\right.$$

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

Result (type 6, 5507 leaves):

$$\left(\text{Cos}[c+d\,x]^2\,\left((1+\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]\right)^{1/3}\right.$$

$$(1+\text{Sec}[c+d\,x])^{5/3}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(-\frac{6}{7}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(10\,A\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-3\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-4\,C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+\right.$$

$$\frac{3}{7}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(A\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+$$

$$\left.\left.\frac{6}{7}\,(9\,A-2\,B-5\,C)\,\text{Sin}[c+d\,x]\right)\right)\Big/$$

$$\left(d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/3}\right)-$$

$$\Bigg(2\times 2^{1/3}\,\text{Cos}[c+d\,x]^2\left(1+\text{Sec}[c+d\,x]\right)^{5/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\frac{32}{7}A\left(1+\text{Sec}[c+d\,x]\right)^{1/3}-\frac{4}{7}B\left(1+\text{Sec}[c+d\,x]\right)^{1/3}-$$

$$\frac{10}{7}C\left(1+\text{Sec}[c+d\,x]\right)^{1/3}+\text{Cos}[c+d\,x]\Bigg(-\frac{54}{7}A\left(1+\text{Sec}[c+d\,x]\right)^{1/3}+$$

$$\frac{12}{7}B\left(1+\text{Sec}[c+d\,x]\right)^{1/3}+\frac{30}{7}C\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\Bigg)\Bigg)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\Bigg(\Bigg(9\left(5A+2B+5C\right)\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg)\Big/$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

$$2\Bigg(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)+$$

$$\Bigg(\left(9A-2B-5C\right)\Bigg(6\Bigg(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-$$

$$\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg)$$

$$\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\right.$$

$$\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg)\Big/$$

$$\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

$$2\Bigg(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\right.$$

$$\left.\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(7d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{2/3}$$

$$\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/3}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4\right)$$

$$\Bigg(\frac{1}{7\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{2/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4\right)^2}$$

$$4\times 2^{1/3}\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4$$

$$\Bigg(\Bigg(9\left(5A+2B+5C\right)\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg)\Big/$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

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

$$\Bigg((9A-2B-5C)\Bigg(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$

$$\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

$$2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)-$$

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

$$\Bigg(\Bigg(9(5A+2B+5C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg)\Bigg/$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

$$2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)+$$

$$\Bigg((9A-2B-5C)\Bigg(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$

$$\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

$$2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)-$$

$$\frac{1}{7\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{2/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4\right)}\,2\times 2^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\left(\left(9\,(5A+2B+5C)\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{1}{9}\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\right)\Big/$$
$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$
$$2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)-$$
$$\left(9\,(5A+2B+5C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$
$$\left(2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.\right.$$
$$\left.\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+9\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+$$
$$\frac{1}{9}\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\left(-\frac{3}{5}\text{AppellF1}\left[\right.\right.$$
$$\frac{5}{2},\frac{4}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{4}{5}\text{AppellF1}\left[\frac{5}{2},\frac{7}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]-3\left(-\frac{6}{5}\text{AppellF1}\left[\right.\right.$$
$$\frac{5}{2},\frac{1}{3},3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{1}{5}\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\right)\right)\right)\Big/$$
$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\right.$$
$$\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2-$$
$$\left(\left((9A-2B-5C)\left(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-\right.\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)$$
$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\right.$$
$$\left.1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\Big)$$
$$\Big(2\Big(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$
$$\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+15\Big(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{1}{5}\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)+2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big(-\frac{5}{7}\text{AppellF1}\Big[$$
$$\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-3\Big(-\frac{10}{7}\text{AppellF1}\Big[$$
$$\frac{7}{2},\frac{1}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{21}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big)\Big)\Big/$$
$$\Big(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2$$
$$\Big(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\Big[$$
$$\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)^2+$$
$$\Big((9A-2B-5C)\Big(40\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+6\Big(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-6\Big(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Sin}[c+d x]\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+6$$
$$\Big(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$
$$\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Cos}[c+d x]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+5\,\Big(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{1}{5}\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\,\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+6$$
$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\,\Big(\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$
$$\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+3\,\Big(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2},\frac{1}{3},3,\right.$$
$$\left.\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{21}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big)\Big)\Big/$$
$$\Big(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$
$$2\,\Big(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\Big[$$
$$\left.\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$
$$\frac{1}{21\,\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{5/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4\right)}$$
$$4\times$$
$$2^{1/3}$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$
$$\Big(\Big(9\,(5A+2B+5C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\Big/$$
$$\Big(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)+$$
$$\Bigg((9\,A-2\,B-5\,C)\left(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\right.$$
$$\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$
$$2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$
$$\left(-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\right.$$
$$\left.\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\right)\Bigg)\Bigg)$$

Problem 633: Unable to integrate problem.

$$\int \text{Sec}[c+d\,x]^m\,(a+a\,\text{Sec}[c+d\,x])^n\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 6, 259 leaves, 8 steps):

$$\frac{C\,\text{Sec}[c+d\,x]^{1+m}\,(a+a\,\text{Sec}[c+d\,x])^n\,\text{Sin}[c+d\,x]}{d\,(1+m+n)}+\frac{1}{d\,(1+m+n)}$$
$$2^{\frac{3}{2}+n}\,(C\,n+B\,(1+m+n))\,\text{AppellF1}\left[\frac{1}{2},1-m,-\frac{1}{2}-n,\frac{3}{2},1-\text{Sec}[c+d\,x],\frac{1}{2}(1-\text{Sec}[c+d\,x])\right]$$
$$(1+\text{Sec}[c+d\,x])^{-\frac{1}{2}-n}\,(a+a\,\text{Sec}[c+d\,x])^n\,\text{Tan}[c+d\,x]+\frac{1}{d\,(1+m+n)}$$
$$2^{\frac{1}{2}+n}\,(C\,(m-n)+A\,(1+m+n)-B\,(1+m+n))\,\text{AppellF1}\left[\frac{1}{2},1-m,\frac{1}{2}-n,\frac{3}{2},1-\text{Sec}[c+d\,x],\right.$$
$$\left.\frac{1}{2}(1-\text{Sec}[c+d\,x])\right](1+\text{Sec}[c+d\,x])^{-\frac{1}{2}-n}\,(a+a\,\text{Sec}[c+d\,x])^n\,\text{Tan}[c+d\,x]$$

Result (type 8, 43 leaves):

$$\int \text{Sec}[c+d\,x]^m\,(a+a\,\text{Sec}[c+d\,x])^n\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Problem 634: Unable to integrate problem.

$$\int \text{Sec}[c+d x]^{-1-n} (a+a \text{Sec}[c+d x])^n \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 6, 258 leaves, 8 steps):

$$\frac{A \text{Sec}[c+d x]^{-n} (a+a \text{Sec}[c+d x])^n \text{Sin}[c+d x]}{d (1+n)}+$$
$$\left((A n+B (1+n)-C (1+n)) \text{Hypergeometric2F1}\left[\frac{1}{2}-n,-n,1-n,-\frac{2 \text{Sec}[c+d x]}{1-\text{Sec}[c+d x]}\right] \text{Sec}[c+d x]^{1-n}\right.$$
$$\left.\left(\frac{1+\text{Sec}[c+d x]}{1-\text{Sec}[c+d x]}\right)^{\frac{1}{2}-n} (a+a \text{Sec}[c+d x])^n \text{Sin}[c+d x]\right) \Big/ (d n (1+n) (1+\text{Sec}[c+d x]))+$$
$$\frac{1}{d} 2^{\frac{3}{2}+n} C \text{AppellF1}\left[\frac{1}{2},1+n,-\frac{1}{2}-n,\frac{3}{2},1-\text{Sec}[c+d x],\frac{1}{2} (1-\text{Sec}[c+d x])\right]$$
$$(1+\text{Sec}[c+d x])^{-\frac{1}{2}-n} (a+a \text{Sec}[c+d x])^n \text{Tan}[c+d x]$$

Result (type 8, 47 leaves):

$$\int \text{Sec}[c+d x]^{-1-n} (a+a \text{Sec}[c+d x])^n \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Problem 636: Result more than twice size of optimal antiderivative.

$$\int (a+a \text{Sec}[c+d x])^m \left(B-C+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 6, 171 leaves, 8 steps):

$$\left(\sqrt{2} (B-C) \text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},1,\frac{5}{2}+m,\frac{1}{2} (1+\text{Sec}[c+d x]),1+\text{Sec}[c+d x]\right]\right.$$
$$\left.(1+\text{Sec}[c+d x]) (a+a \text{Sec}[c+d x])^m \text{Tan}[c+d x]\right) \Big/ \left(d (3+2 m) \sqrt{1-\text{Sec}[c+d x]}\right)+$$
$$\frac{1}{d} 2^{\frac{3}{2}+m} C \text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{1}{2}-m,\frac{3}{2},\frac{1}{2} (1-\text{Sec}[c+d x])\right]$$
$$(1+\text{Sec}[c+d x])^{-\frac{1}{2}-m} (a+a \text{Sec}[c+d x])^m \text{Tan}[c+d x]$$

Result (type 6, 2582 leaves):

$$\left(2^{1+m} \text{Cos}\left[\frac{1}{2} (c+d x)\right] \text{Cos}[c+d x] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]^2 \text{Sec}[c+d x]\right)^m (1+\text{Sec}[c+d x])^{-1-m}\right.$$
$$(a (1+\text{Sec}[c+d x]))^{1+m} (B-C+C \text{Sec}[c+d x]) \left(2 C \text{Sec}[c+d x]^2 (1+\text{Sec}[c+d x])^m+\right.$$
$$\left.\text{Sec}[c+d x] \left(2 B (1+\text{Sec}[c+d x])^m-2 C (1+\text{Sec}[c+d x])^m\right)\right)$$
$$\text{Sin}\left[\frac{1}{2} (c+d x)\right] \left(\left((B-C) \text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]+2 C\right.\right.$$
$$\left.\text{Hypergeometric2F1}\left[\frac{1}{2},2+m,\frac{3}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right]\right) \left(\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2\right)^m+$$
$$\left(3 (B-C) \text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right] \text{Cos}\left[\frac{1}{2} (c+d x)\right]^2\right) \Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$2\left(\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.\left.1+m,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)\Big/$$
$$\left(a\,d\,(C+B\,\text{Cos}[c+d x]-C\,\text{Cos}[c+d x])\left(2^m\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^m\right.\right.$$
$$\left(\left(\left((B-C)\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\,C\,\text{Hypergeometric2F1}\left[\frac{1}{2},\right.\right.\right.\right.$$
$$\left.\left.2+m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\left(\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^m+\left(3\,(B-C)\right.$$
$$\left.\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$2\left(\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.\left.1+m,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$
$$2^{1+m}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^m\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$
$$\left(m\left((B-C)\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\,C\,\text{Hypergeometric2F1}\left[\right.\right.\right.$$
$$\left.\left.\frac{1}{2},2+m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\left(\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-1+m}$$
$$\left(-\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Sin}[c+d x]+\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-$$
$$\left(3\,(B-C)\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right.$$
$$\left.\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$2\left(\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.\left.1+m,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$
$$\left(3\,(B-C)\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\right.\right.\right.\right.$$
$$\left.\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},1+m,1,\right.$$
$$\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$2\left(\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$

$$1+m,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)-$$

$$\Big(3(B-C)\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\Big(-2\Big(\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\Big[\frac{3}{2},$$
$$1+m,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\Big[\frac{1}{2}$$
$$(c+d x)\Big]+3\Big(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3}m\,\text{AppellF1}\Big[\frac{3}{2},1+m,1,\frac{5}{2},$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)-$$
$$2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big(-\frac{6}{5}\text{AppellF1}\Big[\frac{5}{2},m,3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},1+m,2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-m\Big(-\frac{3}{5}\text{AppellF1}\Big[\frac{5}{2},1+m,2,$$
$$\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{3}{5}(1+m)\,\text{AppellF1}\Big[\frac{5}{2},2+m,1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big)\Big)\Big/$$
$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$
$$2\Big(\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\Big[\frac{3}{2},$$
$$1+m,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)^2+$$
$$\left(\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^m\Big(C\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$
$$\Big(-\text{Hypergeometric2F1}\left[\frac{1}{2},2+m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$
$$\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-2-m}\Big)+$$
$$\frac{1}{2}(B-C)\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]\Big(-\text{Hypergeometric2F1}\Big[\frac{1}{2},$$
$$1+m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-1-m}\Big)\Big)+$$
$$2^{1+m}m\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{-1+m}\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(\left(\left((B-C)\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\,C\,\text{Hypergeometric2F1}\left[\frac{1}{2},2+m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\left(\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^m+\left(3\,(B-C)\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\left(-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\right)\right)\right)$$

Problem 637: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^3\,(a+b\,\text{Sec}[c+d\,x])\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 140 leaves, 7 steps):

$$\frac{a\,(4\,A+3\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{b\,(5\,A+4\,C)\,\text{Tan}[c+d\,x]}{5\,d}+\frac{a\,(4\,A+3\,C)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{8\,d}+\frac{a\,C\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{4\,d}+\frac{b\,C\,\text{Sec}[c+d\,x]^4\,\text{Tan}[c+d\,x]}{5\,d}+\frac{b\,(5\,A+4\,C)\,\text{Tan}[c+d\,x]^3}{15\,d}$$

Result (type 3, 426 leaves):

$$-\frac{a\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{2\,d}-\frac{3\,a\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{a\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{2\,d}+\frac{3\,a\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{a\,A}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{3\,a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{a\,A}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{3\,a\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{2\,A\,b\,\text{Tan}[c+d\,x]}{3\,d}+\frac{8\,b\,C\,\text{Tan}[c+d\,x]}{15\,d}+\frac{A\,b\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}+\frac{4\,b\,C\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{15\,d}+\frac{b\,C\,\text{Sec}[c+d\,x]^4\,\text{Tan}[c+d\,x]}{5\,d}$$

Problem 638: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^2\,(a+b\,\text{Sec}[c+d\,x])\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

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

$$\frac{b\,(4\,A+3\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{a\,(3\,A+2\,C)\,\text{Tan}[c+d\,x]}{3\,d}+\frac{b\,(4\,A+3\,C)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{8\,d}+\frac{a\,C\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}+\frac{b\,C\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{4\,d}$$

Result (type 3, 377 leaves):

$$-\frac{A\,b\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{2\,d}-\frac{3\,b\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{A\,b\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{2\,d}+\frac{3\,b\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{b\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{A\,b}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{3\,b\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{b\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{A\,b}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{3\,b\,C}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{a\,A\,\text{Tan}[c+d\,x]}{d}+\frac{2\,a\,C\,\text{Tan}[c+d\,x]}{3\,d}+\frac{a\,C\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}$$

Problem 640: Result more than twice size of optimal antiderivative.

$$\int (a + b \operatorname{Sec}[c + d x]) \left(A + C \operatorname{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 58 leaves, 5 steps):

$$a A x + \frac{b (2 A + C) \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{2 d} + \frac{a C \operatorname{Tan}[c + d x]}{d} + \frac{b C \operatorname{Sec}[c + d x] \operatorname{Tan}[c + d x]}{2 d}$$

Result (type 3, 218 leaves):

$$a A x - \frac{A b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{A b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} - \frac{b C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{2 d} + \frac{b C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{2 d} + \frac{b C}{4 d \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} - \frac{b C}{4 d \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} + \frac{a C \operatorname{Tan}[c + d x]}{d}$$

Problem 641: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c + d x] (a + b \operatorname{Sec}[c + d x]) \left(A + C \operatorname{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 42 leaves, 5 steps):

$$A b x + \frac{a C \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{d} + \frac{a A \operatorname{Sin}[c + d x]}{d} + \frac{b C \operatorname{Tan}[c + d x]}{d}$$

Result (type 3, 112 leaves):

$$A b x - \frac{a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{a A \operatorname{Cos}[d x] \operatorname{Sin}[c]}{d} + \frac{a A \operatorname{Cos}[c] \operatorname{Sin}[d x]}{d} + \frac{b C \operatorname{Tan}[c + d x]}{d}$$

Problem 642: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c + d x]^2 (a + b \operatorname{Sec}[c + d x]) \left(A + C \operatorname{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 58 leaves, 5 steps):

$$\frac{1}{2} a (A + 2 C) x + \frac{b C \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{d} + \frac{A b \operatorname{Sin}[c + d x]}{d} + \frac{a A \operatorname{Cos}[c + d x] \operatorname{Sin}[c + d x]}{2 d}$$

Result (type 3, 131 leaves):

$$a C x + \frac{a A (c + d x)}{2 d} - \frac{b C \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{b C \text{Log}\left[\text{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \text{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right]}{d} + \frac{A b \text{Cos}[d x] \text{Sin}[c]}{d} + \frac{A b \text{Cos}[c] \text{Sin}[d x]}{d} + \frac{a A \text{Sin}[2 (c + d x)]}{4 d}$$

Problem 647: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c + d x] (a + b \text{Sec}[c + d x])^2 \left(A + C \text{Sec}[c + d x]^2\right) dx$$

Optimal (type 3, 170 leaves, 7 steps):

$$\frac{\left(4 a^2 (2 A + C) + b^2 (4 A + 3 C)\right) \text{ArcTanh}[\text{Sin}[c + d x]]}{8 d} + \frac{a \left(12 A b^2 - a^2 C + 8 b^2 C\right) \text{Tan}[c + d x]}{6 b d} - \frac{\left(2 a^2 C - 3 b^2 (4 A + 3 C)\right) \text{Sec}[c + d x] \text{Tan}[c + d x]}{24 d} - \frac{a C (a + b \text{Sec}[c + d x])^2 \text{Tan}[c + d x]}{12 b d} + \frac{C (a + b \text{Sec}[c + d x])^3 \text{Tan}[c + d x]}{4 b d}$$

Result (type 3, 1123 leaves):

$$\left(\left(-8 a^2 A-4 A b^2-4 a^2 C-3 b^2 C\right) \operatorname{Cos}[c+d x]^4 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+b \operatorname{Sec}[c+d x])^2\left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(4 d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+A \operatorname{Cos}[2 c+2 d x])\right)+$$

$$\left(\left(8 a^2 A+4 A b^2+4 a^2 C+3 b^2 C\right) \operatorname{Cos}[c+d x]^4 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+b \operatorname{Sec}[c+d x])^2\left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(4 d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+A \operatorname{Cos}[2 c+2 d x])\right)+$$

$$\left(b^2 C \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^2\left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(8 d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+A \operatorname{Cos}[2 c+2 d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)+$$

$$\left(\left(12 A b^2+12 a^2 C+8 a b C+9 b^2 C\right) \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^2\left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(24 d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+A \operatorname{Cos}[2 c+2 d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$

$$\left(2 a b C \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^2\left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right) \Big/$$

$$\left(3 d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+A \operatorname{Cos}[2 c+2 d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)-$$

$$\left(b^2 C \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^2\left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(8 d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+A \operatorname{Cos}[2 c+2 d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)+$$

$$\left(2 a b C \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^2\left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right) \Big/$$

$$\left(3 d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+A \operatorname{Cos}[2 c+2 d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)+$$

$$\left(\left(-12 A b^2-12 a^2 C-8 a b C-9 b^2 C\right) \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^2\left(A+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/$$

$$\left(24 d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+A \operatorname{Cos}[2 c+2 d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$

$$\left(4 \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^2\left(A+C \operatorname{Sec}[c+d x]^2\right)\left(3 a A b \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+2 a b C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/$$

$$\left(3 d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+A \operatorname{Cos}[2 c+2 d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)+$$

$$\left(4 \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^2\left(A+C \operatorname{Sec}[c+d x]^2\right)\left(3 a A b \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+2 a b C \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/$$

$$\left(3 d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+A \operatorname{Cos}[2 c+2 d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)$$

Problem 648: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[c+d\,x])^2\,(A+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 3, 103 leaves, 6 steps):

$$a^2 A x+\frac{a b (2 A+C)\,\text{ArcTanh}[\text{Sin}[c+d x]]}{d}+\frac{\left(3 A b^2+2 \left(a^2+b^2\right) C\right) \text{Tan}[c+d x]}{3 d}+\frac{a b C\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{3 d}+\frac{C (a+b\,\text{Sec}[c+d x])^2\,\text{Tan}[c+d x]}{3 d}$$

Result (type 3, 242 leaves):

$$\frac{1}{12 d}\text{Sec}[c+d x]^3 \Big(9 a \text{Cos}[c+d x] \Big(a A (c+d x)-b (2 A+C) \text{Log}\Big[\text{Cos}\Big[\frac{1}{2}(c+d x)\Big]-\text{Sin}\Big[\frac{1}{2}(c+d x)\Big]\Big]+b (2 A+C) \text{Log}\Big[\text{Cos}\Big[\frac{1}{2}(c+d x)\Big]+\text{Sin}\Big[\frac{1}{2}(c+d x)\Big]\Big]\Big)+3 a \text{Cos}[3 (c+d x)] \Big(a A (c+d x)-b (2 A+C) \text{Log}\Big[\text{Cos}\Big[\frac{1}{2}(c+d x)\Big]-\text{Sin}\Big[\frac{1}{2}(c+d x)\Big]\Big]+b (2 A+C) \text{Log}\Big[\text{Cos}\Big[\frac{1}{2}(c+d x)\Big]+\text{Sin}\Big[\frac{1}{2}(c+d x)\Big]\Big]\Big)+2 \left(3 A b^2+3 a^2 C+4 b^2 C+6 a b C \text{Cos}[c+d x]+\left(3 A b^2+3 a^2 C+2 b^2 C\right) \text{Cos}[2 (c+d x)]\right) \text{Sin}[c+d x]\Big)$$

Problem 649: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^2\,(A+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 3, 109 leaves, 6 steps):

$$2 a A b x+\frac{\left(2 A b^2+\left(2 a^2+b^2\right) C\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 d}+\frac{A (a+b\,\text{Sec}[c+d x])^2\,\text{Sin}[c+d x]}{d}-\frac{2 a b (A-C)\,\text{Tan}[c+d x]}{d}-\frac{b^2 (2 A-C)\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{2 d}$$

Result (type 3, 352 leaves):

$$\frac{1}{4 d}\text{Sec}[c+d x]^2 \left(4 a A b c+4 a A b d x-2 A b^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-2 a^2 C \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-b^2 C \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+2 A b^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+2 a^2 C \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+b^2 C \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\text{Cos}[2 (c+d x)] \left(4 a A b (c+d x)-\left(2 A b^2+\left(2 a^2+b^2\right) C\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\left(2 A b^2+2 a^2 C+b^2 C\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+\left(a^2 A+2 b^2 C\right) \text{Sin}[c+d x]+4 a b C \text{Sin}[2 (c+d x)]+a^2 A \text{Sin}[3 (c+d x)]\right)$$

Problem 656: Result more than twice size of optimal antiderivative.

$$\int (a+b \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 167 leaves, 7 steps):

$$a^3 A x+\frac{b \left(12 a^2 (2 A+C)+b^2 (4 A+3 C)\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{a \left(6 A b^2+\left(a^2+4 b^2\right) C\right) \text{Tan}[c+d x]}{2 d}+\frac{b \left(2 a^2 C+b^2 (4 A+3 C)\right) \text{Sec}[c+d x] \text{Tan}[c+d x]}{8 d}+\frac{a C (a+b \text{Sec}[c+d x])^2 \text{Tan}[c+d x]}{4 d}+\frac{C (a+b \text{Sec}[c+d x])^3 \text{Tan}[c+d x]}{4 d}$$

Result (type 3, 1241 leaves):

$$\frac{2 a^3 A (c+d x) \text{Cos}[c+d x]^5 (a+b \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right)}{d (b+a \text{Cos}[c+d x])^3 (A+2 C+A \text{Cos}[2 c+2 d x])}+\left(\left(-24 a^2 A b-4 A b^3-12 a^2 b C-3 b^3 C\right) \text{Cos}[c+d x]^5 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] (a+b \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right)\right)\Big/\left(4 d (b+a \text{Cos}[c+d x])^3 (A+2 C+A \text{Cos}[2 c+2 d x])\right)+\left(\left(24 a^2 A b+4 A b^3+12 a^2 b C+3 b^3 C\right) \text{Cos}[c+d x]^5 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] (a+b \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right)\right)\Big/\left(4 d (b+a \text{Cos}[c+d x])^3 (A+2 C+A \text{Cos}[2 c+2 d x])\right)+\left(b^3 C \text{Cos}[c+d x]^5 (a+b \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right)\right)\Big/$$

$$\left(8\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)^4\right)+$$

$$\left(\left(4\,A\,b^3+12\,a^2\,b\,C+4\,a\,b^2\,C+3\,b^3\,C\right)\,\text{Cos}[c+d\,x]^5\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(8\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)^2\right)+$$

$$\left(a\,b^2\,C\,\text{Cos}[c+d\,x]^5\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\Big/$$

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

$$\left(b^3\,C\,\text{Cos}[c+d\,x]^5\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(8\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)^4\right)+$$

$$\left(a\,b^2\,C\,\text{Cos}[c+d\,x]^5\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)^3\right)+$$

$$\left(\left(-4\,A\,b^3-12\,a^2\,b\,C-4\,a\,b^2\,C-3\,b^3\,C\right)\,\text{Cos}[c+d\,x]^5\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(8\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)^2\right)+$$

$$\left(2\,\text{Cos}[c+d\,x]^5\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left.\left(3\,a\,A\,b^2\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+a^3\,C\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+2\,a\,b^2\,C\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\right)\Big/$$

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

$$\left(2\,\text{Cos}[c+d\,x]^5\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left.\left(3\,a\,A\,b^2\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+a^3\,C\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+2\,a\,b^2\,C\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)\right)$$

Problem 665: Result more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Sec}[c+d\,x]\right)^4\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 227 leaves, 8 steps):

$$a^4 A x + \frac{a b \left(4 a^2 (2 A + C) + b^2 (4 A + 3 C)\right) \text{ArcTanh}[\text{Sin}[c + d x]]}{2 d} + \frac{\left(6 a^4 C + 2 b^4 (5 A + 4 C) + a^2 b^2 (85 A + 56 C)\right) \text{Tan}[c + d x]}{15 d} + \frac{a b \left(40 A b^2 + 6 a^2 C + 29 b^2 C\right) \text{Sec}[c + d x] \text{Tan}[c + d x]}{30 d} + \frac{\left(3 a^2 C + b^2 (5 A + 4 C)\right) (a + b \text{Sec}[c + d x])^2 \text{Tan}[c + d x]}{15 d} + \frac{a C (a + b \text{Sec}[c + d x])^3 \text{Tan}[c + d x]}{5 d} + \frac{C (a + b \text{Sec}[c + d x])^4 \text{Tan}[c + d x]}{5 d}$$

Result (type 3, 503 leaves):

$$\frac{1}{120 d (A + 2 C + A \text{Cos}[2 (c + d x)])} \left(C + A \text{Cos}[c + d x]^2\right) \text{Sec}[c + d x]^5 \Big(150 a^4 A (c + d x) \text{Cos}[c + d x] + 75 a^4 A (c + d x) \text{Cos}[3 (c + d x)] + 15 a^4 A c \text{Cos}[5 (c + d x)] + 15 a^4 A d x \text{Cos}[5 (c + d x)] - 120 a b \left(4 a^2 (2 A + C) + b^2 (4 A + 3 C)\right) \text{Cos}[c + d x]^5 \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] - \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right]\right) + 180 a^2 A b^2 \text{Sin}[c + d x] + 40 A b^4 \text{Sin}[c + d x] + 30 a^4 C \text{Sin}[c + d x] + 240 a^2 b^2 C \text{Sin}[c + d x] + 80 b^4 C \text{Sin}[c + d x] + 120 a A b^3 \text{Sin}[2 (c + d x)] + 120 a^3 b C \text{Sin}[2 (c + d x)] + 210 a b^3 C \text{Sin}[2 (c + d x)] + 270 a^2 A b^2 \text{Sin}[3 (c + d x)] + 50 A b^4 \text{Sin}[3 (c + d x)] + 45 a^4 C \text{Sin}[3 (c + d x)] + 300 a^2 b^2 C \text{Sin}[3 (c + d x)] + 40 b^4 C \text{Sin}[3 (c + d x)] + 60 a A b^3 \text{Sin}[4 (c + d x)] + 60 a^3 b C \text{Sin}[4 (c + d x)] + 45 a b^3 C \text{Sin}[4 (c + d x)] + 90 a^2 A b^2 \text{Sin}[5 (c + d x)] + 10 A b^4 \text{Sin}[5 (c + d x)] + 15 a^4 C \text{Sin}[5 (c + d x)] + 60 a^2 b^2 C \text{Sin}[5 (c + d x)] + 8 b^4 C \text{Sin}[5 (c + d x)]\Big)$$

Problem 666: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c + d x] (a + b \text{Sec}[c + d x])^4 \left(A + C \text{Sec}[c + d x]^2\right) dx$$

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

$$4 a^3 A b x + \frac{\left(8 a^4 C + 24 a^2 b^2 (2 A + C) + b^4 (4 A + 3 C)\right) \text{ArcTanh}[\text{Sin}[c + d x]]}{8 d} + \frac{A (a + b \text{Sec}[c + d x])^4 \text{Sin}[c + d x]}{d} - \frac{a b \left(a^2 (12 A - 19 C) - 8 b^2 (3 A + 2 C)\right) \text{Tan}[c + d x]}{6 d} - \frac{b^2 \left(a^2 (24 A - 26 C) - 3 b^2 (4 A + 3 C)\right) \text{Sec}[c + d x] \text{Tan}[c + d x]}{24 d} - \frac{a b (12 A - 7 C) (a + b \text{Sec}[c + d x])^2 \text{Tan}[c + d x]}{12 d} - \frac{b (4 A - C) (a + b \text{Sec}[c + d x])^3 \text{Tan}[c + d x]}{4 d}$$

Result (type 3, 1357 leaves):

$$\left(8 a^3 A b (c + d x) \text{Cos}[c + d x]^6 (a + b \text{Sec}[c + d x])^4 \left(A + C \text{Sec}[c + d x]^2\right)\right) \Big/ \left(d (b + a \text{Cos}[c + d x])^4 (A + 2 C + A \text{Cos}[2 c + 2 d x])\right) +$$

$$\left(\left(-48 a^2 A b^2-4 A b^4-8 a^4 C-24 a^2 b^2 C-3 b^4 C\right) \text{Cos}[c+d x]^6 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] (a+b \text{Sec}[c+d x])^4 \left(A+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(4 d (b+a \text{Cos}[c+d x])^4 (A+2 C+A \text{Cos}[2 c+2 d x])\right)+$$

$$\left(\left(48 a^2 A b^2+4 A b^4+8 a^4 C+24 a^2 b^2 C+3 b^4 C\right) \text{Cos}[c+d x]^6 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] (a+b \text{Sec}[c+d x])^4 \left(A+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(4 d (b+a \text{Cos}[c+d x])^4 (A+2 C+A \text{Cos}[2 c+2 d x])\right)+$$

$$\left(b^4 C \text{Cos}[c+d x]^6 (a+b \text{Sec}[c+d x])^4 \left(A+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(8 d (b+a \text{Cos}[c+d x])^4 (A+2 C+A \text{Cos}[2 c+2 d x]) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4\right)+$$

$$\left(\left(12 A b^4+72 a^2 b^2 C+16 a b^3 C+9 b^4 C\right) \text{Cos}[c+d x]^6 (a+b \text{Sec}[c+d x])^4 \left(A+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(24 d (b+a \text{Cos}[c+d x])^4 (A+2 C+A \text{Cos}[2 c+2 d x]) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right)+$$

$$\left(4 a b^3 C \text{Cos}[c+d x]^6 (a+b \text{Sec}[c+d x])^4 \left(A+C \text{Sec}[c+d x]^2\right) \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \Big/ \left(3 d (b+a \text{Cos}[c+d x])^4 (A+2 C+A \text{Cos}[2 c+2 d x]) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3\right)-$$

$$\left(b^4 C \text{Cos}[c+d x]^6 (a+b \text{Sec}[c+d x])^4 \left(A+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(8 d (b+a \text{Cos}[c+d x])^4 (A+2 C+A \text{Cos}[2 c+2 d x]) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4\right)+$$

$$\left(4 a b^3 C \text{Cos}[c+d x]^6 (a+b \text{Sec}[c+d x])^4 \left(A+C \text{Sec}[c+d x]^2\right) \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \Big/ \left(3 d (b+a \text{Cos}[c+d x])^4 (A+2 C+A \text{Cos}[2 c+2 d x]) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3\right)+$$

$$\left(\left(-12 A b^4-72 a^2 b^2 C-16 a b^3 C-9 b^4 C\right) \text{Cos}[c+d x]^6 (a+b \text{Sec}[c+d x])^4 \left(A+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(24 d (b+a \text{Cos}[c+d x])^4 (A+2 C+A \text{Cos}[2 c+2 d x]) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right)+$$

$$\left(8 \text{Cos}[c+d x]^6 (a+b \text{Sec}[c+d x])^4 \left(A+C \text{Sec}[c+d x]^2\right) \left(3 a A b^3 \text{Sin}\left[\frac{1}{2} (c+d x)\right]+3 a^3 b C \text{Sin}\left[\frac{1}{2} (c+d x)\right]+2 a b^3 C \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right) \Big/ \left(3 d (b+a \text{Cos}[c+d x])^4 (A+2 C+A \text{Cos}[2 c+2 d x]) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)+$$

$$\left(8 \text{Cos}[c+d x]^6 (a+b \text{Sec}[c+d x])^4 \left(A+C \text{Sec}[c+d x]^2\right) \left(3 a A b^3 \text{Sin}\left[\frac{1}{2} (c+d x)\right]+3 a^3 b C \text{Sin}\left[\frac{1}{2} (c+d x)\right]+2 a b^3 C \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right) \Big/ \left(3 d (b+a \text{Cos}[c+d x])^4 (A+2 C+A \text{Cos}[2 c+2 d x]) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)+$$

$$\left(2 a^4 A \cos[c+d x]^6 \left(a+b \sec[c+d x]\right)^4 \left(A+C \sec[c+d x]^2\right) \sin[c+d x]\right) \Big/ \left(d \left(b+a \cos[c+d x]\right)^4 \left(A+2 C+A \cos[2 c+2 d x]\right)\right)$$

Problem 667: Result more than twice size of optimal antiderivative.

$$\int \cos[c+d x]^2 \left(a+b \sec[c+d x]\right)^4 \left(A+C \sec[c+d x]^2\right) dx$$

Optimal (type 3, 219 leaves, 8 steps):

$$\frac{1}{2} a^2 \left(12 A b^2+a^2 (A+2 C)\right) x+\frac{2 a b \left(2 A b^2+\left(2 a^2+b^2\right) C\right) \text{ArcTanh}[\sin[c+d x]]}{d}+\frac{2 A b \left(a+b \sec[c+d x]\right)^3 \sin[c+d x]}{d}+\frac{A \cos[c+d x] \left(a+b \sec[c+d x]\right)^4 \sin[c+d x]}{2 d}-\frac{b^2 \left(a^2 (39 A-34 C)-2 b^2 (3 A+2 C)\right) \tan[c+d x]}{6 d}-\frac{a b^3 (9 A-4 C) \sec[c+d x] \tan[c+d x]}{3 d}-\frac{b^2 (15 A-2 C) \left(a+b \sec[c+d x]\right)^2 \tan[c+d x]}{6 d}$$

Result (type 3, 864 leaves):

$$\frac{a^2 \left(a^2 A+12 A b^2+2 a^2 C\right) (c+d x) \operatorname{Cos}[c+d x]^4 (a+b \operatorname{Sec}[c+d x])^4}{2 d (b+a \operatorname{Cos}[c+d x])^4}-$$

$$\left(2 \left(2 a A b^3+2 a^3 b C+a b^3 C\right) \operatorname{Cos}[c+d x]^4 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right] (a+b \operatorname{Sec}[c+d x])^4\right) \Big/ \left(d (b+a \operatorname{Cos}[c+d x])^4\right)+$$

$$\left(2 \left(2 a A b^3+2 a^3 b C+a b^3 C\right) \operatorname{Cos}[c+d x]^4 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right] (a+b \operatorname{Sec}[c+d x])^4\right) \Big/ \left(d (b+a \operatorname{Cos}[c+d x])^4\right)+$$

$$\frac{\left(12 a b^3 C+b^4 C\right) \operatorname{Cos}[c+d x]^4 (a+b \operatorname{Sec}[c+d x])^4}{12 d (b+a \operatorname{Cos}[c+d x])^4 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+$$

$$\frac{b^4 C \operatorname{Cos}[c+d x]^4 (a+b \operatorname{Sec}[c+d x])^4 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]}{6 d (b+a \operatorname{Cos}[c+d x])^4 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3}+$$

$$\frac{b^4 C \operatorname{Cos}[c+d x]^4 (a+b \operatorname{Sec}[c+d x])^4 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]}{6 d (b+a \operatorname{Cos}[c+d x])^4 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3}+$$

$$\frac{\left(-12 a b^3 C-b^4 C\right) \operatorname{Cos}[c+d x]^4 (a+b \operatorname{Sec}[c+d x])^4}{12 d (b+a \operatorname{Cos}[c+d x])^4 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+$$

$$\left(\operatorname{Cos}[c+d x]^4 (a+b \operatorname{Sec}[c+d x])^4 \left(3 A b^4 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+18 a^2 b^2 C \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+2 b^4 C \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right) \Big/ \left(3 d (b+a \operatorname{Cos}[c+d x])^4 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)+$$

$$\left(\operatorname{Cos}[c+d x]^4 (a+b \operatorname{Sec}[c+d x])^4 \left(3 A b^4 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+18 a^2 b^2 C \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+2 b^4 C \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right) \Big/ \left(3 d (b+a \operatorname{Cos}[c+d x])^4 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)+$$

$$\frac{4 a^3 A b \operatorname{Cos}[c+d x]^4 (a+b \operatorname{Sec}[c+d x])^4 \operatorname{Sin}[c+d x]}{d (b+a \operatorname{Cos}[c+d x])^4}+$$

$$\frac{a^4 A \operatorname{Cos}[c+d x]^4 (a+b \operatorname{Sec}[c+d x])^4 \operatorname{Sin}[2 (c+d x)]}{4 d (b+a \operatorname{Cos}[c+d x])^4}$$

Problem 673: Result more than twice size of optimal antiderivative.

$$\int (a+b \operatorname{Sec}[c+d x])^3 \left(a^2-b^2 \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 158 leaves, 8 steps):

$$a^5 x+\frac{b\left(24 a^4-8 a^2 b^2-3 b^4\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{a b^2\left(5 a^2-4 b^2\right) \text{Tan}[c+d x]}{2 d}+\frac{b^3\left(2 a^2-3 b^2\right) \text{Sec}[c+d x] \text{Tan}[c+d x]}{8 d}-\frac{a b^2(a+b \text{Sec}[c+d x])^2 \text{Tan}[c+d x]}{4 d}-\frac{b^2(a+b \text{Sec}[c+d x])^3 \text{Tan}[c+d x]}{4 d}$$

Result (type 3, 1299 leaves):

$$\frac{2 a^5(c+d x) \text{Cos}[c+d x]^5(a+b \text{Sec}[c+d x])^3\left(a^2-b^2 \text{Sec}[c+d x]^2\right)}{d(b+a \text{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \text{Cos}[2 c+2 d x]\right)}+$$
$$\left(\left(-24 a^4 b+8 a^2 b^3+3 b^5\right) \text{Cos}[c+d x]^5 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+b \text{Sec}[c+d x])^3\left(a^2-b^2 \text{Sec}[c+d x]^2\right)\right) \Big/ \left(4 d(b+a \text{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left(\left(24 a^4 b-8 a^2 b^3-3 b^5\right) \text{Cos}[c+d x]^5 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+b \text{Sec}[c+d x])^3\left(a^2-b^2 \text{Sec}[c+d x]^2\right)\right) \Big/ \left(4 d(b+a \text{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \text{Cos}[2 c+2 d x]\right)\right)-$$
$$\left(b^5 \text{Cos}[c+d x]^5(a+b \text{Sec}[c+d x])^3\left(a^2-b^2 \text{Sec}[c+d x]^2\right)\right) \Big/ \left(8 d(b+a \text{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \text{Cos}[2 c+2 d x]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)+$$
$$\left(\left(-8 a^2 b^3-4 a b^4-3 b^5\right) \text{Cos}[c+d x]^5(a+b \text{Sec}[c+d x])^3\left(a^2-b^2 \text{Sec}[c+d x]^2\right)\right) \Big/ \left(8 d(b+a \text{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \text{Cos}[2 c+2 d x]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)-$$
$$\left(a b^4 \text{Cos}[c+d x]^5(a+b \text{Sec}[c+d x])^3\left(a^2-b^2 \text{Sec}[c+d x]^2\right) \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right) \Big/ \left(d(b+a \text{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \text{Cos}[2 c+2 d x]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)+$$
$$\left(b^5 \text{Cos}[c+d x]^5(a+b \text{Sec}[c+d x])^3\left(a^2-b^2 \text{Sec}[c+d x]^2\right)\right) \Big/ \left(8 d(b+a \text{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \text{Cos}[2 c+2 d x]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)-$$
$$\left(a b^4 \text{Cos}[c+d x]^5(a+b \text{Sec}[c+d x])^3\left(a^2-b^2 \text{Sec}[c+d x]^2\right) \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right) \Big/ \left(d(b+a \text{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \text{Cos}[2 c+2 d x]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)+$$
$$\left(\left(8 a^2 b^3+4 a b^4+3 b^5\right) \text{Cos}[c+d x]^5(a+b \text{Sec}[c+d x])^3\left(a^2-b^2 \text{Sec}[c+d x]^2\right)\right) \Big/ \left(8 d(b+a \text{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \text{Cos}[2 c+2 d x]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)-$$
$$\left(4 \text{Cos}[c+d x]^5(a+b \text{Sec}[c+d x])^3\left(a^2-b^2 \text{Sec}[c+d x]^2\right)\right.$$

$$\left(-a^3 b^2 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+a b^4 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\Big/$$
$$\left(d\,(b+a \operatorname{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \operatorname{Cos}[2 c+2 d x]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)-$$
$$\left(4 \operatorname{Cos}[c+d x]^5\,(a+b \operatorname{Sec}[c+d x])^3\left(a^2-b^2 \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left.\left(-a^3 b^2 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+a b^4 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(d\,(b+a \operatorname{Cos}[c+d x])^3\left(a^2-2 b^2+a^2 \operatorname{Cos}[2 c+2 d x]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)$$

Problem 675: Result more than twice size of optimal antiderivative.

$$\int (a+b \operatorname{Sec}[c+d x])\left(a^2-b^2 \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 75 leaves, 6 steps):

$$a^3 x+\frac{b\left(2 a^2-b^2\right) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{2 d}-\frac{a b^2 \operatorname{Tan}[c+d x]}{2 d}-\frac{b^2\,(a+b \operatorname{Sec}[c+d x]) \operatorname{Tan}[c+d x]}{2 d}$$

Result (type 3, 230 leaves):

$$a^3 x-\frac{a^2 b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+$$
$$\frac{a^2 b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{b^3 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}-$$
$$\frac{b^3 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}-\frac{b^3}{4 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+$$
$$\frac{b^3}{4 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{a b^2 \operatorname{Tan}[c+d x]}{d}$$

Problem 676: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}[c+d x]^3\left(A+C \operatorname{Sec}[c+d x]^2\right)}{a+b \operatorname{Sec}[c+d x]} dx$$

Optimal (type 3, 186 leaves, 8 steps):

$$-\frac{a\left(2 A b^2+\left(2 a^2+b^2\right) C\right) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{2 b^4 d}+\frac{2 a^2\left(A b^2+a^2 C\right) \operatorname{ArcTanh}\left[\frac{\sqrt{a-b}\, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a+b}}\right]}{\sqrt{a-b}\, b^4 \sqrt{a+b}\, d}+$$
$$\frac{\left(3 a^2 C+b^2(3 A+2 C)\right) \operatorname{Tan}[c+d x]}{3 b^3 d}-\frac{a C \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{2 b^2 d}+\frac{C \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]}{3 b d}$$

Result (type 3, 657 leaves):

$$\frac{1}{6 b^4 d \left(A+2 C+A \operatorname{Cos}[2 (c+d x)]\right) (a+b \operatorname{Sec}[c+d x])} \operatorname{Cos}[c+d x] (b+a \operatorname{Cos}[c+d x]) \left(A+C \operatorname{Sec}[c+d x]^2\right) \left(6 a \left(2 A b^2+\left(2 a^2+b^2\right) C\right) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-6 a \left(2 A b^2+\left(2 a^2+b^2\right) C\right) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\left(24 i a^2 \left(A b^2+a^2 C\right) \operatorname{ArcTan}\left[\frac{(i \operatorname{Cos}[c]+\operatorname{Sin}[c]) \left(a \operatorname{Sin}[c]+(-b+a \operatorname{Cos}[c]) \operatorname{Tan}\left[\frac{d x}{2}\right]\right)}{\sqrt{a^2-b^2} \sqrt{(\operatorname{Cos}[c]-i \operatorname{Sin}[c])^2}}\right] (\operatorname{Cos}[c]-i \operatorname{Sin}[c])\right) \Big/ \left(\sqrt{a^2-b^2} \sqrt{(\operatorname{Cos}[c]-i \operatorname{Sin}[c])^2}\right)+\frac{2 b^3 C \operatorname{Sin}\left[\frac{d x}{2}\right]}{\left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3}+\frac{b^2 C \left((-3 a+b) \operatorname{Cos}\left[\frac{c}{2}\right]+(3 a+b) \operatorname{Sin}\left[\frac{c}{2}\right]\right)}{\left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+\frac{4 b \left(3 A b^2+3 a^2 C+2 b^2 C\right) \operatorname{Sin}\left[\frac{d x}{2}\right]}{\left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}+\frac{2 b^3 C \operatorname{Sin}\left[\frac{d x}{2}\right]}{\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3}+\frac{b^2 C \left((3 a-b) \operatorname{Cos}\left[\frac{c}{2}\right]+(3 a+b) \operatorname{Sin}\left[\frac{c}{2}\right]\right)}{\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+\frac{4 b \left(3 A b^2+3 a^2 C+2 b^2 C\right) \operatorname{Sin}\left[\frac{d x}{2}\right]}{\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}\right)$$

Problem 677: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}[c+d x]^2 \left(A+C \operatorname{Sec}[c+d x]^2\right)}{a+b \operatorname{Sec}[c+d x]} \, dx$$

Optimal (type 3, 137 leaves, 7 steps):

$$\frac{\left(2 a^2 C+b^2 (2 A+C)\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 b^3 d}-\frac{2 a \left(A b^2+a^2 C\right) \text{ArcTanh}\left[\frac{\sqrt{a-b} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]}{\sqrt{a-b}\, b^3 \sqrt{a+b}\, d}-\frac{a C \text{Tan}[c+d x]}{b^2 d}+\frac{C \text{Sec}[c+d x] \text{Tan}[c+d x]}{2 b d}$$

Result (type 3, 428 leaves):

$$\frac{1}{2 b^3 d (A+2 C+A \text{Cos}[2 (c+d x)]) (a+b \text{Sec}[c+d x])} \text{Cos}[c+d x] (b+a \text{Cos}[c+d x]) \left(A+C \text{Sec}[c+d x]^2\right) \left(-2 \left(2 A b^2+\left(2 a^2+b^2\right) C\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+2 \left(2 A b^2+\left(2 a^2+b^2\right) C\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\left(8 a \left(A b^2+a^2 C\right) \text{ArcTan}\left[\frac{(i \text{Cos}[c]+\text{Sin}[c]) \left(a \text{Sin}[c]+(-b+a \text{Cos}[c]) \text{Tan}\left[\frac{d x}{2}\right]\right)}{\sqrt{a^2-b^2} \sqrt{(\text{Cos}[c]-i \text{Sin}[c])^2}}\right] (i \text{Cos}[c]+\text{Sin}[c])\right) \Big/ \left(\sqrt{a^2-b^2} \sqrt{(\text{Cos}[c]-i \text{Sin}[c])^2}\right)+\frac{b^2 C}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}-\frac{4 a b C \text{Sin}\left[\frac{d x}{2}\right]}{\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}-\frac{b^2 C}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}-\frac{4 a b C \text{Sin}\left[\frac{d x}{2}\right]}{\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}\right)$$

Problem 678: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x] \left(A+C \text{Sec}[c+d x]^2\right)}{a+b \text{Sec}[c+d x]} \, dx$$

Optimal (type 3, 95 leaves, 6 steps):

$$-\frac{a C \text{ArcTanh}[\text{Sin}[c+d x]]}{b^2 d}+\frac{2 \left(A b^2+a^2 C\right) \text{ArcTanh}\left[\frac{\sqrt{a-b} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]}{\sqrt{a-b}\, b^2 \sqrt{a+b}\, d}+\frac{C \text{Tan}[c+d x]}{b d}$$

Result (type 3, 331 leaves):

$$\frac{1}{b^2 d \left(A+2 C+A \operatorname{Cos}[2 (c+d x)]\right) (a+b \operatorname{Sec}[c+d x])}$$
$$2 \operatorname{Cos}[c+d x] \left(b+a \operatorname{Cos}[c+d x]\right) \left(A+C \operatorname{Sec}[c+d x]^2\right)$$
$$\left(a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\right.$$
$$\left(2 i \left(A b^2+a^2 C\right) \operatorname{ArcTan}\left[\frac{(i \operatorname{Cos}[c]+\operatorname{Sin}[c]) \left(a \operatorname{Sin}[c]+(-b+a \operatorname{Cos}[c]) \operatorname{Tan}\left[\frac{d x}{2}\right]\right)}{\sqrt{a^2-b^2} \sqrt{(\operatorname{Cos}[c]-i \operatorname{Sin}[c])^2}}\right]\right.$$
$$\left.(\operatorname{Cos}[c]-i \operatorname{Sin}[c])\right) \Big/ \left(\sqrt{a^2-b^2} \sqrt{(\operatorname{Cos}[c]-i \operatorname{Sin}[c])^2}\right)+$$
$$\frac{b C \operatorname{Sin}\left[\frac{d x}{2}\right]}{\left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}+$$
$$\left.\frac{b C \operatorname{Sin}\left[\frac{d x}{2}\right]}{\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}\right)$$

Problem 679: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{A+C \operatorname{Sec}[c+d x]^2}{a+b \operatorname{Sec}[c+d x]} \, dx$$

Optimal (type 3, 88 leaves, 6 steps):

$$\frac{A x}{a}+\frac{C \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{b d}-\frac{2 \left(A b^2+a^2 C\right) \operatorname{ArcTanh}\left[\frac{\sqrt{a-b} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]}{a \sqrt{a-b}\, b \sqrt{a+b}\, d}$$

Result (type 3, 239 leaves):

$$\left(2 \left(C+A \operatorname{Cos}[c+d x]^2\right) \left(\sqrt{a^2-b^2} \left(A b d x-a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\right.\right.\right.$$
$$\left.a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right) \sqrt{(\operatorname{Cos}[c]-i \operatorname{Sin}[c])^2}+2 \left(A b^2+a^2 C\right)$$
$$\left.\left.\operatorname{ArcTan}\left[\frac{(i \operatorname{Cos}[c]+\operatorname{Sin}[c]) \left(a \operatorname{Sin}[c]+(-b+a \operatorname{Cos}[c]) \operatorname{Tan}\left[\frac{d x}{2}\right]\right)}{\sqrt{a^2-b^2} \sqrt{(\operatorname{Cos}[c]-i \operatorname{Sin}[c])^2}}\right] (i \operatorname{Cos}[c]+\operatorname{Sin}[c])\right)\right) \Big/$$
$$\left(a b \sqrt{a^2-b^2}\, d \left(A+2 C+A \operatorname{Cos}[2 (c+d x)]\right) \sqrt{(\operatorname{Cos}[c]-i \operatorname{Sin}[c])^2}\right)$$

Problem 685: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+C\,\text{Sec}[c+d x]^2\right)}{\left(a+b\,\text{Sec}[c+d x]\right)^2}\,dx$$

Optimal (type 3, 153 leaves, 7 steps):

$$-\frac{2\,a\,C\,\text{ArcTanh}[\text{Sin}[c+d x]]}{b^3\,d}-\frac{2\left(A\,b^4-2\,a^4\,C+3\,a^2\,b^2\,C\right)\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a+b}}\right]}{(a-b)^{3/2}\,b^3\,(a+b)^{3/2}\,d}+\frac{C\,\text{Tan}[c+d x]}{b^2\,d}+\frac{a\left(A\,b^2+a^2\,C\right)\text{Tan}[c+d x]}{b^2\left(a^2-b^2\right)d\,(a+b\,\text{Sec}[c+d x])}$$

Result (type 3, 336 leaves):

$$\frac{1}{b^3\,d\,(A+2\,C+A\,\text{Cos}[2\,(c+d x)])\,(a+b\,\text{Sec}[c+d x])^2}2\,(b+a\,\text{Cos}[c+d x])\left(A+C\,\text{Sec}[c+d x]^2\right)\left(\frac{1}{\left(a^2-b^2\right)^{3/2}}2\left(A\,b^4-2\,a^4\,C+3\,a^2\,b^2\,C\right)\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right](b+a\,\text{Cos}[c+d x])+2\,a\,C\,(b+a\,\text{Cos}[c+d x])\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-2\,a\,C\,(b+a\,\text{Cos}[c+d x])\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\frac{b\,C\,(b+a\,\text{Cos}[c+d x])\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]}+\frac{b\,C\,(b+a\,\text{Cos}[c+d x])\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]}+\frac{a\,b\left(A\,b^2+a^2\,C\right)\text{Sin}[c+d x]}{(a-b)\,(a+b)}\right)$$

Problem 686: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]\left(A+C\,\text{Sec}[c+d x]^2\right)}{\left(a+b\,\text{Sec}[c+d x]\right)^2}\,dx$$

Optimal (type 3, 135 leaves, 6 steps):

$$\frac{C\,\text{ArcTanh}[\text{Sin}[c+d x]]}{b^2\,d}+\frac{2\,a\left(A\,b^2-a^2\,C+2\,b^2\,C\right)\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a+b}}\right]}{(a-b)^{3/2}\,b^2\,(a+b)^{3/2}\,d}-\frac{\left(A\,b^2+a^2\,C\right)\text{Tan}[c+d x]}{b\left(a^2-b^2\right)d\,(a+b\,\text{Sec}[c+d x])}$$

Result (type 3, 331 leaves):

$$\frac{1}{b^2\,d\,\left(A+2\,C+A\,\mathrm{Cos}\left[2\,\left(c+d\,x\right)\right]\right)\,\left(a+b\,\mathrm{Sec}\left[c+d\,x\right]\right)^2}\,2\,\left(b+a\,\mathrm{Cos}\left[c+d\,x\right]\right)$$
$$\left(A+C\,\mathrm{Sec}\left[c+d\,x\right]^2\right)\,\left(-C\,\left(b+a\,\mathrm{Cos}\left[c+d\,x\right]\right)\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]+\right.$$
$$C\,\left(b+a\,\mathrm{Cos}\left[c+d\,x\right]\right)\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]+$$
$$\left(2\,a\,\left(-A\,b^2+\left(a^2-2\,b^2\right)\,C\right)\,\mathrm{ArcTan}\left[\frac{\left(\mathrm{i}\,\mathrm{Cos}[c]+\mathrm{Sin}[c]\right)\,\left(a\,\mathrm{Sin}[c]+\left(-b+a\,\mathrm{Cos}[c]\right)\,\mathrm{Tan}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{\left(\mathrm{Cos}[c]-\mathrm{i}\,\mathrm{Sin}[c]\right)^2}}\right]\right.$$
$$\left.\left(b+a\,\mathrm{Cos}\left[c+d\,x\right]\right)\,\left(\mathrm{i}\,\mathrm{Cos}[c]+\mathrm{Sin}[c]\right)\right)\Big/\left(\left(a^2-b^2\right)^{3/2}\,\sqrt{\left(\mathrm{Cos}[c]-\mathrm{i}\,\mathrm{Sin}[c]\right)^2}\right)+$$
$$\left.\frac{b\,\left(A\,b^2+a^2\,C\right)\,\left(b\,\mathrm{Sin}[c]-a\,\mathrm{Sin}[d\,x]\right)}{a\,\left(a-b\right)\,\left(a+b\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)}\right)$$

Problem 687: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{A+C\,\mathrm{Sec}\left[c+d\,x\right]^2}{\left(a+b\,\mathrm{Sec}\left[c+d\,x\right]\right)^2}\,dx$$

Optimal (type 3, 125 leaves, 5 steps):

$$\frac{A\,x}{a^2}-\frac{2\,b\,\left(2\,a^2\,A-A\,b^2+a^2\,C\right)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a-b}\,\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]}{\sqrt{a+b}}\right]}{a^2\,\left(a-b\right)^{3/2}\,\left(a+b\right)^{3/2}\,d}+\frac{\left(A\,b^2+a^2\,C\right)\,\mathrm{Tan}\left[c+d\,x\right]}{a\,\left(a^2-b^2\right)\,d\,\left(a+b\,\mathrm{Sec}\left[c+d\,x\right]\right)}$$

Result (type 3, 270 leaves):

$$\left(2\,\left(b+a\,\mathrm{Cos}\left[c+d\,x\right]\right)\,\left(A+C\,\mathrm{Sec}\left[c+d\,x\right]^2\right)\,\left(A\,x\,\left(b+a\,\mathrm{Cos}\left[c+d\,x\right]\right)+\right.\right.$$
$$\left(2\,b\,\left(-A\,b^2+a^2\,\left(2\,A+C\right)\right)\,\mathrm{ArcTan}\left[\frac{\left(\mathrm{i}\,\mathrm{Cos}[c]+\mathrm{Sin}[c]\right)\,\left(a\,\mathrm{Sin}[c]+\left(-b+a\,\mathrm{Cos}[c]\right)\,\mathrm{Tan}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{\left(\mathrm{Cos}[c]-\mathrm{i}\,\mathrm{Sin}[c]\right)^2}}\right]\right.$$
$$\left.\left(b+a\,\mathrm{Cos}\left[c+d\,x\right]\right)\,\left(\mathrm{i}\,\mathrm{Cos}[c]+\mathrm{Sin}[c]\right)\right)\Big/\left(\left(a^2-b^2\right)^{3/2}\,d\,\sqrt{\left(\mathrm{Cos}[c]-\mathrm{i}\,\mathrm{Sin}[c]\right)^2}\right)+$$
$$\left.\left.\frac{\left(A\,b^2+a^2\,C\right)\,\left(-b\,\mathrm{Sin}[c]+a\,\mathrm{Sin}[d\,x]\right)}{\left(a-b\right)\,\left(a+b\right)\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)}\right)\right)\Big/$$
$$\left(a^2\,\left(A+2\,C+A\,\mathrm{Cos}\left[2\,\left(c+d\,x\right)\right]\right)\,\left(a+b\,\mathrm{Sec}\left[c+d\,x\right]\right)^2\right)$$

Problem 691: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^4\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 3, 381 leaves, 9 steps):

$$\frac{\left(2\,A\,b^2+\left(12\,a^2+b^2\right)\,C\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,b^5\,d}-\left(a\,\left(6\,A\,b^6+a^4\,b^2\,\left(2\,A-29\,C\right)-5\,a^2\,b^4\,\left(A-4\,C\right)+12\,a^6\,C\right)\,\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]}{\sqrt{a+b}}\right]\right)\Big/\left(\left(a-b\right)^{5/2}\,b^5\,\left(a+b\right)^{5/2}\,d\right)-\frac{a\,\left(a^2\,b^2\,\left(2\,A-21\,C\right)-b^4\,\left(5\,A-6\,C\right)+12\,a^4\,C\right)\,\text{Tan}[c+d\,x]}{2\,b^4\,\left(a^2-b^2\right)^2\,d}+\frac{\left(a^2\,b^2\,\left(A-10\,C\right)-b^4\,\left(4\,A-C\right)+6\,a^4\,C\right)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,b^3\,\left(a^2-b^2\right)^2\,d}-\frac{\left(A\,b^2+a^2\,C\right)\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{2\,b\,\left(a^2-b^2\right)\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2}+\frac{\left(3\,A\,b^4-4\,a^4\,C+7\,a^2\,b^2\,C\right)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{2\,b^2\,\left(a^2-b^2\right)^2\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)}$$

Result (type 3, 1028 leaves):

$$\left(2\,a\,\left(2\,a^4\,A\,b^2-5\,a^2\,A\,b^4+6\,A\,b^6+12\,a^6\,C-29\,a^4\,b^2\,C+20\,a^2\,b^4\,C\right)\right.$$
$$\left.\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(b^5\,\sqrt{a^2-b^2}\,\left(-a^2+b^2\right)^2\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\right)+$$
$$\left(\left(-2\,A\,b^2-12\,a^2\,C-b^2\,C\right)\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right.$$
$$\left.\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(b^5\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\right)+$$
$$\left(\left(2\,A\,b^2+12\,a^2\,C+b^2\,C\right)\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right.$$
$$\left.\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(b^5\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\right)+$$
$$\left(C\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(2\,b^3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)-$$
$$\left(6\,a\,C\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(b^4\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)-$$
$$\left(C\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(2\,b^3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)-$$
$$\left(6\,a\,C\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(b^4\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)+$$
$$\left((b+a\,\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\left(a^2\,A\,b^2\,\text{Sin}[c+d\,x]+a^4\,C\,\text{Sin}[c+d\,x]\right)\right)\Big/$$
$$\left(b^3\,(-a+b)\,(a+b)\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\right)+$$
$$\left((b+a\,\text{Cos}[c+d\,x])^2\,\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(-2\,a^4\,A\,b^2\,\text{Sin}[c+d\,x]+5\,a^2\,A\,b^4\,\text{Sin}[c+d\,x]-6\,a^6\,C\,\text{Sin}[c+d\,x]+9\,a^4\,b^2\,C\,\text{Sin}[c+d\,x]\right)\right)\Big/$$
$$\left(b^4\,(-a+b)^2\,(a+b)^2\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\right)$$

Problem 693: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{(a+b\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 212 leaves, 7 steps):

$$\frac{C\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{b^3\,d}-\frac{a\left(3\,A\,b^4+\left(2\,a^4-5\,a^2\,b^2+6\,b^4\right)C\right)\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a+b}}\right]}{(a-b)^{5/2}\,b^3\,(a+b)^{5/2}\,d}+\frac{a\left(A\,b^2+a^2\,C\right)\text{Tan}[c+d\,x]}{2\,b^2\left(a^2-b^2\right)d\,(a+b\,\text{Sec}[c+d\,x])^2}+\frac{\left(2\,A\,b^4-3\,a^4\,C+a^2\,b^2\,(A+6\,C)\right)\text{Tan}[c+d\,x]}{2\,b^2\left(a^2-b^2\right)^2d\,(a+b\,\text{Sec}[c+d\,x])}$$

Result (type 3, 895 leaves):

$$-\Bigg(\left(2\,C\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(b^3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\right)\Bigg)+$$
$$\left(2\,C\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(b^3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\right)+$$
$$\Bigg(\left(3\,A\,b^4+2\,a^4\,C-5\,a^2\,b^2\,C+6\,b^4\,C\right)(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\Bigg(2\,i\,a\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}-\right.\right.$$
$$\left.\left.\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}\right)\left(-i\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+i\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\text{Cos}[c]\Bigg)\Big/$$
$$\left(b^3\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}\right)+\Bigg(2\,a\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\right.$$
$$\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}-\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}\right)\left(-i\,b\,\text{Sin}\left[\right.\right.$$
$$\left.\left.\left.\frac{d\,x}{2}\right]+i\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\text{Sin}[c]\Bigg)\Big/\left(b^3\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}\right)\Bigg)\Bigg)\Big/$$
$$\left(\left(-a^2+b^2\right)^2\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\right)+$$
$$\frac{1}{2\,a\,b^2\left(-a^2+b^2\right)^2d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3}$$
$$(b+a\,\text{Cos}[c+d\,x])$$
$$\text{Sec}[c]\,\text{Sec}[c+d\,x]$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-2\,a^4\,A\,b^2\,\text{Sin}[c]-5\,a^2\,A\,b^4\,\text{Sin}[c]-2\,A\,b^6\,\text{Sin}[c]+2\,a^6\,C\,\text{Sin}[c]-a^4\,b^2\,C\,\text{Sin}[c]-\right.$$
$$10\,a^2\,b^4\,C\,\text{Sin}[c]+5\,a^3\,A\,b^3\,\text{Sin}[d\,x]+4\,a\,A\,b^5\,\text{Sin}[d\,x]-7\,a^5\,b\,C\,\text{Sin}[d\,x]+$$
$$16\,a^3\,b^3\,C\,\text{Sin}[d\,x]-3\,a^3\,A\,b^3\,\text{Sin}[2\,c+d\,x]+a^5\,b\,C\,\text{Sin}[2\,c+d\,x]-4\,a^3\,b^3\,C\,\text{Sin}[2\,c+d\,x]+$$
$$\left.2\,a^4\,A\,b^2\,\text{Sin}[c+2\,d\,x]+a^2\,A\,b^4\,\text{Sin}[c+2\,d\,x]-2\,a^6\,C\,\text{Sin}[c+2\,d\,x]+5\,a^4\,b^2\,C\,\text{Sin}[c+2\,d\,x]\right)$$

Problem 694: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{(a+b\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 177 leaves, 6 steps):

$$\frac{\left(a^2 (2 A+C)+b^2 (A+2 C)\right) \text{ArcTanh}\left[\frac{\sqrt{a-b} \text{ Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]}{(a-b)^{5/2} (a+b)^{5/2} d}-$$

$$\frac{\left(A b^2+a^2 C\right) \text{Tan}[c+d x]}{2 b \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^2}-\frac{a \left(3 A b^2-a^2 C+4 b^2 C\right) \text{Tan}[c+d x]}{2 b \left(a^2-b^2\right)^2 d (a+b \text{Sec}[c+d x])}$$

Result (type 3, 342 leaves) :

$$\Bigg((b+a \text{Cos}[c+d x]) \text{Sec}[c+d x] \left(A+C \text{Sec}[c+d x]^2\right)$$
$$\Bigg(-\Bigg(\Bigg(4 i \left(a^2 (2 A+C)+b^2 (A+2 C)\right) \text{ArcTan}\Big[\Big((i \text{Cos}[c]+\text{Sin}[c]) \Big(a \text{Sin}[c]+(-b+a \text{Cos}[c])$$
$$\text{Tan}\left[\frac{d x}{2}\right]\Big)\Big)\Big/ \left(\sqrt{a^2-b^2} \sqrt{(\text{Cos}[c]-i \text{Sin}[c])^2}\right)\Big] (b+a \text{Cos}[c+d x])^2$$
$$(\text{Cos}[c]-i \text{Sin}[c])\Bigg)\Bigg/ \left(\left(a^2-b^2\right)^{5/2} \sqrt{(\text{Cos}[c]-i \text{Sin}[c])^2}\right)\Bigg)+\frac{1}{\left(a^3-a b^2\right)^2}$$
$$\Big(a \text{Sec}[c] \Big(\left(2 A b^4+a^4 C-a^2 b^2 (11 A+10 C)\right) \text{Sin}[d x]+\left(-2 A b^4+a^4 C+a^2 b^2 (5 A+2 C)\right)$$
$$\text{Sin}[2 c+d x]+a b \left(A b^2-a^2 (4 A+3 C)\right) \text{Sin}[c+2 d x]\Big)+$$
$$b \left(a^2+2 b^2\right) \left(-A b^2+a^2 (4 A+3 C)\right) \text{Tan}[c]\Big)\Bigg)\Bigg)\Bigg/$$
$$\left(2 d (A+2 C+A \text{Cos}[2 (c+d x)]) (a+b \text{Sec}[c+d x])^3\right)$$

Problem 695: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{A+C \text{Sec}[c+d x]^2}{(a+b \text{Sec}[c+d x])^3} \, dx$$

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

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

$$\frac{\left(A b^2+a^2 C\right) \text{Tan}[c+d x]}{2 a \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^2}-\frac{\left(2 A b^4-a^4 C-a^2 b^2 (5 A+2 C)\right) \text{Tan}[c+d x]}{2 a^2 \left(a^2-b^2\right)^2 d (a+b \text{Sec}[c+d x])}$$

Result (type 3, 926 leaves) :

$$\Bigg(\left(6\,a^4\,A-5\,a^2\,A\,b^2+2\,A\,b^4+3\,a^4\,C\right)\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^3\,\mathrm{Sec}[c+d\,x]$$

$$\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\Bigg(\Bigg(\Bigg(2\,\mathrm{i}\,b\,\mathrm{ArcTan}\Big[\mathrm{Sec}\Big[\frac{d\,x}{2}\Big]\,\Bigg(\frac{\mathrm{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}-$$

$$\frac{\mathrm{i}\,\mathrm{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}\Bigg)\,\Big(-\mathrm{i}\,b\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]+\mathrm{i}\,a\,\mathrm{Sin}\Big[c+\frac{d\,x}{2}\Big]\Big)\Big]$$

$$\mathrm{Cos}[c]\Bigg)\Big/\left(a^3\,\sqrt{a^2-b^2}\,d\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}\right)+$$

$$\Bigg(2\,b\,\mathrm{ArcTan}\Big[\mathrm{Sec}\Big[\frac{d\,x}{2}\Big]\,\Bigg(\frac{\mathrm{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}-$$

$$\frac{\mathrm{i}\,\mathrm{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}\Bigg)\,\Big(-\mathrm{i}\,b\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]+\mathrm{i}\,a\,\mathrm{Sin}\Big[c+\frac{d\,x}{2}\Big]\Big)\Big]$$

$$\mathrm{Sin}[c]\Bigg)\Big/\left(a^3\,\sqrt{a^2-b^2}\,d\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}\right)\Bigg)\Bigg)\Bigg/$$

$$\left(\left(-a^2+b^2\right)^2\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^3\right)+$$

$$\frac{1}{2\,a^3\,\left(a^2-b^2\right)^2\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^3}$$

$$\left(b+a\,\mathrm{Cos}[c+d\,x]\right)$$

$$\mathrm{Sec}[c]$$

$$\mathrm{Sec}[c+d\,x]$$

$$\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Big(2\,a^6\,A\,d\,x\,\mathrm{Cos}[c]-6\,a^2\,A\,b^4\,d\,x\,\mathrm{Cos}[c]+4\,A\,b^6\,d\,x\,\mathrm{Cos}[c]+4\,a^5\,A\,b\,d\,x\,\mathrm{Cos}[d\,x]-$$
$$8\,a^3\,A\,b^3\,d\,x\,\mathrm{Cos}[d\,x]+4\,a\,A\,b^5\,d\,x\,\mathrm{Cos}[d\,x]+4\,a^5\,A\,b\,d\,x\,\mathrm{Cos}[2\,c+d\,x]-$$
$$8\,a^3\,A\,b^3\,d\,x\,\mathrm{Cos}[2\,c+d\,x]+4\,a\,A\,b^5\,d\,x\,\mathrm{Cos}[2\,c+d\,x]+a^6\,A\,d\,x\,\mathrm{Cos}[c+2\,d\,x]-$$
$$2\,a^4\,A\,b^2\,d\,x\,\mathrm{Cos}[c+2\,d\,x]+a^2\,A\,b^4\,d\,x\,\mathrm{Cos}[c+2\,d\,x]+a^6\,A\,d\,x\,\mathrm{Cos}[3\,c+2\,d\,x]-$$
$$2\,a^4\,A\,b^2\,d\,x\,\mathrm{Cos}[3\,c+2\,d\,x]+a^2\,A\,b^4\,d\,x\,\mathrm{Cos}[3\,c+2\,d\,x]-6\,a^4\,A\,b^2\,\mathrm{Sin}[c]-$$
$$9\,a^2\,A\,b^4\,\mathrm{Sin}[c]+6\,A\,b^6\,\mathrm{Sin}[c]-2\,a^6\,C\,\mathrm{Sin}[c]-5\,a^4\,b^2\,C\,\mathrm{Sin}[c]-2\,a^2\,b^4\,C\,\mathrm{Sin}[c]+$$
$$17\,a^3\,A\,b^3\,\mathrm{Sin}[d\,x]-8\,a\,A\,b^5\,\mathrm{Sin}[d\,x]+5\,a^5\,b\,C\,\mathrm{Sin}[d\,x]+4\,a^3\,b^3\,C\,\mathrm{Sin}[d\,x]-$$
$$7\,a^3\,A\,b^3\,\mathrm{Sin}[2\,c+d\,x]+4\,a\,A\,b^5\,\mathrm{Sin}[2\,c+d\,x]-3\,a^5\,b\,C\,\mathrm{Sin}[2\,c+d\,x]+$$
$$6\,a^4\,A\,b^2\,\mathrm{Sin}[c+2\,d\,x]-3\,a^2\,A\,b^4\,\mathrm{Sin}[c+2\,d\,x]+2\,a^6\,C\,\mathrm{Sin}[c+2\,d\,x]+a^4\,b^2\,C\,\mathrm{Sin}[c+2\,d\,x]\Big)$$

Problem 696: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[c+d\,x]\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 3, 266 leaves, 7 steps):

$$-\frac{3\,A\,b\,x}{a^4}-\left(\left(15\,a^2\,A\,b^4-6\,A\,b^6-2\,a^6\,C-a^4\,b^2\,\left(12\,A+C\right)\right)\,\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]}{\sqrt{a+b}}\right]\right)\Big/$$

$$\left(a^4\,\left(a-b\right)^{5/2}\,\left(a+b\right)^{5/2}\,d\right)-\frac{\left(11\,a^2\,A\,b^2-6\,A\,b^4-a^4\,\left(2\,A-3\,C\right)\right)\,\text{Sin}\left[c+d\,x\right]}{2\,a^3\,\left(a^2-b^2\right)^2\,d}+$$

$$\frac{\left(A\,b^2+a^2\,C\right)\,\text{Sin}\left[c+d\,x\right]}{2\,a\,\left(a^2-b^2\right)\,d\,\left(a+b\,\text{Sec}\left[c+d\,x\right]\right)^2}-\frac{\left(3\,A\,b^4-2\,a^4\,C-a^2\,b^2\,\left(6\,A+C\right)\right)\,\text{Sin}\left[c+d\,x\right]}{2\,a^2\,\left(a^2-b^2\right)^2\,d\,\left(a+b\,\text{Sec}\left[c+d\,x\right]\right)}$$

Result (type 3, 1186 leaves) :

$$\frac{1}{\left(-a^2+b^2\right)^2 \left(A+2 C+A \text{Cos}[2 c+2 d x]\right) \left(a+b \text{Sec}[c+d x]\right)^3} \left(12 a^4 A b^2-15 a^2 A b^4+6 A b^6+2 a^6 C+a^4 b^2 C\right) \left(b+a \text{Cos}[c+d x]\right)^3 \text{Sec}[c+d x] \left(A+C \text{Sec}[c+d x]^2\right) \left(-\left(\left(2 i \text{ArcTan}\left[\text{Sec}\left[\frac{d x}{2}\right] \left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2} \sqrt{\text{Cos}[2 c]-i \text{Sin}[2 c]}}-\frac{i \text{Sin}[c]}{\sqrt{a^2-b^2} \sqrt{\text{Cos}[2 c]-i \text{Sin}[2 c]}}\right) \left(-i b \text{Sin}\left[\frac{d x}{2}\right]+i a \text{Sin}\left[c+\frac{d x}{2}\right]\right)\right] \text{Cos}[c]\right) \Big/ \left(a^4 \sqrt{a^2-b^2}\, d \sqrt{\text{Cos}[2 c]-i \text{Sin}[2 c]}\right)\right) - \left(2 \text{ArcTan}\left[\text{Sec}\left[\frac{d x}{2}\right] \left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2} \sqrt{\text{Cos}[2 c]-i \text{Sin}[2 c]}}-\frac{i \text{Sin}[c]}{\sqrt{a^2-b^2} \sqrt{\text{Cos}[2 c]-i \text{Sin}[2 c]}}\right) \left(-i b \text{Sin}\left[\frac{d x}{2}\right]+i a \text{Sin}\left[c+\frac{d x}{2}\right]\right)\right] \text{Sin}[c]\right) \Big/ \left(a^4 \sqrt{a^2-b^2}\, d \sqrt{\text{Cos}[2 c]-i \text{Sin}[2 c]}\right)\right) +$$

$$\frac{1}{4 a^4 \left(a^2-b^2\right)^2 d \left(A+2 C+A \text{Cos}[2 c+2 d x]\right) \left(a+b \text{Sec}[c+d x]\right)^3} \left(b+a \text{Cos}[c+d x]\right) \text{Sec}[c] \text{Sec}[c+d x] \left(A+C \text{Sec}[c+d x]^2\right) \left(-12 a^6 A b d x \text{Cos}[c]+36 a^2 A b^5 d x \text{Cos}[c]-24 A b^7 d x \text{Cos}[c]-24 a^5 A b^2 d x \text{Cos}[d x]+48 a^3 A b^4 d x \text{Cos}[d x]-24 a A b^6 d x \text{Cos}[d x]-24 a^5 A b^2 d x \text{Cos}[2 c+d x]+48 a^3 A b^4 d x \text{Cos}[2 c+d x]-24 a A b^6 d x \text{Cos}[2 c+d x]-6 a^6 A b d x \text{Cos}[c+2 d x]+12 a^4 A b^3 d x \text{Cos}[c+2 d x]-6 a^2 A b^5 d x \text{Cos}[c+2 d x]-6 a^6 A b d x \text{Cos}[3 c+2 d x]+12 a^4 A b^3 d x \text{Cos}[3 c+2 d x]-6 a^2 A b^5 d x \text{Cos}[3 c+2 d x]+16 a^4 A b^3 \text{Sin}[c]+22 a^2 A b^5 \text{Sin}[c]-20 A b^7 \text{Sin}[c]+8 a^6 b C \text{Sin}[c]+14 a^4 b^3 C \text{Sin}[c]-4 a^2 b^5 C \text{Sin}[c]+a^7 A \text{Sin}[d x]+2 a^5 A b^2 \text{Sin}[d x]-53 a^3 A b^4 \text{Sin}[d x]+32 a A b^6 \text{Sin}[d x]-22 a^5 b^2 C \text{Sin}[d x]+4 a^3 b^4 C \text{Sin}[d x]+a^7 A \text{Sin}[2 c+d x]+2 a^5 A b^2 \text{Sin}[2 c+d x]+11 a^3 A b^4 \text{Sin}[2 c+d x]-8 a A b^6 \text{Sin}[2 c+d x]+10 a^5 b^2 C \text{Sin}[2 c+d x]-4 a^3 b^4 C \text{Sin}[2 c+d x]+4 a^6 A b \text{Sin}[c+2 d x]-24 a^4 A b^3 \text{Sin}[c+2 d x]+14 a^2 A b^5 \text{Sin}[c+2 d x]-8 a^6 b C \text{Sin}[c+2 d x]+2 a^4 b^3 C \text{Sin}[c+2 d x]+4 a^6 A b \text{Sin}[3 c+2 d x]-8 a^4 A b^3 \text{Sin}[3 c+2 d x]+4 a^2 A b^5 \text{Sin}[3 c+2 d x]+a^7 A \text{Sin}[2 c+3 d x]-2 a^5 A b^2 \text{Sin}[2 c+3 d x]+a^3 A b^4 \text{Sin}[2 c+3 d x]+a^7 A \text{Sin}[4 c+3 d x]-2 a^5 A b^2 \text{Sin}[4 c+3 d x]+a^3 A b^4 \text{Sin}[4 c+3 d x]\right)$$

Problem 698: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^4 \left(A+C \text{Sec}[c+d x]^2\right)}{\left(a+b \text{Sec}[c+d x]\right)^4} \, dx$$

Optimal (type 3, 378 leaves, 9 steps):

$$-\frac{4\,a\,C\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{b^5\,d}-$$
$$\left(\left(2\,A\,b^8-8\,a^8\,C+28\,a^6\,b^2\,C-35\,a^4\,b^4\,C+a^2\,b^6\,(3\,A+20\,C)\right)\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/$$
$$\left((a-b)^{7/2}\,b^5\,(a+b)^{7/2}\,d\right)-\frac{\left(5\,A\,b^4-\left(12\,a^4-23\,a^2\,b^2+6\,b^4\right)C\right)\text{Tan}[c+d\,x]}{6\,b^4\,\left(a^2-b^2\right)^2\,d}-$$
$$\frac{\left(A\,b^2+a^2\,C\right)\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{3\,b\,\left(a^2-b^2\right)d\,(a+b\,\text{Sec}[c+d\,x])^3}+$$
$$\frac{\left(3\,A\,b^4-4\,a^4\,C+a^2\,b^2\,(2\,A+9\,C)\right)\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{6\,b^2\,\left(a^2-b^2\right)^2\,d\,(a+b\,\text{Sec}[c+d\,x])^2}+$$
$$\frac{a\,\left(2\,A\,b^6+4\,a^6\,C-11\,a^4\,b^2\,C+3\,a^2\,b^4\,(A+4\,C)\right)\text{Tan}[c+d\,x]}{2\,b^4\,\left(a^2-b^2\right)^3\,d\,(a+b\,\text{Sec}[c+d\,x])}$$

Result (type 3, 874 leaves):

$$-\left(\left(2\,\left(3\,a^2\,A\,b^6+2\,A\,b^8-8\,a^8\,C+28\,a^6\,b^2\,C-35\,a^4\,b^4\,C+20\,a^2\,b^6\,C\right)\right.\right.$$
$$\left.\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]\,(b+a\,\text{Cos}[c+d\,x])^4\,\text{Sec}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left.\left(b^5\,\sqrt{a^2-b^2}\,\left(-a^2+b^2\right)^3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)\right)+$$
$$\left(8\,a\,C\,(b+a\,\text{Cos}[c+d\,x])^4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sec}[c+d\,x]^2\right.$$
$$\left.\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(b^5\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)-$$
$$\left(8\,a\,C\,(b+a\,\text{Cos}[c+d\,x])^4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sec}[c+d\,x]^2\right.$$
$$\left.\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(b^5\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)+$$
$$\frac{1}{24\,b^4\,\left(-a^2+b^2\right)^3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4}$$
$$(b+a\,\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-6\,a^4\,A\,b^5\,\text{Sin}[c+d\,x]-54\,a^2\,A\,b^7\,\text{Sin}[c+d\,x]-120\,a^8\,b\,C\,\text{Sin}[c+d\,x]+\right.$$
$$294\,a^6\,b^3\,C\,\text{Sin}[c+d\,x]-174\,a^4\,b^5\,C\,\text{Sin}[c+d\,x]-108\,a^2\,b^7\,C\,\text{Sin}[c+d\,x]+$$
$$48\,b^9\,C\,\text{Sin}[c+d\,x]-16\,a^5\,A\,b^4\,\text{Sin}[2\,(c+d\,x)]-2\,a^3\,A\,b^6\,\text{Sin}[2\,(c+d\,x)]-$$
$$72\,a\,A\,b^8\,\text{Sin}[2\,(c+d\,x)]-48\,a^9\,C\,\text{Sin}[2\,(c+d\,x)]-40\,a^7\,b^2\,C\,\text{Sin}[2\,(c+d\,x)]+$$
$$370\,a^5\,b^4\,C\,\text{Sin}[2\,(c+d\,x)]-444\,a^3\,b^6\,C\,\text{Sin}[2\,(c+d\,x)]+72\,a\,b^8\,C\,\text{Sin}[2\,(c+d\,x)]-$$
$$6\,a^4\,A\,b^5\,\text{Sin}[3\,(c+d\,x)]-54\,a^2\,A\,b^7\,\text{Sin}[3\,(c+d\,x)]-120\,a^8\,b\,C\,\text{Sin}[3\,(c+d\,x)]+$$
$$342\,a^6\,b^3\,C\,\text{Sin}[3\,(c+d\,x)]-318\,a^4\,b^5\,C\,\text{Sin}[3\,(c+d\,x)]+36\,a^2\,b^7\,C\,\text{Sin}[3\,(c+d\,x)]-$$
$$4\,a^5\,A\,b^4\,\text{Sin}[4\,(c+d\,x)]-11\,a^3\,A\,b^6\,\text{Sin}[4\,(c+d\,x)]-24\,a^9\,C\,\text{Sin}[4\,(c+d\,x)]+$$
$$\left.68\,a^7\,b^2\,C\,\text{Sin}[4\,(c+d\,x)]-65\,a^5\,b^4\,C\,\text{Sin}[4\,(c+d\,x)]+6\,a^3\,b^6\,C\,\text{Sin}[4\,(c+d\,x)]\right)$$

Problem 699: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[c+d\,x]^3\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 3, 313 leaves, 8 steps):

$$\frac{C\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{b^4\,d}+$$
$$\left(a\,\left(a^2\,b^4\,(A-8\,C)-2\,a^6\,C+7\,a^4\,b^2\,C+4\,b^6\,(A+2\,C)\right)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a-b}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/$$
$$\left((a-b)^{7/2}\,b^4\,(a+b)^{7/2}\,d\right)-\frac{\left(A\,b^2+a^2\,C\right)\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]}{3\,b\,\left(a^2-b^2\right)\,d\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^3}-$$
$$\frac{a\,\left(2\,A\,b^4-3\,a^4\,C+a^2\,b^2\,(3\,A+8\,C)\right)\,\mathrm{Tan}[c+d\,x]}{6\,b^3\,\left(a^2-b^2\right)^2\,d\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2}-$$
$$\frac{\left(4\,A\,b^6+9\,a^6\,C+2\,a^2\,b^4\,(7\,A+17\,C)-a^4\,b^2\,(3\,A+28\,C)\right)\,\mathrm{Tan}[c+d\,x]}{6\,b^3\,\left(a^2-b^2\right)^3\,d\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)}$$

Result (type 3, 1092 leaves):

$$-\left(\left(2\,C\,(b+a\,\mathrm{Cos}[c+d\,x])^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(b^4\,d\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4\right)\right)+$$

$$\left(2\,C\,(b+a\,\mathrm{Cos}[c+d\,x])^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\left(b^4\,d\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4\right)+$$

$$\frac{1}{(-a^2+b^2)^3\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4}\left(a^2\,A\,b^4+4\,A\,b^6-2\,a^6\,C+7\,a^4\,b^2\,C-8\,a^2\,b^4\,C+8\,b^6\,C\right)$$

$$(b+a\,\mathrm{Cos}[c+d\,x])^4\,\mathrm{Sec}[c+d\,x]^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(\left(2\,\mathrm{i}\,a\,\mathrm{ArcTan}\left[\mathrm{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\mathrm{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}-\frac{\mathrm{i}\,\mathrm{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}\right)\left(-\mathrm{i}\,b\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+\mathrm{i}\,a\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\mathrm{Cos}[c]\right)\Big/\left(b^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}\right)+$$

$$\left(2\,a\,\mathrm{ArcTan}\left[\mathrm{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\mathrm{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}-\frac{\mathrm{i}\,\mathrm{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}\right)\left(-\mathrm{i}\,b\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+\mathrm{i}\,a\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\mathrm{Sin}[c]\right)\Big/$$

$$\left.\left(b^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}\right)\right)-\left(2\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\right.$$

$$\left.\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(A\,b^3\,\mathrm{Sin}[c]+a^2\,b\,C\,\mathrm{Sin}[c]-a\,A\,b^2\,\mathrm{Sin}[d\,x]-a^3\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$

$$\left(3\,a\,b\,(-a^2+b^2)\,d\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4\right)+$$

$$\left((b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(-5\,a\,A\,b^3\,\mathrm{Sin}[c]+a^3\,b\,C\,\mathrm{Sin}[c]-\right.\right.$$

$$\left.\left.6\,a\,b^3\,C\,\mathrm{Sin}[c]+3\,a^2\,A\,b^2\,\mathrm{Sin}[d\,x]+2\,A\,b^4\,\mathrm{Sin}[d\,x]-3\,a^4\,C\,\mathrm{Sin}[d\,x]+8\,a^2\,b^2\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$

$$\left(3\,b^2\,(-a^2+b^2)^2\,d\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4\right)+$$

$$\left((b+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(-3\,a^3\,A\,b^3\,\mathrm{Sin}[c]-12\,a\,A\,b^5\,\mathrm{Sin}[c]-3\,a^5\,b\,C\,\mathrm{Sin}[c]+6\,a^3\,b^3\,C\,\mathrm{Sin}[c]-18\,a\,b^5\,C\,\mathrm{Sin}[c]+13\,a^2\,A\right.$$

$$\left.\left.b^4\,\mathrm{Sin}[d\,x]+2\,A\,b^6\,\mathrm{Sin}[d\,x]+6\,a^6\,C\,\mathrm{Sin}[d\,x]-17\,a^4\,b^2\,C\,\mathrm{Sin}[d\,x]+26\,a^2\,b^4\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$

$$\left(3\,b^3\,(-a^2+b^2)^3\,d\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4\right)$$

Problem 701: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[c+d\,x]\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{(a+b\,\mathrm{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 3, 252 leaves, 7 steps):

$$\frac{a\left(a^2\left(2A+C\right)+b^2\left(3A+4C\right)\right)\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a+b}}\right]}{(a-b)^{7/2}(a+b)^{7/2}d}-\frac{\left(A\,b^2+a^2C\right)\text{Tan}[c+d\,x]}{3b\left(a^2-b^2\right)d\left(a+b\,\text{Sec}[c+d\,x]\right)^3}-\frac{a\left(5A\,b^2-a^2C+6b^2C\right)\text{Tan}[c+d\,x]}{6b\left(a^2-b^2\right)^2d\left(a+b\,\text{Sec}[c+d\,x]\right)^2}+\frac{\left(a^4C-2b^4\left(2A+3C\right)-a^2b^2\left(11A+10C\right)\right)\text{Tan}[c+d\,x]}{6b\left(a^2-b^2\right)^3d\left(a+b\,\text{Sec}[c+d\,x]\right)}$$

Result (type 3, 868 leaves):

$$\Bigg(\left(2a^2A+3A\,b^2+a^2C+4b^2C\right)\left(b+a\,\text{Cos}[c+d\,x]\right)^4\text{Sec}[c+d\,x]^2\left(A+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\Bigg(2\,i\,a\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}}-\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}}\right)\left(-i\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+i\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\text{Cos}[c]\Bigg)\Big/\left(\sqrt{a^2-b^2}\,d\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}\right)+\Bigg(2a\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}}-\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}}\right)\left(-i\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+i\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\text{Sin}[c]\Bigg)\Big/\left(\sqrt{a^2-b^2}\,d\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}\right)\Bigg)\Bigg)\Big/$$

$$\left(\left(-a^2+b^2\right)^3\left(A+2C+A\,\text{Cos}[2c+2d\,x]\right)\left(a+b\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\left(2\left(b+a\,\text{Cos}[c+d\,x]\right)\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(A\,b^4\,\text{Sin}[c]+a^2b^2C\,\text{Sin}[c]-a\,A\,b^3\,\text{Sin}[d\,x]-a^3b\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$

$$\left(3a^3\left(a^2-b^2\right)d\left(A+2C+A\,\text{Cos}[2c+2d\,x]\right)\left(a+b\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\Big(\left(b+a\,\text{Cos}[c+d\,x]\right)^2\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(-11a^2A\,b^3\,\text{Sin}[c]+6A\,b^5\,\text{Sin}[c]-5a^4b\,C\,\text{Sin}[c]+9a^3A\,b^2\,\text{Sin}[d\,x]-4a\,A\,b^4\,\text{Sin}[d\,x]+3a^5C\,\text{Sin}[d\,x]+2a^3b^2C\,\text{Sin}[d\,x]\right)\Big)\Big/$$

$$\left(3a^3\left(a^2-b^2\right)^2d\left(A+2C+A\,\text{Cos}[2c+2d\,x]\right)\left(a+b\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\Big(\left(b+a\,\text{Cos}[c+d\,x]\right)^3\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(27a^4A\,b^2\,\text{Sin}[c]-18a^2A\,b^4\,\text{Sin}[c]+6A\,b^6\,\text{Sin}[c]+3a^6C\,\text{Sin}[c]+12a^4b^2C\,\text{Sin}[c]-18a^5A\,b\,\text{Sin}[d\,x]+5a^3A\,b^3\,\text{Sin}[d\,x]-2a\,A\,b^5\,\text{Sin}[d\,x]-13a^5b\,C\,\text{Sin}[d\,x]-2a^3b^3C\,\text{Sin}[d\,x]\right)\Big)\Big/$$

$$\left(3a^3\left(a^2-b^2\right)^3d\left(A+2C+A\,\text{Cos}[2c+2d\,x]\right)\left(a+b\,\text{Sec}[c+d\,x]\right)^4\right)$$

Problem 702: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{A + C \operatorname{Sec}[c + d x]^2}{(a + b \operatorname{Sec}[c + d x])^4} \, dx$$

Optimal (type 3, 292 leaves, 7 steps):

$$\frac{A x}{a^4} - \left(b \left(7 a^2 A b^4 - 2 A b^6 - a^4 b^2 (8 A - C) + 4 a^6 (2 A + C)\right) \operatorname{ArcTanh}\left[\frac{\sqrt{a - b} \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]}{\sqrt{a + b}}\right]\right) \Big/ \left(a^4 (a - b)^{7/2} (a + b)^{7/2} d\right) + \frac{(A b^2 + a^2 C) \operatorname{Tan}[c + d x]}{3 a (a^2 - b^2) d (a + b \operatorname{Sec}[c + d x])^3} - \frac{(3 A b^4 - 2 a^4 C - a^2 b^2 (8 A + 3 C)) \operatorname{Tan}[c + d x]}{6 a^2 (a^2 - b^2)^2 d (a + b \operatorname{Sec}[c + d x])^2} - \frac{(17 a^2 A b^4 - 6 A b^6 - 2 a^6 C - 13 a^4 b^2 (2 A + C)) \operatorname{Tan}[c + d x]}{6 a^3 (a^2 - b^2)^3 d (a + b \operatorname{Sec}[c + d x])}$$

Result (type 3, 995 leaves):

$$\frac{2\,A\,x\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\text{Sec}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{a^4\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4}+$$

$$\frac{1}{\left(-a^2+b^2\right)^3\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4}$$
$$\left(-8\,a^6\,A+8\,a^4\,A\,b^2-7\,a^2\,A\,b^4+2\,A\,b^6-4\,a^6\,C-a^4\,b^2\,C\right)$$
$$\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\text{Sec}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,\mathrm{i}\,b\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}-\frac{\mathrm{i}\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}\right)\right.\right.\right.$$
$$\left.\left.\left(-\mathrm{i}\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+\mathrm{i}\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\,\text{Cos}[c]\right)\Big/\left(a^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}\right)+$$
$$\left(2\,b\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}-\frac{\mathrm{i}\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}\right)\right.\right.$$
$$\left.\left.\left(-\mathrm{i}\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+\mathrm{i}\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\,\text{Sin}[c]\right)\Big/$$
$$\left.\left(a^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}\right)\right)-\left(2\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\right.$$
$$\left.\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\left(A\,b^5\,\text{Sin}[c]+a^2\,b^3\,C\,\text{Sin}[c]-a\,A\,b^4\,\text{Sin}[d\,x]-a^3\,b^2\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$
$$\left(3\,a^4\,\left(a^2-b^2\right)\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4\right)+$$
$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(14\,a^2\,A\,b^4\,\text{Sin}[c]-9\,A\,b^6\,\text{Sin}[c]+8\,a^4\,b^2\,C\,\text{Sin}[c]-3\,a^2\,b^4\,C\,\text{Sin}[c]-\right.$$
$$\left.\left.12\,a^3\,A\,b^3\,\text{Sin}[d\,x]+7\,a\,A\,b^5\,\text{Sin}[d\,x]-6\,a^5\,b\,C\,\text{Sin}[d\,x]+a^3\,b^3\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$
$$\left(3\,a^4\,\left(a^2-b^2\right)^2\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4\right)+$$
$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-48\,a^4\,A\,b^3\,\text{Sin}[c]+51\,a^2\,A\,b^5\,\text{Sin}[c]-18\,A\,b^7\,\text{Sin}[c]-12\,a^6\,b\,C\,\text{Sin}[c]-\right.$$
$$3\,a^4\,b^3\,C\,\text{Sin}[c]+36\,a^5\,A\,b^2\,\text{Sin}[d\,x]-32\,a^3\,A\,b^4\,\text{Sin}[d\,x]+$$
$$\left.\left.11\,a\,A\,b^6\,\text{Sin}[d\,x]+6\,a^7\,C\,\text{Sin}[d\,x]+10\,a^5\,b^2\,C\,\text{Sin}[d\,x]-a^3\,b^4\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$
$$\left(3\,a^4\,\left(a^2-b^2\right)^3\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4\right)$$

Problem 703: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 3, 367 leaves, 8 steps):

$$-\frac{4\,A\,b\,x}{a^5}-\left(\left(35\,a^4\,A\,b^4-28\,a^2\,A\,b^6+8\,A\,b^8-2\,a^8\,C-a^6\,b^2\,(20\,A+3\,C)\right)\,\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/\left(a^5\,(a-b)^{7/2}\,(a+b)^{7/2}\,d\right)+\frac{\left(68\,a^2\,A\,b^4-24\,A\,b^6+a^6\,(6\,A-11\,C)-a^4\,b^2\,(65\,A+4\,C)\right)\,\text{Sin}[c+d\,x]}{6\,a^4\,\left(a^2-b^2\right)^3\,d}+\frac{\left(A\,b^2+a^2\,C\right)\,\text{Sin}[c+d\,x]}{3\,a\,\left(a^2-b^2\right)\,d\,(a+b\,\text{Sec}[c+d\,x])^3}-\frac{\left(4\,A\,b^4-3\,a^4\,C-a^2\,b^2\,(9\,A+2\,C)\right)\,\text{Sin}[c+d\,x]}{6\,a^2\,\left(a^2-b^2\right)^2\,d\,(a+b\,\text{Sec}[c+d\,x])^2}-\frac{\left(11\,a^2\,A\,b^4-4\,A\,b^6-2\,a^6\,C-3\,a^4\,b^2\,(4\,A+C)\right)\,\text{Sin}[c+d\,x]}{2\,a^3\,\left(a^2-b^2\right)^3\,d\,(a+b\,\text{Sec}[c+d\,x])}$$

Result (type 3, 1089 leaves) :

$$-\frac{8\,A\,b\,x\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\text{Sec}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{a^5\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4}+$$

$$\frac{1}{\left(-a^2+b^2\right)^3\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4}$$

$$\left(-20\,a^6\,A\,b^2+35\,a^4\,A\,b^4-28\,a^2\,A\,b^6+8\,A\,b^8-2\,a^8\,C-3\,a^6\,b^2\,C\right)\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\text{Sec}[c+d\,x]^2$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\left(-\left(\left(\left(2\,\mathrm{i}\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\,\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}-\right.\right.\right.\right.\right.$$

$$\left.\left.\frac{\mathrm{i}\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}\right)\,\left(-\mathrm{i}\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+\mathrm{i}\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]$$

$$\left.\left.\text{Cos}[c]\right)\Big/\left(a^5\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}\right)\right)-$$

$$\left(2\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\,\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}-\frac{\mathrm{i}\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}\right)\right.\right.$$

$$\left.\left.\left(-\mathrm{i}\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+\mathrm{i}\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\,\text{Sin}[c]\right)\Big/$$

$$\left.\left(a^5\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}\right)\right)+$$

$$\left(2\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left.\left(A\,b^6\,\text{Sin}[c]+a^2\,b^4\,C\,\text{Sin}[c]-a\,A\,b^5\,\text{Sin}[d\,x]-a^3\,b^3\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$

$$\left(3\,a^5\,\left(a^2-b^2\right)\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(-17\,a^2\,A\,b^5\,\text{Sin}[c]+12\,A\,b^7\,\text{Sin}[c]-11\,a^4\,b^3\,C\,\text{Sin}[c]+6\,a^2\,b^5\,C\,\text{Sin}[c]+\right.$$

$$\left.\left.15\,a^3\,A\,b^4\,\text{Sin}[d\,x]-10\,a\,A\,b^6\,\text{Sin}[d\,x]+9\,a^5\,b^2\,C\,\text{Sin}[d\,x]-4\,a^3\,b^4\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$

$$\left(3\,a^5\,\left(a^2-b^2\right)^2\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\frac{1}{3\,a^5\,\left(a^2-b^2\right)^3\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4}$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Sec}[c]$$

$$\text{Sec}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(75\,a^4\,A\,b^4\,\text{Sin}[c]-96\,a^2\,A\,b^6\,\text{Sin}[c]+36\,A\,b^8\,\text{Sin}[c]+27\,a^6\,b^2\,C\,\text{Sin}[c]-\right.$$

$$18\,a^4\,b^4\,C\,\text{Sin}[c]+6\,a^2\,b^6\,C\,\text{Sin}[c]-60\,a^5\,A\,b^3\,\text{Sin}[d\,x]+71\,a^3\,A\,b^5\,\text{Sin}[d\,x]-$$

$$\left.26\,a\,A\,b^7\,\text{Sin}[d\,x]-18\,a^7\,b\,C\,\text{Sin}[d\,x]+5\,a^5\,b^3\,C\,\text{Sin}[d\,x]-2\,a^3\,b^5\,C\,\text{Sin}[d\,x]\right)+$$

$$\left(2\,A\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Tan}[c+d\,x]\right)\Big/$$

$$\left(a^4\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4\right)$$

Problem 704: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 3, 513 leaves, 9 steps):

$$\frac{\left(20\,A\,b^2+a^2\,(A+2\,C)\right)\,x}{2\,a^6}+\left(\left(20\,A\,b^9-a^2\,b^7\,(69\,A-2\,C)-8\,a^6\,b^3\,(5\,A-C)+7\,a^4\,b^5\,(12\,A-C)-8\,a^8\,b\,C\right)\right.$$
$$\left.\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/\left(a^6\,\sqrt{a-b}\,\sqrt{a+b}\,\left(a^2-b^2\right)^3\,d\right)+\frac{1}{6\,a^5\,\left(a^2-b^2\right)^3\,d}$$
$$b\,\left(60\,A\,b^6-a^6\,(24\,A-26\,C)+a^4\,b^2\,(146\,A-17\,C)-a^2\,b^4\,(167\,A-6\,C)\right)\,\text{Sin}[c+d\,x]-$$
$$\frac{1}{2\,a^4\,\left(a^2-b^2\right)^3\,d}\left(10\,A\,b^6-a^6\,(A-6\,C)+a^4\,b^2\,(23\,A-2\,C)-a^2\,b^4\,(27\,A-C)\right)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]+$$
$$\frac{\left(A\,b^2+a^2\,C\right)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{3\,a\,\left(a^2-b^2\right)\,d\,(a+b\,\text{Sec}[c+d\,x])^3}-\frac{\left(5\,A\,b^4-4\,a^4\,C-a^2\,b^2\,(10\,A+C)\right)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{6\,a^2\,\left(a^2-b^2\right)^2\,d\,(a+b\,\text{Sec}[c+d\,x])^2}+$$
$$\left(\left(20\,A\,b^6-a^2\,b^4\,(53\,A-2\,C)+12\,a^6\,C+a^4\,b^2\,(48\,A+C)\right)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]\right)\Big/$$
$$\left(6\,a^3\,\left(a^2-b^2\right)^3\,d\,(a+b\,\text{Sec}[c+d\,x])\right)$$

Result (type 3, 1452 leaves) :

$$\left(b\left(-40 a^6 A b^2+84 a^4 A b^4-69 a^2 A b^6+20 A b^8-8 a^8 C+8 a^6 b^2 C-7 a^4 b^4 C+2 a^2 b^6 C\right)\right.$$
$$\left.\text{ArcTanh}\left[\frac{(-a+b) \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]\right) \Big/ \left(a^6 \sqrt{a^2-b^2}\left(-a^2+b^2\right)^3 d\right)-$$
$$\frac{1}{96 a^6\left(a^2-b^2\right)^3 d\,(b+a \text{Cos}[c+d x])^3}\left(-72 a^{10} A b(c+d x)-1272 a^8 A b^3(c+d x)+\right.$$
$$3288 a^6 A b^5(c+d x)-1512 a^4 A b^7(c+d x)-1392 a^2 A b^9(c+d x)+960 A b^{11}(c+d x)-$$
$$144 a^{10} b C(c+d x)+336 a^8 b^3 C(c+d x)-144 a^6 b^5 C(c+d x)-144 a^4 b^7 C(c+d x)+$$
$$96 a^2 b^9 C(c+d x)-36 a^{11} A(c+d x) \text{Cos}[c+d x]-756 a^9 A b^2(c+d x) \text{Cos}[c+d x]-$$
$$396 a^7 A b^4(c+d x) \text{Cos}[c+d x]+6084 a^5 A b^6(c+d x) \text{Cos}[c+d x]-$$
$$7776 a^3 A b^8(c+d x) \text{Cos}[c+d x]+2880 a A b^{10}(c+d x) \text{Cos}[c+d x]-$$
$$72 a^{11} C(c+d x) \text{Cos}[c+d x]-72 a^9 b^2 C(c+d x) \text{Cos}[c+d x]+648 a^7 b^4 C(c+d x) \text{Cos}[c+d x]-$$
$$792 a^5 b^6 C(c+d x) \text{Cos}[c+d x]+288 a^3 b^8 C(c+d x) \text{Cos}[c+d x]-$$
$$72 a^{10} A b(c+d x) \text{Cos}[2(c+d x)]-1224 a^8 A b^3(c+d x) \text{Cos}[2(c+d x)]+$$
$$4104 a^6 A b^5(c+d x) \text{Cos}[2(c+d x)]-4248 a^4 A b^7(c+d x) \text{Cos}[2(c+d x)]+$$
$$1440 a^2 A b^9(c+d x) \text{Cos}[2(c+d x)]-144 a^{10} b C(c+d x) \text{Cos}[2(c+d x)]+$$
$$432 a^8 b^3 C(c+d x) \text{Cos}[2(c+d x)]-432 a^6 b^5 C(c+d x) \text{Cos}[2(c+d x)]+$$
$$144 a^4 b^7 C(c+d x) \text{Cos}[2(c+d x)]-12 a^{11} A(c+d x) \text{Cos}[3(c+d x)]-$$
$$204 a^9 A b^2(c+d x) \text{Cos}[3(c+d x)]+684 a^7 A b^4(c+d x) \text{Cos}[3(c+d x)]-$$
$$708 a^5 A b^6(c+d x) \text{Cos}[3(c+d x)]+240 a^3 A b^8(c+d x) \text{Cos}[3(c+d x)]-$$
$$24 a^{11} C(c+d x) \text{Cos}[3(c+d x)]+72 a^9 b^2 C(c+d x) \text{Cos}[3(c+d x)]-$$
$$72 a^7 b^4 C(c+d x) \text{Cos}[3(c+d x)]+24 a^5 b^6 C(c+d x) \text{Cos}[3(c+d x)]-6 a^{11} A \text{Sin}[c+d x]+$$
$$270 a^9 A b^2 \text{Sin}[c+d x]-750 a^7 A b^4 \text{Sin}[c+d x]-1086 a^5 A b^6 \text{Sin}[c+d x]+$$
$$2232 a^3 A b^8 \text{Sin}[c+d x]-960 a A b^{10} \text{Sin}[c+d x]-144 a^9 b^2 C \text{Sin}[c+d x]-$$
$$288 a^7 b^4 C \text{Sin}[c+d x]+228 a^5 b^6 C \text{Sin}[c+d x]-96 a^3 b^8 C \text{Sin}[c+d x]+$$
$$60 a^{10} A b \text{Sin}[2(c+d x)]+372 a^8 A b^3 \text{Sin}[2(c+d x)]-2772 a^6 A b^5 \text{Sin}[2(c+d x)]+$$
$$3300 a^4 A b^7 \text{Sin}[2(c+d x)]-1200 a^2 A b^9 \text{Sin}[2(c+d x)]-480 a^8 b^3 C \text{Sin}[2(c+d x)]+$$
$$360 a^6 b^5 C \text{Sin}[2(c+d x)]-120 a^4 b^7 C \text{Sin}[2(c+d x)]-9 a^{11} A \text{Sin}[3(c+d x)]+$$
$$279 a^9 A b^2 \text{Sin}[3(c+d x)]-1143 a^7 A b^4 \text{Sin}[3(c+d x)]+1253 a^5 A b^6 \text{Sin}[3(c+d x)]-$$
$$440 a^3 A b^8 \text{Sin}[3(c+d x)]-144 a^9 b^2 C \text{Sin}[3(c+d x)]+128 a^7 b^4 C \text{Sin}[3(c+d x)]-$$
$$44 a^5 b^6 C \text{Sin}[3(c+d x)]+30 a^{10} A b \text{Sin}[4(c+d x)]-90 a^8 A b^3 \text{Sin}[4(c+d x)]+$$
$$90 a^6 A b^5 \text{Sin}[4(c+d x)]-30 a^4 A b^7 \text{Sin}[4(c+d x)]-3 a^{11} A \text{Sin}[5(c+d x)]+$$
$$\left.9 a^9 A b^2 \text{Sin}[5(c+d x)]-9 a^7 A b^4 \text{Sin}[5(c+d x)]+3 a^5 A b^6 \text{Sin}[5(c+d x)]\right)$$

Problem 705: Result more than twice size of optimal antiderivative.

$$\int \frac{a^2-b^2 \text{Sec}[c+d x]^2}{a+b \text{Sec}[c+d x]} \, dx$$

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

$$a x-\frac{b \text{ArcTanh}[\text{Sin}[c+d x]]}{d}$$

Result (type 3, 73 leaves):

$$a x+\frac{b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}-\frac{b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}$$

Problem 709: Attempted integration timed out after 120 seconds.

$$\int \operatorname{Sec}[c+d x]^3 \sqrt{a+b \operatorname{Sec}[c+d x]}\left(A+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 467 leaves, 7 steps):

$$\frac{1}{315 b^5 d} 2 (a-b) \sqrt{a+b}\left(16 a^4 C+6 a^2 b^2 (7 A+4 C)-21 b^4 (9 A+7 C)\right) \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}}+$$
$$\frac{1}{315 b^4 d} 2 (a-b) \sqrt{a+b}\left(16 a^3 C+12 a^2 b C+6 a b^2 (7 A+6 C)+21 b^3 (9 A+7 C)\right) \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}}+$$
$$\frac{2 a \left(21 A b^2+8 a^2 C+13 b^2 C\right) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Tan}[c+d x]}{315 b^3 d}-\frac{1}{315 b^2 d} 2\left(6 a^2 C-7 b^2 (9 A+7 C)\right) \operatorname{Sec}[c+d x] \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Tan}[c+d x]+$$
$$\frac{2 a C \operatorname{Sec}[c+d x]^2 \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Tan}[c+d x]}{63 b d}+\frac{2 C \operatorname{Sec}[c+d x]^3 \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Tan}[c+d x]}{9 d}$$

Result (type 1, 1 leaves):

???

Problem 710: Unable to integrate problem.

$$\int \operatorname{Sec}[c+d x]^2 \sqrt{a+b \operatorname{Sec}[c+d x]}\left(A+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 375 leaves, 6 steps):

$$-\frac{1}{105\,b^4\,d}2\,a\,(a-b)\,\sqrt{a+b}\,\left(35\,A\,b^2+8\,a^2\,C+19\,b^2\,C\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{105\,b^3\,d}2\,(a-b)\,\sqrt{a+b}\,\left(35\,A\,b^2+\left(8\,a^2+6\,a\,b+25\,b^2\right)\,C\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{2\,\left(8\,a^2\,C+5\,b^2\,(7\,A+5\,C)\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{105\,b^2\,d}-\frac{8\,a\,C\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]}{35\,b^2\,d}+\frac{2\,C\,\text{Sec}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]}{7\,b\,d}$$

Result (type 8, 37 leaves) :

$$\int \text{Sec}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Problem 711: Unable to integrate problem.

$$\int \text{Sec}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 308 leaves, 5 steps) :

$$\frac{1}{15\,b^3\,d}2\,(a-b)\,\sqrt{a+b}\,\left(2\,a^2\,C-3\,b^2\,(5\,A+3\,C)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{15\,b^2\,d}2\,(a-b)\,\sqrt{a+b}\,(15\,A\,b+2\,a\,C+9\,b\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{4\,a\,C\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{15\,b\,d}+\frac{2\,C\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]}{5\,b\,d}$$

Result (type 8, 35 leaves) :

$$\int \text{Sec}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Problem 712: Result unnecessarily involves imaginary or complex numbers.

$$\int \sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 355 leaves, 6 steps):

$$-\frac{1}{3\,b^2\,d}2\,a\,(a-b)\,\sqrt{a+b}\;C\,\mathrm{Cot}[c+d\,x]\;\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{3\,b\,d}2\,\sqrt{a+b}\;(3\,A\,b-(a-b)\,C)\;\mathrm{Cot}[c+d\,x]\;\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{1}{d}2\,A\,\sqrt{a+b}\;\mathrm{Cot}[c+d\,x]\;\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{2\,C\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Tan}[c+d\,x]}{3\,d}$$

Result (type 4, 570 leaves):

$$\frac{1}{3\,b\,\sqrt{\frac{-a+b}{a+b}}\;d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$

$$4\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Cos}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(2\,\mathrm{i}\,a\,(a-b)\,C\,\sqrt{\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{(a+b)\,(1+\text{Cos}[c+d\,x])}}\,\text{EllipticE}\Big[\right.$$

$$\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\Big]+2\,\mathrm{i}\,(a-b)\,b\,(3\,A+C)\,\sqrt{\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}$$

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

$$12\,\mathrm{i}\,a\,A\,b\,\sqrt{\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{(a+b)\,(1+\text{Cos}[c+d\,x])}}$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]-$$

$$\left.a\,\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Cos}[c+d\,x]\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+$$

$$\left(\text{Cos}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\left(\frac{4\,a\,C\,\text{Sin}[c+d\,x]}{3\,b}+\frac{4}{3}\,C\,\text{Tan}[c+d\,x]\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 713: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 352 leaves, 6 steps):

$$\frac{1}{b\,d}(a-b)\sqrt{a+b}\,(A-2\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{b\,d}\sqrt{a+b}\,(A\,b+2\,(a-b)\,C)\,\text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$
$$\frac{1}{a\,d}A\,b\sqrt{a+b}\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{A\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d}$$

Result (type 4, 727 leaves) :

$$\frac{2\,C\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{d}+$$

$$\Bigg(\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\;\Bigg(a\,A\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+A\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$

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

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+a\,A\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-A\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-2\,a\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+$$

$$2\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-2\,A\,b\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

$$2\,A\,b\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

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

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

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

$$2\,(A\,b-(a+b)\,C)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

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

$$\Bigg(d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\;\sqrt{\text{Sec}[c+d\,x]}\;\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{3/2}$$

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

Problem 714: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^2\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 411 leaves, 7 steps):

$$\frac{1}{4\,a\,d}A\,(a-b)\,\sqrt{a+b}\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{4\,a\,d}\sqrt{a+b}\,\left(A\,b+2\,a\,(A+4\,C)\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{4\,a^2\,d}\sqrt{a+b}\,\left(A\,b^2-4\,a^2\,(A+2\,C)\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{A\,b\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{4\,a\,d}+\frac{A\,\mathrm{Cos}[c+d\,x]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 1417 leaves):

$$\frac{A\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[2\,(c+d\,x)]}{4\,d}+\left(\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(-a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.\right.$$

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

$$a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$8\,i\,a^2\,A\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$2\,\mathrm{i}\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$
$$16\,\mathrm{i}\,a^2\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$
$$8\,\mathrm{i}\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$
$$2\,\mathrm{i}\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+16\,\mathrm{i}\,a^2\,C$$
$$\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$
$$\mathrm{i}\,A\,(a-b)\,b\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-2\,\mathrm{i}\,(a-b)\,(A\,b+2\,a\,(A+2\,C))$$

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

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

$$\left(4\,a\,\sqrt{\frac{-a+b}{a+b}}\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$

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

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

Problem 715: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^3\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 502 leaves, 8 steps):

$$-\frac{1}{24\,a^2\,b\,d}\left(a-b\right)\sqrt{a+b}\,\left(3\,A\,b^2-8\,a^2\,\left(2\,A+3\,C\right)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}+\frac{1}{24\,a^2\,d}\sqrt{a+b}\,\left(2\,a\,A\,b-3\,A\,b^2+8\,a^2\,\left(2\,A+3\,C\right)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}-\frac{1}{8\,a^3\,d}b\,\sqrt{a+b}\,\left(A\,b^2+4\,a^2\,\left(A+2\,C\right)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\Big[\frac{a+b}{a},\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}-\frac{\left(3\,A\,b^2-8\,a^2\,\left(2\,A+3\,C\right)\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,a^2\,d}+\frac{A\,b\,\text{Cos}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{12\,a\,d}+\frac{A\,\text{Cos}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 1347 leaves):

$$\frac{1}{d}\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(\frac{1}{12}\,A\,\text{Sin}[c+d\,x]+\frac{A\,b\,\text{Sin}\big[2\,\left(c+d\,x\right)\big]}{24\,a}+\frac{1}{12}\,A\,\text{Sin}\big[3\,\left(c+d\,x\right)\big]\right)+$$

$$\left(\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\sqrt{\frac{1}{1-\text{Tan}\big[\frac{1}{2}\,\left(c+d\,x\right)\big]^2}}\,\sqrt{\frac{a+b-a\,\text{Tan}\big[\frac{1}{2}\,\left(c+d\,x\right)\big]^2+b\,\text{Tan}\big[\frac{1}{2}\,\left(c+d\,x\right)\big]^2}{1+\text{Tan}\big[\frac{1}{2}\,\left(c+d\,x\right)\big]^2}}\right.$$

$$\left(-16\,a^3\,A\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]-16\,a^2\,A\,b\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]+3\,a\,A\,b^2\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]+\right.$$
$$3\,A\,b^3\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]-24\,a^3\,C\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]-24\,a^2\,b\,C\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]+$$
$$32\,a^3\,A\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]^3-6\,a\,A\,b^2\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]^3+48\,a^3\,C\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]^3-$$
$$16\,a^3\,A\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]^5+16\,a^2\,A\,b\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]^5+3\,a\,A\,b^2\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]^5-$$
$$3\,A\,b^3\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]^5-24\,a^3\,C\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]^5+24\,a^2\,b\,C\,\text{Tan}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]^5+$$

$$24\,a^2\,A\,b\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

$$6\,A\,b^3\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

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

$$48\,a^2\,b\,C\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

$$24\,a^2\,A\,b\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

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

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

$$48\,a^2\,b\,C\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$(a+b)\,\left(-3\,A\,b^2+8\,a^2\,(2\,A+3\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+2\,a\,b\,(14\,a\,A-A\,b+24\,a\,C)$$

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

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

$$\left(24\,a^2\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right.$$

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

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

$$\int \text{Cos}[c+d\,x]^4\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 587 leaves, 9 steps):

$$\frac{1}{192\,a^3\,d}\left(a-b\right)\sqrt{a+b}\,\left(15\,A\,b^2+4\,a^2\,\left(7\,A+12\,C\right)\right)\,\text{Cot}[c+d\,x]$$

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

$$\frac{1}{192\,a^3\,d}\sqrt{a+b}\,\left(10\,a\,A\,b^2-15\,A\,b^3-24\,a^3\,\left(3\,A+4\,C\right)-4\,a^2\,b\,\left(7\,A+12\,C\right)\right)\,\text{Cot}[c+d\,x]$$

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

$$\frac{1}{64\,a^4\,d}\sqrt{a+b}\,\left(5\,A\,b^4+8\,a^2\,b^2\,\left(A+2\,C\right)-16\,a^4\,\left(3\,A+4\,C\right)\right)\,\text{Cot}[c+d\,x]$$

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

$$\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}+\frac{b\,\left(15\,A\,b^2+4\,a^2\,\left(7\,A+12\,C\right)\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{192\,a^3\,d}-$$

$$\frac{1}{96\,a^2\,d}\left(5\,A\,b^2-12\,a^2\,\left(3\,A+4\,C\right)\right)\,\text{Cos}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]\,+$$

$$\frac{A\,b\,\text{Cos}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,a\,d}+\frac{A\,\text{Cos}[c+d\,x]^3\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d}$$

Result (type 4, 4121 leaves):

$$\frac{1}{d}\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(\frac{A\,b\,\text{Sin}[c+d\,x]}{96\,a}+\right.$$

$$\frac{\left(48\,a^2\,A-5\,A\,b^2+48\,a^2\,C\right)\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]}{192\,a^2}+\frac{A\,b\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]}{96\,a}+\frac{1}{32}\,A\,\text{Sin}\left[4\,\left(c+d\,x\right)\right]\Bigg)+$$

$$\Bigg(\Bigg(\frac{3\,a\,A}{8\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{A\,b^2}{96\,a\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{a\,C}{2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{25\,A\,b\,\sqrt{\text{Sec}[c+d\,x]}}{96\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+$$

$$\frac{5\,A\,b^3\,\sqrt{\text{Sec}[c+d\,x]}}{384\,a^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{3\,b\,C\,\sqrt{\text{Sec}[c+d\,x]}}{8\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{7\,A\,b\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\,\sqrt{\text{Sec}[c+d\,x]}}{96\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+$$

$$\frac{5\,A\,b^3\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\,\sqrt{\text{Sec}[c+d\,x]}}{128\,a^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{b\,C\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\,\sqrt{\text{Sec}[c+d\,x]}}{8\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}\Bigg)$$

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\Bigg(\Bigg(b\,\left(15\,A\,b^2+4\,a^2\,\left(7\,A+12\,C\right)\right)\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2}}\Bigg)\Bigg/\left(192\,a^3\,\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2}}\right)+$$

$$\Bigg(\Bigg(b\,\left(a+b\right)\,\left(15\,A\,b^2+4\,a^2\,\left(7\,A+12\,C\right)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]-$$

$$2\,a\,\left(2\,a\,A\,b^2+5\,A\,b^3+24\,a^3\,\left(3\,A+4\,C\right)-12\,a^2\,b\,\left(3\,A+4\,C\right)\right)\,\text{EllipticF}\Big[$$

$$\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\Big]-6\,\left(-5\,A\,b^4-8\,a^2\,b^2\,\left(A+2\,C\right)+16\,a^4\,\left(3\,A+4\,C\right)\right)$$

$$\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]\Bigg)$$

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

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

$$\left(192\,a^3\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\right)^2\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(d\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\;\sqrt{\mathrm{Sec}[c+d\,x]}\;\Bigg(\Bigg(b\left(15\,A\,b^2+4\,a^2\left(7\,A+12\,C\right)\right)\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\Bigg)\Bigg/\left(384\,a^3\sqrt{\frac{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\right)-$$

$$\Bigg(\Bigg(b\left(a+b\right)\left(15\,A\,b^2+4\,a^2\left(7\,A+12\,C\right)\right)\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]-$$

$$2\,a\left(2\,a\,A\,b^2+5\,A\,b^3+24\,a^3\left(3\,A+4\,C\right)-12\,a^2\,b\left(3\,A+4\,C\right)\right)\mathrm{EllipticF}\Big[$$

$$\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\Big]-6\left(-5\,A\,b^4-8\,a^2\,b^2\left(A+2\,C\right)+16\,a^4\left(3\,A+4\,C\right)\right)$$

$$\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]\Bigg)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4}\;\Bigg(-2\,b\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^3+$$

$$2\,a\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Bigg)\Bigg)\Bigg/$$

$$\left(192\,a^3\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\left(b-b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4+a\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)^2\right)-$$

$$\Bigg(\Bigg(b\left(a+b\right)\left(15\,A\,b^2+4\,a^2\left(7\,A+12\,C\right)\right)\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]-$$

$$2\,a\left(2\,a\,A\,b^2+5\,A\,b^3+24\,a^3\left(3\,A+4\,C\right)-12\,a^2\,b\left(3\,A+4\,C\right)\right)\mathrm{EllipticF}\Big[$$

$$\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\Big]-6\left(-5\,A\,b^4-8\,a^2\,b^2\left(A+2\,C\right)+16\,a^4\left(3\,A+4\,C\right)\right)$$

$$\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]\Bigg)\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

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

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right) \Bigg/ \left(192\,a^3\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right.$$

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

$$\left(\left(b\,(a+b)\left(15\,A\,b^2+4\,a^2\,(7\,A+12\,C)\right)\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]-\right.\right.$$

$$2\,a\left(2\,a\,A\,b^2+5\,A\,b^3+24\,a^3\,(3\,A+4\,C)-12\,a^2\,b\,(3\,A+4\,C)\right)\text{EllipticF}\Big[$$

$$\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\Big]-6\left(-5\,A\,b^4-8\,a^2\,b^2\,(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)$$

$$\left.\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\right)$$

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

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

$$\left(384\,a^3\,(a+b)\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right.$$

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

$$\frac{1}{384\,a^3\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)}$$

$$\left(b\,(a+b)\left(15\,A\,b^2+4\,a^2\,(7\,A+12\,C)\right)\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]-\right.$$

$$2\,a\left(2\,a\,A\,b^2+5\,A\,b^3+24\,a^3\,(3\,A+4\,C)-12\,a^2\,b\,(3\,A+4\,C)\right)\text{EllipticF}\Big[$$

$$\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\Big]-6\left(-5\,A\,b^4-8\,a^2\,b^2\,(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)$$

$$\left.\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

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

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

$$\Bigg(b\left(15 A b^2+4 a^2 (7 A+12 C)\right) \text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

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

$$\left(\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}+\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right.\right.$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right) \Big/ \left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\Bigg) \Big/$$

$$\left(384 a^3 \left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{3/2}\right)+\Bigg(b\left(15 A b^2+4 a^2 (7 A+12 C)\right) \text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

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

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right.$$

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

$$\left(384 a^3 \sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)+$$

$$\Bigg(\Bigg(b(a+b)\left(15 A b^2+4 a^2 (7 A+12 C)\right) \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]-$$

$$2 a\left(2 a A b^2+5 A b^3+24 a^3 (3 A+4 C)-12 a^2 b (3 A+4 C)\right) \text{EllipticF}\Big[$$

$$\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\Big]-6\left(-5 A b^4-8 a^2 b^2 (A+2 C)+16 a^4 (3 A+4 C)\right)$$

$$\text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]\Bigg)$$

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

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

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-\Bigg(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

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

$$\Bigg(384\,a^3\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\ \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

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

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

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

$$\Bigg(-\Bigg(\left(a\left(2\,a\,A\,b^2+5\,A\,b^3+24\,a^3(3A+4C)-12\,a^2\,b\,(3A+4C)\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg/$$

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

$$\left(3\left(-5\,A\,b^4-8\,a^2\,b^2(A+2C)+16\,a^4(3A+4C)\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg/$$

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

$$\left(b\,(a+b)\,\left(15\,A\,b^2+4\,a^2\,(7\,A+12\,C)\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right.$$

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

$$\left(192\,a^3\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\right)\Bigg)\Bigg)$$

Problem 717: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d\,x]^3\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 550 leaves, 8 steps):

$$\frac{1}{1155\,b^5\,d}4\,a\,(a-b)\,\sqrt{a+b}\,\left(8\,a^4\,C+3\,a^2\,b^2\,(11\,A+6\,C)-b^4\,(451\,A+348\,C)\right)$$

$$\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{1155\,b^4\,d}$$

$$2\,(a-b)\,\sqrt{a+b}\,\left(16\,a^4\,C+12\,a^3\,b\,C+6\,a^2\,b^2\,(11\,A+8\,C)-25\,b^4\,(11\,A+9\,C)+3\,a\,b^3\,(209\,A+157\,C)\right)$$

$$\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{1155\,b^3\,d}$$

$$2\,\left(8\,a^4\,C+25\,b^4\,(11\,A+9\,C)+a^2\,b^2\,(33\,A+19\,C)\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]+$$

$$\frac{1}{1155\,b^2\,d}4\,a\,\left(132\,A\,b^2-3\,a^2\,C+101\,b^2\,C\right)\,\text{Sec}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]+$$

$$\frac{1}{231\,b\,d}2\,\left(a^2\,C+3\,b^2\,(11\,A+9\,C)\right)\,\text{Sec}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]+$$

$$\frac{2\,a\,C\,\text{Sec}[c+d\,x]^3\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{33\,d}+$$

$$\frac{2\,C\,\text{Sec}[c+d\,x]^3\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]}{11\,d}$$

Result (type 1, 1 leaves):

???

Problem 718: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^2 \left(a+b \text{Sec}[c+d x]\right)^{3/2} \left(A+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 454 leaves, 7 steps):

$$-\frac{1}{315 b^4 d} 2 (a-b) \sqrt{a+b} \left(8 a^4 C+21 b^4 (9 A+7 C)+3 a^2 b^2 (21 A+11 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} - \frac{1}{315 b^3 d} 2 (a-b) \sqrt{a+b} \left(8 a^3 C+6 a^2 b C-21 b^3 (9 A+7 C)+3 a b^2 (21 A+13 C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} + \frac{2 a \left(63 A b^2+8 a^2 C+39 b^2 C\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{315 b^2 d} + \frac{2 \left(8 a^2 C+7 b^2 (9 A+7 C)\right) \left(a+b \text{Sec}[c+d x]\right)^{3/2} \text{Tan}[c+d x]}{315 b^2 d} - \frac{8 a C \left(a+b \text{Sec}[c+d x]\right)^{5/2} \text{Tan}[c+d x]}{63 b^2 d} + \frac{2 C \text{Sec}[c+d x] \left(a+b \text{Sec}[c+d x]\right)^{5/2} \text{Tan}[c+d x]}{9 b d}$$

Result (type 1, 1 leaves):

???

Problem 719: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x] \left(a+b \text{Sec}[c+d x]\right)^{3/2} \left(A+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 374 leaves, 6 steps):

$$-\frac{1}{105 b^3 d} 4 a (a-b) \sqrt{a+b} \left(70 A b^2 - 3 a^2 C + 41 b^2 C\right) \mathrm{Cot}[c+d x] \,\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\Big], \frac{a+b}{a-b}\Big] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}} + \frac{1}{105 b^2 d} 2 (a-b) \sqrt{a+b} \left(105 a A b - 35 A b^2 + 6 a^2 C + 57 a b C - 25 b^2 C\right) \mathrm{Cot}[c+d x] \,\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\Big], \frac{a+b}{a-b}\Big] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}} - \frac{2 \left(6 a^2 C - 5 b^2 (7 A + 5 C)\right) \sqrt{a+b\,\mathrm{Sec}[c+d x]}\,\mathrm{Tan}[c+d x]}{105 b d} - \frac{4 a C (a+b\,\mathrm{Sec}[c+d x])^{3/2}\,\mathrm{Tan}[c+d x]}{35 b d} + \frac{2 C (a+b\,\mathrm{Sec}[c+d x])^{5/2}\,\mathrm{Tan}[c+d x]}{7 b d}$$

Result (type 1, 1 leaves):

???

Problem 720: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\mathrm{Sec}[c+d x])^{3/2} \left(A + C\,\mathrm{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 415 leaves, 7 steps):

$$-\frac{1}{5 b^2 d} 2 (a-b) \sqrt{a+b} \left(a^2 C + b^2 (5 A + 3 C)\right) \mathrm{Cot}[c+d x] \,\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\Big], \frac{a+b}{a-b}\Big] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}} - \frac{1}{5 b d} 2 \sqrt{a+b} \left(a^2 C - 2 a b (5 A + 2 C) + b^2 (5 A + 3 C)\right) \mathrm{Cot}[c+d x] \,\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\Big], \frac{a+b}{a-b}\Big] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}} - \frac{1}{d} 2 a A \sqrt{a+b}\,\mathrm{Cot}[c+d x] \,\mathrm{EllipticPi}\Big[\frac{a+b}{a}, \mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\Big], \frac{a+b}{a-b}\Big] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}} + \frac{2 a C \sqrt{a+b\,\mathrm{Sec}[c+d x]}\,\mathrm{Tan}[c+d x]}{5 d} + \frac{2 C (a+b\,\mathrm{Sec}[c+d x])^{3/2}\,\mathrm{Tan}[c+d x]}{5 d}$$

Result (type 4, 1023 leaves):

$$-\left(\left(4\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.\right.$$

$$\left(5\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+5\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+a^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$

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

$$10\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-2\,a^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-6\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$

$$5\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-5\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+a^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

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

$$10\,a^2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

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

$$10\,a^2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$(a+b)\,\left(5\,A\,b^2+\left(a^2+3\,b^2\right)\,C\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

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

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

$$b\,\left(a^2\,(-5\,A+C)+2\,a\,b\,(5\,A+2\,C)+b^2\,(5\,A+3\,C)\right)$$

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

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

$$\left(5\,b\,d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{3/2}\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{7/2}\right.$$

$$\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{3/2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)\right)+$$

$$\left(\mathrm{Cos}[c+d\,x]^3\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\frac{4\,\left(5\,A\,b^2+a^2\,C+3\,b^2\,C\right)\,\mathrm{Sin}[c+d\,x]}{5\,b}+\right.$$

$$\left.\left.\frac{8}{5}\,a\,C\,\mathrm{Tan}[c+d\,x]+\frac{4}{5}\,b\,C\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]\right)\right)\Big/$$

$$\left(d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 722: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^2\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 414 leaves, 7 steps):

$$\frac{1}{4\,d}(a-b)\,\sqrt{a+b}\,\left(5\,A-8\,C\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,\left(1-\mathrm{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\mathrm{Sec}[c+d\,x]\right)}{a-b}}+\frac{1}{4\,d}$$

$$\sqrt{a+b}\,\left(2\,a\,A+5\,A\,b+16\,a\,C-8\,b\,C\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,\left(1-\mathrm{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\mathrm{Sec}[c+d\,x]\right)}{a-b}}-\frac{1}{4\,a\,d}$$

$$\sqrt{a+b}\,\left(3\,A\,b^2+4\,a^2\,\left(A+2\,C\right)\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,\left(1-\mathrm{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\mathrm{Sec}[c+d\,x]\right)}{a-b}}+$$

$$\frac{3\,A\,b\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{4\,d}+\frac{A\,\mathrm{Cos}[c+d\,x]\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\mathrm{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 1618 leaves):

$$\frac{1}{2}\left(\left(\text{Cos}[c+d\,x]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(4\,b\,C\,\text{Sin}[c+d\,x]+\frac{1}{2}\,a\,A\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]\right)\right)\Big/\right.$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\right)-$$

$$\left(\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(5\,a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+5\,A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\right.\right.$$

$$8\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-8\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-$$

$$10\,a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^3+16\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^3+$$

$$5\,a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5-5\,A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5-$$

$$8\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5+8\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5-$$

$$8\,i\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$6\,i\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$16\,i\,a^2\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2}{a+b}}\,-8\,i\,a^2\,A$$

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

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -6\,i\,A\,b^2$$

$$\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\ i\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\ \frac{a+b}{a-b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -16\,i\,a^2\,C$$

$$\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\ i\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\ \frac{a+b}{a-b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -$$

$$i\,(a-b)\,b\,(5\,A-8\,C)\ \mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\ \frac{a+b}{a-b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ +2\,i\,(a-b)\,(b\,(A-4\,C)+2\,a\,(A+2\,C))$$

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

$$\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(2\sqrt{\frac{-a+b}{a+b}}\ d\,(b+a\,\mathrm{Cos}[c+d\,x])^{3/2}\,\mathrm{Sec}[c+d\,x]^{3/2}\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right.$$

$$\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{3/2}$$

$$\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)$$

Problem 723: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3 \left(a+b \text{Sec}[c+d x]\right)^{3/2} \left(A+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 504 leaves, 8 steps):

$$\frac{1}{24 a b d}(a-b) \sqrt{a+b} \left(3 A b^2+8 a^2 (2 A+3 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{24 a d}\sqrt{a+b} \left(16 a^2 A+14 a A b+3 A b^2+24 a^2 C+48 a b C\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{8 a^2 d}b \sqrt{a+b} \left(A b^2-12 a^2 (A+2 C)\right) \text{Cot}[c+d x] \text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{\left(3 A b^2+8 a^2 (2 A+3 C)\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Sin}[c+d x]}{24 a d}+\frac{A b \text{Cos}[c+d x] \sqrt{a+b \text{Sec}[c+d x]} \text{Sin}[c+d x]}{4 d}+\frac{A \text{Cos}[c+d x]^2 (a+b \text{Sec}[c+d x])^{3/2} \text{Sin}[c+d x]}{3 d}$$

Result (type 4, 1393 leaves):

$$\left(\text{Cos}[c+d x]^3 (a+b \text{Sec}[c+d x])^{3/2} \left(A+C \text{Sec}[c+d x]^2\right) \left(\frac{1}{6} a A \text{Sin}[c+d x]+\frac{7}{12} A b \text{Sin}[2 (c+d x)]+\frac{1}{6} a A \text{Sin}[3 (c+d x)]\right)\right)/\left(d (b+a \text{Cos}[c+d x]) (A+2 C+A \text{Cos}[2 c+2 d x])\right)+$$

$$\left((a+b \text{Sec}[c+d x])^{3/2} \left(A+C \text{Sec}[c+d x]^2\right) \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}}\right.$$

$$\left(16 a^3 A \text{Tan}\left[\frac{1}{2} (c+d x)\right]+16 a^2 A b \text{Tan}\left[\frac{1}{2} (c+d x)\right]+3 a A b^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]+\right.$$

$$3 A b^3 \text{Tan}\left[\frac{1}{2} (c+d x)\right]+24 a^3 C \text{Tan}\left[\frac{1}{2} (c+d x)\right]+24 a^2 b C \text{Tan}\left[\frac{1}{2} (c+d x)\right]-$$

$$32 a^3 A \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3-6 a A b^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3-48 a^3 C \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3+$$

$$16\,a^3\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-16\,a^2\,A\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+3\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$3\,A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+24\,a^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-24\,a^2\,b\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$72\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$6\,A\,b^3\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

$$144\,a^2\,b\,C\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

$$72\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$6\,A\,b^3\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

$$144\,a^2\,b\,C\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$(a+b)\,\left(3\,A\,b^2+8\,a^2\,(2\,A+3\,C)\right)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-2\,a\,b\,(26\,a\,A-7\,A\,b+48\,a\,C-24\,b\,C)$$

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

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

$$\Bigg(12\,a\,d\,(b+a\,\text{Cos}[c+d\,x])^{3/2}\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{7/2}$$

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

Problem 724: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^4\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 583 leaves, 9 steps):

$$-\frac{1}{64 a^2 d}(a-b)\sqrt{a+b}\left(3 A b^2-4 a^2 (13 A+20 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+$$
$$\frac{1}{64 a^2 d}\sqrt{a+b}\left(2 a A b^2-3 A b^3+8 a^3 (3 A+4 C)+a^2 (52 A b+80 b C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-$$
$$\frac{1}{64 a^3 d}\sqrt{a+b}\left(3 A b^4+24 a^2 b^2 (A+2 C)+16 a^4 (3 A+4 C)\right) \text{Cot}[c+d x] \text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}}$$
$$\sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{b\left(3 A b^2-4 a^2 (13 A+20 C)\right)\sqrt{a+b \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{64 a^2 d}+$$
$$\frac{\left(A b^2+4 a^2 (3 A+4 C)\right) \text{Cos}[c+d x]\sqrt{a+b \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{32 a d}+$$
$$\frac{A b \text{Cos}[c+d x]^2\sqrt{a+b \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{8 d}+$$
$$\frac{A \text{Cos}[c+d x]^3 (a+b \text{Sec}[c+d x])^{3/2} \text{Sin}[c+d x]}{4 d}$$

Result (type 4, 4278 leaves):

$$\Bigg(\text{Cos}[c+d x]^3 (a+b \text{Sec}[c+d x])^{3/2}\left(A+C \text{Sec}[c+d x]^2\right)$$
$$\left(\frac{3}{16} A b \text{Sin}[c+d x]+\frac{\left(16 a^2 A+A b^2+16 a^2 C\right) \text{Sin}[2 (c+d x)]}{32 a}+\frac{3}{16} A b \text{Sin}[3 (c+d x)]+\right.$$
$$\left.\frac{1}{16} a A \text{Sin}[4 (c+d x)]\right)\Bigg)\Bigg/\left(d (b+a \text{Cos}[c+d x]) (A+2 C+A \text{Cos}[2 c+2 d x])\right)+$$
$$\Bigg(\Bigg(\frac{3 a^2 A}{4\sqrt{b+a \text{Cos}[c+d x]}\sqrt{\text{Sec}[c+d x]}}+\frac{19 A b^2}{16\sqrt{b+a \text{Cos}[c+d x]}\sqrt{\text{Sec}[c+d x]}}+$$
$$\frac{a^2 C}{\sqrt{b+a \text{Cos}[c+d x]}\sqrt{\text{Sec}[c+d x]}}+\frac{2 b^2 C}{\sqrt{b+a \text{Cos}[c+d x]}\sqrt{\text{Sec}[c+d x]}}+$$
$$\frac{19 a A b\sqrt{\text{Sec}[c+d x]}}{16\sqrt{b+a \text{Cos}[c+d x]}}-\frac{A b^3\sqrt{\text{Sec}[c+d x]}}{64 a\sqrt{b+a \text{Cos}[c+d x]}}+\frac{7 a b C\sqrt{\text{Sec}[c+d x]}}{4\sqrt{b+a \text{Cos}[c+d x]}}+$$
$$\frac{13 a A b \text{Cos}[2 (c+d x)]\sqrt{\text{Sec}[c+d x]}}{16\sqrt{b+a \text{Cos}[c+d x]}}-\frac{3 A b^3 \text{Cos}[2 (c+d x)]\sqrt{\text{Sec}[c+d x]}}{64 a\sqrt{b+a \text{Cos}[c+d x]}}+$$

$$\left.\frac{5\,a\,b\,C\,\text{Cos}\left[2\,(c+d\,x)\right]\,\sqrt{\text{Sec}[c+d\,x]}}{4\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\left(\left(\left(b\,\left(-3\,A\,b^2+a^2\,(52\,A+80\,C)\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right.\right.\right.$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)\Big/\left(32\,a^2\,\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)-$$

$$\left(\left(b\,(a+b)\,\left(3\,A\,b^2-4\,a^2\,(13\,A+20\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+\right.\right.$$

$$2\,\left(a\,\left(-A\,b^3+8\,a^3\,(3\,A+4\,C)-4\,a^2\,b\,(3\,A+4\,C)+2\,a\,b^2\,(19\,A+32\,C)\right)\,\text{EllipticF}\left[\right.\right.$$

$$\left.\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+\left(3\,A\,b^4+24\,a^2\,b^2\,(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)$$

$$\left.\left.\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\right)\right)$$

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

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

$$\left.\left.\left.\left(32\,a^2\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\right)\right)\right)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^{3/2}\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{7/2}\right.$$

$$\left(\left(\left(b\,\left(-3\,A\,b^2+a^2\,(52\,A+80\,C)\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right.\right.\right.$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)\Big/\left(64\,a^2\,\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)+$$

$$\left(\left(b\,(a+b)\,\left(3\,A\,b^2-4\,a^2\,(13\,A+20\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+\right.\right.$$

$$2\,\left(a\,\left(-A\,b^3+8\,a^3\,(3\,A+4\,C)-4\,a^2\,b\,(3\,A+4\,C)+2\,a\,b^2\,(19\,A+32\,C)\right)\,\text{EllipticF}\left[\right.\right.$$

$$\left.\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+\left(3\,A\,b^4+24\,a^2\,b^2\,(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)$$

$$\left.\left.\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\right)\right)$$

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

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

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}\,\left(-2\,b\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+\right.$$

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

$$\left(32\,a^2\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)^2\right)+$$

$$\left(\left(b\,(a+b)\,\left(3\,A\,b^2-4\,a^2\,(13\,A+20\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+\right.\right.$$

$$2\,\left(a\,\left(-A\,b^3+8\,a^3\,(3\,A+4\,C)-4\,a^2\,b\,(3\,A+4\,C)+2\,a\,b^2\,(19\,A+32\,C)\right)\,\text{EllipticF}\left[\right.\right.$$

$$\left.\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+\left(3\,A\,b^4+24\,a^2\,b^2\,(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)$$

$$\left.\left.\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\right)\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)\Big/\left(32\,a^2\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4}\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\Bigg) -$$

$$\Bigg(\Bigg(b(a+b)\left(3 A b^2-4 a^2(13 A+20 C)\right)\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]+$$

$$2\Bigg(a\left(-A b^3+8 a^3(3 A+4 C)-4 a^2 b(3 A+4 C)+2 a b^2(19 A+32 C)\right)\text{EllipticF}\Big[$$

$$\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\Big]+\left(3 A b^4+24 a^2 b^2(A+2 C)+16 a^4(3 A+4 C)\right)$$

$$\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\Bigg)\Bigg)$$

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

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

$$\Bigg(64 a^2(a+b)\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}$$

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

$$\frac{1}{64 a^2\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)}$$

$$\Bigg(b(a+b)\left(3 A b^2-4 a^2(13 A+20 C)\right)\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]+$$

$$2\Bigg(a\left(-A b^3+8 a^3(3 A+4 C)-4 a^2 b(3 A+4 C)+2 a b^2(19 A+32 C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]+\Big(3 A b^4+24 a^2 b^2(A+2 C)+$$

$$16 a^4(3 A+4 C)\Big)\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\Bigg)\Bigg)$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

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

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

$$\left(b\left(-3\,A\,b^2+a^2\left(52\,A+80\,C\right)\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right.$$

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

$$\left(\frac{\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}+\left(\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right.\right.$$

$$\left.\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\right)\Big/$$

$$\left(64\,a^2\left(\frac{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^{3/2}\right)+\left(b\left(-3\,A\,b^2+a^2\left(52\,A+80\,C\right)\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right.$$

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

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right.$$

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

$$\left(64\,a^2\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\;\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\right)-$$

$$\left(\left(b\left(a+b\right)\left(3\,A\,b^2-4\,a^2\left(13\,A+20\,C\right)\right)\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]+\right.\right.$$

$$2\left(a\left(-A\,b^3+8\,a^3\left(3\,A+4\,C\right)-4\,a^2\,b\left(3\,A+4\,C\right)+2\,a\,b^2\left(19\,A+32\,C\right)\right)\text{EllipticF}\left[\right.\right.$$

$$\left.\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]+\left(3\,A\,b^4+24\,a^2\,b^2\left(A+2\,C\right)+16\,a^4\left(3\,A+4\,C\right)\right)$$

$$\left.\left.\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]\right)\right)$$

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

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

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)-\left(\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right.$$

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

$$\left(64\,a^2\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$

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

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

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

$$\left(\left(\left(b\,(a+b)\,\left(3\,A\,b^2-4\,a^2\,(13\,A+20\,C)\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right.\right.\right.$$

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

$$\left.\left.8\,a^3\,(3\,A+4\,C)-4\,a^2\,b\,(3\,A+4\,C)+2\,a\,b^2\,(19\,A+32\,C)\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/$$

$$\left(2\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{1-\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)-\left(\left(3\,A\,b^4+24\,a^2\,b^2\right.\right.$$

$$\left.(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/\left(2\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right.$$

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

$$\left(32\,a^2\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\right)\Bigg)\Bigg)$$

Problem 725: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d\,x]^3\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 650 leaves, 9 steps):

$$\frac{1}{45045\,b^5\,d}2\,(a-b)\,\sqrt{a+b}\,\left(240\,a^6\,C-1617\,b^6\,(13\,A+11\,C)+10\,a^4\,b^2\,(143\,A+76\,C)-3\,a^2\,b^4\,(13299\,A+10223\,C)\right)\,\text{Cot}[c+d\,x]$$
$$\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{1}{45045\,b^4\,d}2\,(a-b)\,\sqrt{a+b}\,\left(240\,a^5\,C+180\,a^4\,b\,C+1617\,b^5\,(13\,A+11\,C)+\right.$$
$$\left.10\,a^3\,b^2\,(143\,A+94\,C)+15\,a^2\,b^3\,(1573\,A+1175\,C)-6\,a\,b^4\,(2717\,A+2174\,C)\right)$$
$$\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{45045\,b^3\,d}$$
$$2\,a\,\left(120\,a^4\,C+5\,a^2\,b^2\,(143\,A+79\,C)+b^4\,(23309\,A+18973\,C)\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\,\text{Tan}[c+d\,x]-$$
$$\frac{1}{45045\,b^2\,d}2\,\left(90\,a^4\,C-539\,b^4\,(13\,A+11\,C)-15\,a^2\,b^2\,(715\,A+543\,C)\right)$$
$$\text{Sec}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\,\text{Tan}[c+d\,x]+\frac{1}{9009\,b\,d}$$
$$2\,a\,\left(2717\,A\,b^2+15\,a^2\,C+2209\,b^2\,C\right)\,\text{Sec}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\,\text{Tan}[c+d\,x]+$$
$$\frac{1}{1287\,d}2\,\left(15\,a^2\,C+11\,b^2\,(13\,A+11\,C)\right)\,\text{Sec}[c+d\,x]^3\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\,\text{Tan}[c+d\,x]+$$
$$\frac{10\,a\,C\,\text{Sec}[c+d\,x]^3\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]}{143\,d}+$$
$$\frac{2\,C\,\text{Sec}[c+d\,x]^3\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]}{13\,d}$$

Result (type 1, 1 leaves):

???

Problem 726: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^2 (a+b \text{Sec}[c+d x])^{5/2} \left(A+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 534 leaves, 8 steps):

$$-\frac{1}{693 b^4 d} 2 a (a-b) \sqrt{a+b} \left(8 a^4 C+3 a^2 b^2 (33 A+17 C)+3 b^4 (319 A+247 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{693 b^3 d} 2 (a-b) \sqrt{a+b} \left(8 a^4 C+6 a^3 b C+15 b^4 (11 A+9 C)+3 a^2 b^2 (33 A+19 C)-6 a b^3 (132 A+101 C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{693 b^2 d} 2 \left(8 a^4 C+15 b^4 (11 A+9 C)+3 a^2 b^2 (33 A+19 C)\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]+\frac{2 a \left(99 A b^2+8 a^2 C+67 b^2 C\right) (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{693 b^2 d}+\frac{2 \left(8 a^2 C+9 b^2 (11 A+9 C)\right) (a+b \text{Sec}[c+d x])^{5/2} \text{Tan}[c+d x]}{693 b^2 d}-\frac{8 a C (a+b \text{Sec}[c+d x])^{7/2} \text{Tan}[c+d x]}{99 b^2 d}+\frac{2 C \text{Sec}[c+d x] (a+b \text{Sec}[c+d x])^{7/2} \text{Tan}[c+d x]}{11 b d}$$

Result (type 1, 1 leaves):

???

Problem 727: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x] (a+b \text{Sec}[c+d x])^{5/2} \left(A+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 454 leaves, 7 steps):

$$\frac{1}{315\, b^3\, d} 2\, (a-b)\, \sqrt{a+b}\, \left(10\, a^4\, C - 21\, b^4\, (9\, A + 7\, C) - 3\, a^2\, b^2\, (161\, A + 93\, C)\right)\, \text{Cot}[c+d\, x]$$

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

$$\frac{1}{315\, b^2\, d} 2\, (a-b)\, \sqrt{a+b}\, \left(10\, a^3\, C + 21\, b^3\, (9\, A + 7\, C) + 15\, a^2\, b\, (21\, A + 11\, C) - 6\, a\, b^2\, (28\, A + 19\, C)\right)$$

$$\text{Cot}[c+d\, x]\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\, \text{Sec}[c+d\, x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\, (1-\text{Sec}[c+d\, x])}{a+b}}$$

$$\sqrt{-\frac{b\, (1+\text{Sec}[c+d\, x])}{a-b}} + \frac{4\, a\, (84\, A\, b^2 - 5\, a^2\, C + 57\, b^2\, C)\, \sqrt{a+b\, \text{Sec}[c+d\, x]}\, \text{Tan}[c+d\, x]}{315\, b\, d} -$$

$$\frac{2\, \left(10\, a^2\, C - 7\, b^2\, (9\, A + 7\, C)\right)\, (a+b\, \text{Sec}[c+d\, x])^{3/2}\, \text{Tan}[c+d\, x]}{315\, b\, d} -$$

$$\frac{4\, a\, C\, (a+b\, \text{Sec}[c+d\, x])^{5/2}\, \text{Tan}[c+d\, x]}{63\, b\, d} + \frac{2\, C\, (a+b\, \text{Sec}[c+d\, x])^{7/2}\, \text{Tan}[c+d\, x]}{9\, b\, d}$$

Result (type 1, 1 leaves):

???

Problem 729: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\, x]\, (a+b\, \text{Sec}[c+d\, x])^{5/2}\, \left(A + C\, \text{Sec}[c+d\, x]^2\right)\, dx$$

Optimal (type 4, 478 leaves, 8 steps):

$$\frac{1}{15\, b\, d} (a-b)\, \sqrt{a+b}\, \left(a^2\, (15\, A - 46\, C) - 6\, b^2\, (5\, A + 3\, C)\right)\, \text{Cot}[c+d\, x]$$

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

$$\frac{1}{15\, b\, d} \sqrt{a+b}\, \left(a^2\, b\, (15\, A - 46\, C) + 30\, a^3\, C - 6\, b^3\, (5\, A + 3\, C) + 2\, a\, b^2\, (45\, A + 17\, C)\right)\, \text{Cot}[c+d\, x]$$

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

$$\frac{1}{d} 5\, a\, A\, b\, \sqrt{a+b}\, \text{Cot}[c+d\, x]\, \text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b\, \text{Sec}[c+d\, x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\, (1-\text{Sec}[c+d\, x])}{a+b}} \sqrt{-\frac{b\, (1+\text{Sec}[c+d\, x])}{a-b}} + \frac{A\, (a+b\, \text{Sec}[c+d\, x])^{5/2}\, \text{Sin}[c+d\, x]}{d} -$$

$$\frac{a\, b\, (15\, A - 16\, C)\, \sqrt{a+b\, \text{Sec}[c+d\, x]}\, \text{Tan}[c+d\, x]}{15\, d} - \frac{b\, (5\, A - 2\, C)\, (a+b\, \text{Sec}[c+d\, x])^{3/2}\, \text{Tan}[c+d\, x]}{5\, d}$$

Result (type 4, 1129 leaves):

$$\Bigg(2\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\,\Bigg(15\,a^3\,A\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+15\,a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$

$$30\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-30\,A\,b^3\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-46\,a^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$

$$46\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-18\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-18\,b^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$

$$30\,a^3\,A\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+60\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+92\,a^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+$$

$$36\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+15\,a^3\,A\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-15\,a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-$$

$$30\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+30\,A\,b^3\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-46\,a^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+$$

$$46\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-18\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+18\,b^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-$$

$$150\,a^2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

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

$$150\,a^2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

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

$$(a+b)\,\left(a^2\,(15\,A-46\,C)-6\,b^2\,(5\,A+3\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

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

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

$$2\,\left(15\,a^3\,C+3\,b^3\,(5\,A+3\,C)+a\,b^2\,(45\,A+17\,C)+a^2\,(-45\,A\,b+23\,b\,C)\right)$$

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

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

$$\Bigg(15\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^{3/2}$$

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

$$\Bigg(\text{Cos}[c+d\,x]^4\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\frac{4}{15}\left(15\,A\,b^2+23\,a^2\,C+9\,b^2\,C\right)\text{Sin}[c+d\,x]+\right.$$

$$\left.\frac{44}{15}\,a\,b\,C\,\text{Tan}[c+d\,x]+\frac{4}{5}\,b^2\,C\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\right)\Bigg)\Bigg/$$

$$\left(d\left(b+a\,\text{Cos}[c+d\,x]\right)^2\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 731: Result more than twice size of optimal antiderivative.

$$\int\text{Cos}[c+d\,x]^3\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 507 leaves, 8 steps):

$$\frac{1}{24\,b\,d}(a-b)\sqrt{a+b}\,\left(3\,b^2\,(11\,A-16\,C)+8\,a^2\,(2\,A+3\,C)\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$

$$\frac{1}{24\,d}\sqrt{a+b}\,\left(16\,a^2\,A+26\,a\,A\,b+33\,A\,b^2+24\,a^2\,C+144\,a\,b\,C-48\,b^2\,C\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$

$$\frac{1}{8\,a\,d}5\,b\,\sqrt{a+b}\,\left(A\,b^2+4\,a^2\,(A+2\,C)\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticPi}\Big[\frac{a+b}{a},\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}$$

$$\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{\left(15\,A\,b^2+8\,a^2\,(2\,A+3\,C)\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,d}+$$

$$\frac{5\,A\,b\,\text{Cos}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{12\,d}+$$

$$\frac{A\,\text{Cos}[c+d\,x]^2\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 1513 leaves):

$$\Big(\text{Cos}[c+d\,x]^4\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Big(\frac{1}{6}\,\left(a^2\,A+24\,b^2\,C\right)\,\text{Sin}[c+d\,x]+\frac{13}{12}\,a\,A\,b\,\text{Sin}[2\,(c+d\,x)]+\frac{1}{6}\,a^2\,A\,\text{Sin}[3\,(c+d\,x)]\Big)\Big)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$

$$\Bigg((a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\Bigg(16\,a^3\,A\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+16\,a^2\,A\,b\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$

$$33\,a\,A\,b^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+33\,A\,b^3\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+24\,a^3\,C\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$

$$24\,a^2\,b\,C\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]-48\,a\,b^2\,C\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]-48\,b^3\,C\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$

$$32\,a^3\,A\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^3-66\,a\,A\,b^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^3-48\,a^3\,C\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^3+$$

$$96\,a\,b^2\,C\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^3+16\,a^3\,A\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^5-16\,a^2\,A\,b\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^5+$$

$$33\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-33\,A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+24\,a^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$24\,a^2\,b\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-48\,a\,b^2\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+48\,b^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$120\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$30\,A\,b^3\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$240\,a^2\,b\,C\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$120\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$30\,A\,b^3\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$240\,a^2\,b\,C\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$

$$(a+b)\,\left(3\,b^2\,(11\,A-16\,C)+8\,a^2\,(2\,A+3\,C)\right)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$2\,b\,\left(24\,b^2\,(A-C)-a\,b\,(13\,A+72\,C)+a^2\,(38\,A+72\,C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}$$
$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}}\right)\right)\Big/$$
$$\left(12\,d\,(b+a\,\text{Cos}[c+dx])^{5/2}\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+dx]^{9/2}\right.$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{3/2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\right)$$

Problem 734: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\sqrt{a+b\,\text{Sec}[c+dx]}\,\left(a^2-b^2\,\text{Sec}[c+dx]^2\right)dx$$

Optimal (type 4, 353 leaves, 7 steps):

$$\frac{1}{3d}2\,a\,(a-b)\,\sqrt{a+b}\,\text{Cot}[c+dx]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+dx])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+dx])}{a-b}}+\frac{1}{3d}2\sqrt{a+b}\,\left(3\,a^2+a\,b-b^2\right)\text{Cot}[c+dx]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+dx])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+dx])}{a-b}}-$$
$$\frac{1}{d}2\,a^2\sqrt{a+b}\,\text{Cot}[c+dx]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+dx])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+dx])}{a-b}}-\frac{2\,b^2\sqrt{a+b\,\text{Sec}[c+dx]}\,\text{Tan}[c+dx]}{3d}$$

Result (type 4, 799 leaves):

$$-\left(\left(4\sqrt{a+b\,\text{Sec}[c+dx]}\,\left(a^2-b^2\,\text{Sec}[c+dx]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\right.\right.$$

$$\left(\text{i}\, a\,(a-b)\,b\,\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]\right.$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-\text{i}\,\left(3a^3-3a^2b-ab^2+b^3\right)$$
$$\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$
$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}+$$
$$6\,\text{i}\,a^3\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-$$
$$\left.\left.a\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\right)\right)\Big/$$
$$\left(3\sqrt{\frac{-a+b}{a+b}}\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(a^2-2b^2+a^2\,\text{Cos}[2c+2d\,x]\right)\,\text{Sec}[c+d\,x]^{5/2}\right.$$
$$\left.\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\right)+$$
$$\left(\text{Cos}[c+d\,x]^2\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(a^2-b^2\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(-\frac{4}{3}a\,b\,\text{Sin}[c+d\,x]-\frac{4}{3}b^2\,\text{Tan}[c+d\,x]\right)\right)\Big/$$
$$\left(d\,\left(a^2-2b^2+a^2\,\text{Cos}[2c+2d\,x]\right)\right)$$

Problem 735: Unable to integrate problem.

$$\int \frac{\text{Sec}[c+d x]^3 \left(A+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 393 leaves, 6 steps):

$$\frac{1}{105 b^5 d}4 a (a-b) \sqrt{a+b} \left(35 A b^2+24 a^2 C+22 b^2 C\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{105 b^4 d}2 \sqrt{a+b} \left(48 a^3 C-12 a^2 b C+5 b^3 (7 A+5 C)+2 a b^2 (35 A+22 C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 \left(24 a^2 C+5 b^2 (7 A+5 C)\right) \sqrt{a+b\,\text{Sec}[c+d x]}\, \text{Tan}[c+d x]}{105 b^3 d}-\frac{12 a C\,\text{Sec}[c+d x] \sqrt{a+b\,\text{Sec}[c+d x]}\, \text{Tan}[c+d x]}{35 b^2 d}+\frac{2 C\,\text{Sec}[c+d x]^2 \sqrt{a+b\,\text{Sec}[c+d x]}\, \text{Tan}[c+d x]}{7 b d}$$

Result (type 8, 37 leaves):

$$\int \frac{\text{Sec}[c+d x]^3 \left(A+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Problem 736: Unable to integrate problem.

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 320 leaves, 5 steps):

$$-\frac{1}{15 b^4 d}2 (a-b) \sqrt{a+b} \left(8 a^2 C+3 b^2 (5 A+3 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{15 b^3 d}2 \sqrt{a+b} \left(8 a^2 C-2 a b C+3 b^2 (5 A+3 C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{8 a C \sqrt{a+b\,\text{Sec}[c+d x]}\, \text{Tan}[c+d x]}{15 b^2 d}+\frac{2 C\,\text{Sec}[c+d x] \sqrt{a+b\,\text{Sec}[c+d x]}\, \text{Tan}[c+d x]}{5 b d}$$

Result (type 8, 37 leaves):

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+C \,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b \,\text{Sec}[c+d x]}} \, dx$$

Problem 737: Unable to integrate problem.

$$\int \frac{\text{Sec}[c+d x] \left(A+C \,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b \,\text{Sec}[c+d x]}} \, dx$$

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

$$\frac{1}{3 b^3 d} 4 a (a-b) \sqrt{a+b}\, C \,\text{Cot}[c+d x] \,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} + \frac{1}{3 b^2 d} 2 \sqrt{a+b} \,(3 A b+(2 a+b) C) \,\text{Cot}[c+d x] \,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} + \frac{2 C \sqrt{a+b \,\text{Sec}[c+d x]} \,\text{Tan}[c+d x]}{3 b d}$$

Result (type 8, 35 leaves):

$$\int \frac{\text{Sec}[c+d x] \left(A+C \,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b \,\text{Sec}[c+d x]}} \, dx$$

Problem 738: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{A+C \,\text{Sec}[c+d x]^2}{\sqrt{a+b \,\text{Sec}[c+d x]}} \, dx$$

Optimal (type 4, 313 leaves, 5 steps):

$$-\frac{1}{b^2 d}2\,(a-b)\,\sqrt{a+b}\;C\,\mathrm{Cot}[c+d\,x]\;\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{1}{b\,d}$$

$$2\sqrt{a+b}\;C\,\mathrm{Cot}[c+d\,x]\;\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{1}{a\,d}$$

$$2\,A\sqrt{a+b}\;\mathrm{Cot}[c+d\,x]\;\mathrm{EllipticPi}\Big[\frac{a+b}{a},\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}$$

Result (type 4, 914 leaves):

$$\frac{4\,C\,\mathrm{Cos}[c+d\,x]\,(b+a\,\mathrm{Cos}[c+d\,x])\,(A+C\,\mathrm{Sec}[c+d\,x]^2)\,\mathrm{Sin}[c+d\,x]}{b\,d\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\Bigg(4\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\;(A+C\,\mathrm{Sec}[c+d\,x]^2)\sqrt{\frac{1}{1-\mathrm{Tan}[\frac{1}{2}(c+d\,x)]^2}}$$

$$\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\;\Bigg(-a\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}-$$

$$b\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}+a\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3$$

$$\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}-b\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}-$$

$$2\,i\,A\,b\,\mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},i\,\mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}[\frac{1}{2}(c+d\,x)]^2+b\,\mathrm{Tan}[\frac{1}{2}(c+d\,x)]^2}{a+b}}-$$

$$2\,i\,A\,b\,\mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},i\,\mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]$$

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

$$i\,(a-b)\,C\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$

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

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

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

$$\left(b\sqrt{\frac{-a+b}{a+b}}\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}\right.$$

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

Problem 740: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 411 leaves, 7 steps):

$$-\frac{1}{4 a^2 d} 3 A (a-b) \sqrt{a+b} \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}}+\frac{1}{4 a^2 d}$$

$$A (2 a-3 b) \sqrt{a+b} \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}}-\frac{1}{4 a^3 d}$$

$$\sqrt{a+b} \left(3 A b^2+4 a^2 (A+2 C)\right) \operatorname{Cot}[c+d x] \operatorname{EllipticPi}\left[\frac{a+b}{a}, \operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}}-$$

$$\frac{3 A b \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{4 a^2 d}+\frac{A \operatorname{Cos}[c+d x] \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{2 a d}$$

Result (type 4, 1475 leaves):

$$\frac{A (b+a \operatorname{Cos}[c+d x]) \operatorname{Sec}[c+d x] \operatorname{Sin}[2 (c+d x)]}{4 a d \sqrt{a+b \operatorname{Sec}[c+d x]}}-$$

$$\left(\sqrt{b+a \operatorname{Cos}[c+d x]} \sqrt{\operatorname{Sec}[c+d x]} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}}\right.$$

$$\left(3 a A b \sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]+3 A b^2 \sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]-6 a A b \sqrt{\frac{-a+b}{a+b}}\right.$$

$$\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^3+3 a A b \sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^5-3 A b^2 \sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^5+$$

$$8 i a^2 A \operatorname{EllipticPi}\left[-\frac{a+b}{a-b}, i \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a+b}{a-b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}}+$$

$$6 i A b^2 \operatorname{EllipticPi}\left[-\frac{a+b}{a-b}, i \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a+b}{a-b}\right]$$

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

$$16\,i\,a^2\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$8\,i\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

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

$$6\,i\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\,+16\,i\,a^2\,C$$

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

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

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

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

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

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

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

$$\left(4 a^2\sqrt{\frac{-a+b}{a+b}}\,d\sqrt{a+b\,\text{Sec}[c+d x]}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$

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

Problem 741: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d x]^3\left(A+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 506 leaves, 8 steps):

$$\frac{1}{24 a^3 b d}(a-b)\sqrt{a+b}\left(15 A b^2+8 a^2(2 A+3 C)\right)\text{Cot}[c+d x]$$

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

$$\frac{1}{24 a^3 d}\sqrt{a+b}\left(10 a A b-15 A b^2-8 a^2(2 A+3 C)\right)\text{Cot}[c+d x]$$

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

$$\frac{1}{8 a^4 d}b\sqrt{a+b}\left(5 A b^2+4 a^2(A+2 C)\right)\text{Cot}[c+d x]$$

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

$$\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}+\frac{\left(15 A b^2+8 a^2(2 A+3 C)\right)\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{24 a^3 d}-$$

$$\frac{5 A b\,\text{Cos}[c+d x]\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{12 a^2 d}+\frac{A\,\text{Cos}[c+d x]^2\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{3 a d}$$

Result (type 4, 1363 leaves):

$$\left((b+a\,\text{Cos}[c+d x])\,\text{Sec}[c+d x]\left(\frac{A\,\text{Sin}[c+d x]}{12 a}-\frac{5 A b\,\text{Sin}[2(c+d x)]}{24 a^2}+\frac{A\,\text{Sin}[3(c+d x)]}{12 a}\right)\right)\Big/$$

$$\left(d\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)-\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\ \sqrt{\mathrm{Sec}[c+d\,x]}\right.$$

$$\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\left(16\,a^3\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+16\,a^2\,A\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+15\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$

$$15\,A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+24\,a^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+24\,a^2\,b\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$

$$32\,a^3\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-30\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-48\,a^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$

$$16\,a^3\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-16\,a^2\,A\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+15\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$15\,A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+24\,a^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-24\,a^2\,b\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$24\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$30\,A\,b^3\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$48\,a^2\,b\,C\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$24\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$30\,A\,b^3\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ +$$

$$48\,a^2\,b\,C\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ +$$

$$(a+b)\,\left(15\,A\,b^2+8\,a^2\,(2\,A+3\,C)\right)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -$$

$$2\,a\,A\,b\,(2\,a+5\,b)\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(24\,a^3\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\ \sqrt{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right.$$

$$\left.\left(a\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\,\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)$$

Problem 742: Attempted integration timed out after 120 seconds.

$$\int\frac{\mathrm{Sec}[c+d\,x]^3\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 460 leaves, 6 steps):

$$-\frac{1}{5 b^5 \sqrt{a+b}\, d} 2 \left(2 a^2 b^2 (5 A-4 C)+16 a^4 C-b^4 (5 A+3 C)\right) \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}} - \frac{1}{5 b^4 \sqrt{a+b}\, d} 2 \left(16 a^3 C+12 a^2 b C+2 a b^2 (5 A+2 C)+b^3 (5 A+3 C)\right) \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}} - \frac{2 \left(A b^2+a^2 C\right) \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]}{b \left(a^2-b^2\right) d \sqrt{a+b \operatorname{Sec}[c+d x]}} - \frac{2 a \left(5 A b^2+8 a^2 C-3 b^2 C\right) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Tan}[c+d x]}{5 b^3 \left(a^2-b^2\right) d} + \frac{2 \left(5 A b^2+6 a^2 C-b^2 C\right) \operatorname{Sec}[c+d x] \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Tan}[c+d x]}{5 b^2 \left(a^2-b^2\right) d}$$

Result (type 1, 1 leaves):

???

Problem 743: Attempted integration timed out after 120 seconds.

$$\int \frac{\operatorname{Sec}[c+d x]^2 \left(A+C \operatorname{Sec}[c+d x]^2\right)}{(a+b \operatorname{Sec}[c+d x])^{3/2}} \, dx$$

Optimal (type 4, 327 leaves, 5 steps):

$$\frac{1}{3 b^4 \sqrt{a+b}\, d} 2 a \left(3 A b^2+8 a^2 C-5 b^2 C\right) \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}} + \frac{1}{3 b^3 \sqrt{a+b}\, d} 2 \left(3 A b^2+\left(8 a^2+6 a b+b^2\right) C\right) \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}} + \frac{2 a \left(A b^2+a^2 C\right) \operatorname{Tan}[c+d x]}{b^2 \left(a^2-b^2\right) d \sqrt{a+b \operatorname{Sec}[c+d x]}} + \frac{2 C \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Tan}[c+d x]}{3 b^2 d}$$

Result (type 1, 1 leaves):

???

Problem 744: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Sec}[c+d x] \left(A+C \text{Sec}[c+d x]^2\right)}{(a+b \text{Sec}[c+d x])^{3/2}} \, dx$$

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

$$-\frac{1}{b^3 \sqrt{a+b}\, d} 2 \left(A b^2+2 a^2 C-b^2 C\right) \text{Cot}[c+d x] \,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{b^2 \sqrt{a+b}\, d} 2 (A b-(2 a+b) C) \text{Cot}[c+d x] \,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{2 \left(A b^2+a^2 C\right) \text{Tan}[c+d x]}{b \left(a^2-b^2\right) d \sqrt{a+b \text{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 745: Result more than twice size of optimal antiderivative.

$$\int \frac{A+C \text{Sec}[c+d x]^2}{(a+b \text{Sec}[c+d x])^{3/2}} \, dx$$

Optimal (type 4, 381 leaves, 6 steps):

$$\frac{1}{a b^2 \sqrt{a+b}\, d} 2 \left(A b^2+a^2 C\right) \text{Cot}[c+d x] \,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{a b \sqrt{a+b}\, d} 2 (A b-a C) \text{Cot}[c+d x] \,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{a^2 d} 2 A \sqrt{a+b} \,\text{Cot}[c+d x] \,\text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 \left(A b^2+a^2 C\right) \text{Tan}[c+d x]}{a \left(a^2-b^2\right) d \sqrt{a+b \text{Sec}[c+d x]}}$$

Result (type 4, 1127 leaves):

$$\left(\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(\frac{4\left(A\,b^2+a^2\,C\right)\mathrm{Sin}[c+d\,x]}{a\,b\left(-a^2+b^2\right)}+\frac{4\left(A\,b^2\,\mathrm{Sin}[c+d\,x]+a^2\,C\,\mathrm{Sin}[c+d\,x]\right)}{a\left(a^2-b^2\right)\left(b+a\,\mathrm{Cos}[c+d\,x]\right)}\right)\right)\Big/$$

$$\left(d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\left(4\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{3/2}\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\right.$$

$$\left(a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+a^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\right.$$

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

$$a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5-A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5+a^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5-$$

$$a^2\,b\,C\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5-2\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}+$$

$$2\,A\,b^3\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}-$$

$$2\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}+$$

$$2\,A\,b^3\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}+$$

$$\left(a+b\right)\left(A\,b^2+a^2\,C\right)\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$a\,b\,(a+b)\,(A+C)\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\left(a\left(-a^2 b+b^3\right) d\,(A+2C+A\,\mathrm{Cos}[2c+2d x])\sqrt{\mathrm{Sec}[c+d x]}\,(a+b\,\mathrm{Sec}[c+d x])^{3/2}\right.$$

$$\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)$$

Problem 746: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[c+d x]\left(A+C\,\mathrm{Sec}[c+d x]^2\right)}{(a+b\,\mathrm{Sec}[c+d x])^{3/2}}\,dx$$

Optimal (type 4, 431 leaves, 7 steps):

$$-\frac{1}{a^2 b\sqrt{a+b}\,d}\left(3 A b^2-a^2(A-2C)\right)\mathrm{Cot}[c+d x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b(1-\mathrm{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\mathrm{Sec}[c+d x])}{a-b}}+\frac{1}{a^2 b\sqrt{a+b}\,d}$$

$$\left(a A b+3 A b^2+2a^2 C\right)\mathrm{Cot}[c+d x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b(1-\mathrm{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\mathrm{Sec}[c+d x])}{a-b}}+\frac{1}{a^3 d}$$

$$3 A b\sqrt{a+b}\,\mathrm{Cot}[c+d x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b(1-\mathrm{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\mathrm{Sec}[c+d x])}{a-b}}+$$

$$\frac{A\,\mathrm{Sin}[c+d x]}{a d\sqrt{a+b\,\mathrm{Sec}[c+d x]}}-\frac{b\left(3 A b^2-a^2(A-2C)\right)\mathrm{Tan}[c+d x]}{a^2\left(a^2-b^2\right) d\sqrt{a+b\,\mathrm{Sec}[c+d x]}}$$

Result (type 4, 1259 leaves):

$$\left((b+a\,\mathrm{Cos}[c+d\,x])^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(\frac{4\,\left(A\,b^2+a^2\,C\right)\,\mathrm{Sin}[c+d\,x]}{a^2\,\left(a^2-b^2\right)}-\frac{4\,\left(A\,b^3\,\mathrm{Sin}[c+d\,x]+a^2\,b\,C\,\mathrm{Sin}[c+d\,x]\right)}{a^2\,\left(a^2-b^2\right)\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)}\right)\right)\Big/$$
$$\left(d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\right)-$$
$$\Bigg(2\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{3/2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$
$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$
$$\Bigg(a^3\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+a^2\,A\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-3\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$3\,A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-2\,a^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-2\,a^2\,b\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$2\,a^3\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+6\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+4\,a^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$
$$a^3\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-a^2\,A\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-3\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$
$$3\,A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-2\,a^3\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+2\,a^2\,b\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$
$$6\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$
$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$
$$6\,A\,b^3\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$
$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$
$$6\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

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

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

$$(a+b)\,\left(-3\,A\,b^2+a^2\,(A-2\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

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

$$2\,a\,(a+b)\,(A\,b+a\,C)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

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

$$\left(a^2\,(a^2-b^2)\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{\text{Sec}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\right.$$

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

Problem 747: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 501 leaves, 8 steps):

$$\frac{1}{4\,a^3\,\sqrt{a+b}\,d}\left(15\,A\,b^2-a^2\,\left(7\,A-8\,C\right)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]$$

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

$$\left(5\,a\,A\,b+15\,A\,b^2-2\,a^2\,\left(A-4\,C\right)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}-\frac{1}{4\,a^4\,d}\sqrt{a+b}\,\left(15\,A\,b^2+4\,a^2\,\left(A+2\,C\right)\right)$$

$$\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\,\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}-\frac{5\,A\,b\,\text{Sin}[c+d\,x]}{4\,a^2\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\frac{A\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+\frac{b^2\,\left(15\,A\,b^2-a^2\,\left(7\,A-8\,C\right)\right)\,\text{Tan}[c+d\,x]}{4\,a^3\,\left(a^2-b^2\right)\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 41 966 leaves) : Display of huge result suppressed!

Problem 748: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+d\,x]^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 4, 488 leaves, 6 steps) :

$$\left(4\,a\,\left(a^2\,b^2\,\left(A-14\,C\right)-b^4\,\left(3\,A-4\,C\right)+8\,a^4\,C\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\mathrm{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\mathrm{Sec}[c+d\,x]\right)}{a-b}}\right)\Bigg/\left(3\,b^5\,\sqrt{a+b}\,\left(a^2-b^2\right)\,d\right)+$$

$$\left(2\,\left(2\,a^2\,b^2\,\left(A-8\,C\right)+3\,a\,b^3\,\left(A-3\,C\right)+16\,a^4\,C+12\,a^3\,b\,C-b^4\,\left(3\,A+C\right)\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\mathrm{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\mathrm{Sec}[c+d\,x]\right)}{a-b}}\right)\Bigg/$$

$$\left(3\,b^4\,\sqrt{a+b}\,\left(a^2-b^2\right)\,d\right)-\frac{2\,\left(A\,b^2+a^2\,C\right)\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]}{3\,b\,\left(a^2-b^2\right)\,d\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}}-$$

$$\frac{4\,a\,\left(2\,A\,b^4-3\,a^4\,C+5\,a^2\,b^2\,C\right)\,\mathrm{Tan}[c+d\,x]}{3\,b^3\,\left(a^2-b^2\right)^2\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\frac{2\,\left(A\,b^2+2\,a^2\,C-b^2\,C\right)\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Tan}[c+d\,x]}{3\,b^3\,\left(a^2-b^2\right)\,d}$$

Result (type 1, 1 leaves):

???

Problem 749: Attempted integration timed out after 120 seconds.

$$\int\frac{\mathrm{Sec}[c+d\,x]^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 4, 408 leaves, 5 steps):

$$\left(2\left(3 b^4 (A-C)-8 a^4 C+a^2 b^2 (A+15 C)\right) \text{Cot}[c+d x] \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \, \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3 b^4 \sqrt{a+b} \left(a^2-b^2\right) d\right) -$$

$$\left(2\left(3 b^3 (A-C)+8 a^3 C+6 a^2 b C-a b^2 (A+9 C)\right) \text{Cot}[c+d x] \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \, \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}\right) \Big/$$

$$\left(3 b^3 \sqrt{a+b} \left(a^2-b^2\right) d\right) + \frac{2 a \left(A b^2+a^2 C\right) \text{Tan}[c+d x]}{3 b^2 \left(a^2-b^2\right) d \, (a+b \, \text{Sec}[c+d x])^{3/2}} + \frac{2\left(3 A b^4-5 a^4 C+a^2 b^2 (A+9 C)\right) \text{Tan}[c+d x]}{3 b^2 \left(a^2-b^2\right)^2 d \sqrt{a+b \, \text{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 750: Unable to integrate problem.

$$\int \frac{\text{Sec}[c+d x] \left(A+C \, \text{Sec}[c+d x]^2\right)}{(a+b \, \text{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 4, 378 leaves, 5 steps):

$$-\left(\left(4\,a\,\left(2\,A\,b^2-a^2\,C+3\,b^2\,C\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\right.\right.$$

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

$$\left(2\,\left(2\,a^2\,C+3\,a\,b\,(A+C)-b^2\,(A+3\,C)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\right.$$

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

$$\frac{2\,\left(A\,b^2+a^2\,C\right)\,\text{Tan}[c+d\,x]}{3\,b\,\left(a^2-b^2\right)\,d\,(a+b\,\text{Sec}[c+d\,x])^{3/2}}-\frac{4\,a\,\left(2\,A\,b^2-a^2\,C+3\,b^2\,C\right)\,\text{Tan}[c+d\,x]}{3\,b\,\left(a^2-b^2\right)^2\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 8, 35 leaves):

$$\int\frac{\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{(a+b\,\text{Sec}[c+d\,x])^{5/2}}\,dx$$

Problem 751: Result more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{(a+b\,\text{Sec}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 517 leaves, 7 steps):

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

$$\left(2\left(6 a^2 A b-a A b^2-3 A b^3-a^3 C+3 a^2 b C\right) \text{Cot}[c+d x] \,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3 a^2 (a-b)\, b\, (a+b)^{3/2} d\right)-$$

$$\frac{1}{a^3 d} 2 A \sqrt{a+b} \,\text{Cot}[c+d x] \,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+$$

$$\frac{2\left(A b^2+a^2 C\right) \text{Tan}[c+d x]}{3 a \left(a^2-b^2\right) d\, (a+b \,\text{Sec}[c+d x])^{3/2}}-\frac{2\left(3 A b^4-a^4 C-a^2 b^2 (7 A+3 C)\right) \text{Tan}[c+d x]}{3 a^2 \left(a^2-b^2\right)^2 d \sqrt{a+b \,\text{Sec}[c+d x]}}$$

Result (type 4, 1727 leaves):

$$\left((b+a \,\text{Cos}[c+d x])^3 \,\text{Sec}[c+d x] \left(A+C \,\text{Sec}[c+d x]^2\right) \left(\frac{4\left(-7 a^2 A b^2+3 A b^4-a^4 C-3 a^2 b^2 C\right) \text{Sin}[c+d x]}{3 a^2 b \left(-a^2+b^2\right)^2}-\frac{4\left(A b^3 \,\text{Sin}[c+d x]+a^2 b C \,\text{Sin}[c+d x]\right)}{3 a^2 \left(a^2-b^2\right) (b+a \,\text{Cos}[c+d x])^2}+\left(8\left(4 a^2 A b^2 \,\text{Sin}[c+d x]-2 A b^4 \,\text{Sin}[c+d x]+a^4 C \,\text{Sin}[c+d x]+a^2 b^2 C \,\text{Sin}[c+d x]\right)\right) \Big/ \left(3 a^2 \left(a^2-b^2\right)^2 (b+a \,\text{Cos}[c+d x])\right)\right)\right) \Big/$$

$$\left(d\, (A+2 C+A \,\text{Cos}[2 c+2 d x])\, (a+b \,\text{Sec}[c+d x])^{5/2}\right)-$$

$$\left(4\, (b+a \,\text{Cos}[c+d x])^{5/2} \sqrt{\text{Sec}[c+d x]} \left(A+C \,\text{Sec}[c+d x]^2\right) \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \sqrt{\frac{a+b-a \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$

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

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

$$3 a^2 b^3 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-14 a^3 A b^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3+6 a A b^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3-$$

$$2 a^5 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3-6 a^3 b^2 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3+7 a^3 A b^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-$$

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

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

$$3 a^2 b^3 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-6 a^4 A b \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$12 a^2 A b^3 \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$6 A b^5 \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$6 a^4 A b \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$12 a^2 A b^3 \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$6 A b^5 \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$(a+b)\left(-3 A b^4+a^4 C+a^2 b^2(7 A+3 C)\right) \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$a b(a+b)\left(-2 A b^2+3 a b(A+C)+a^2(3 A+C)\right) \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\left.\left.\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right) \Big/$$

$$\left(3 a^2 b\left(a^2-b^2\right)^2 d(A+2 C+A \operatorname{Cos}[2 c+2 d x])(a+b \operatorname{Sec}[c+d x])^{5/2}\right.$$

$$\sqrt{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left(a\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)$$

Problem 752: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]\left(A+C \operatorname{Sec}[c+d x]^2\right)}{(a+b \operatorname{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 4, 559 leaves, 8 steps):

$$-\left(\left(\left(26 a^2 A b^2-15 A b^4-a^4 (3 A-8 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}\right)\Big/\left(3 a^3 (a-b) b (a+b)^{3/2} d\right)\right)+$$

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

$$5 A b \sqrt{a+b} \text{Cot}[c+d x] \text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+$$

$$\frac{A \text{Sin}[c+d x]}{a d (a+b \text{Sec}[c+d x])^{3/2}}-\frac{b \left(5 A b^2-a^2 (3 A-2 C)\right) \text{Tan}[c+d x]}{3 a^2 \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^{3/2}}-\frac{b \left(26 a^2 A b^2-15 A b^4-a^4 (3 A-8 C)\right) \text{Tan}[c+d x]}{3 a^3 \left(a^2-b^2\right)^2 d \sqrt{a+b \text{Sec}[c+d x]}}$$

Result (type 4, 1714 leaves):

$$\left((b+a \text{Cos}[c+d x])^3 \text{Sec}[c+d x] \left(A+C \text{Sec}[c+d x]^2\right)\left(-\frac{8 \left(-5 a^2 A b^2+3 A b^4-2 a^4 C\right) \text{Sin}[c+d x]}{3 a^3 \left(-a^2+b^2\right)^2}+\frac{4 \left(A b^4 \text{Sin}[c+d x]+a^2 b^2 C \text{Sin}[c+d x]\right)}{3 a^3 \left(a^2-b^2\right) (b+a \text{Cos}[c+d x])^2}+\left(4 \left(-11 a^2 A b^3 \text{Sin}[c+d x]+7 A b^5 \text{Sin}[c+d x]-5 a^4 b C \text{Sin}[c+d x]+a^2 b^3 C \text{Sin}[c+d x]\right)\right)\Big/\left(3 a^3 \left(a^2-b^2\right)^2 (b+a \text{Cos}[c+d x])\right)\right)\right)\Big/$$

$$\left(d (A+2 C+A \text{Cos}[2 c+2 d x]) (a+b \text{Sec}[c+d x])^{5/2}\right)-$$

$$\left(2 (b+a \text{Cos}[c+d x])^{5/2} \sqrt{\text{Sec}[c+d x]} \left(A+C \text{Sec}[c+d x]^2\right)\right.$$

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

$$\Bigg(3 a^5 A\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+3 a^4 A b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-26 a^3 A b^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$26 a^2 A b^3\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+15 a A b^4\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+15 A b^5\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$8 a^5 C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-8 a^4 b C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-6 a^5 A\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+$$

$$52 a^3 A b^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3-30 a A b^4\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+16 a^5 C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+$$

$$3 a^5 A\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-3 a^4 A b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-26 a^3 A b^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+$$

$$26 a^2 A b^3\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+15 a A b^4\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-$$

$$15 A b^5\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-8 a^5 C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+8 a^4 b C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+$$

$$30 a^4 A b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]$$

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

$$60 a^2 A b^3\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]$$

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

$$30 A b^5\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]$$

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

$$30 a^4 A b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

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

$$60 a^2 A b^3\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$30\,A\,b^5\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$(a+b)\left(-26\,a^2\,A\,b^2+15\,A\,b^4+a^4\,(3\,A-8\,C)\right)\text{EllipticE}\left[\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$2\,a\,(a+b)\left(3\,a\,A\,b^2-5\,A\,b^3+3\,a^3\,C+a^2\,b\,(6\,A+C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\left(3\,a\,\left(a^3-a\,b^2\right)^2 d\,(A+2\,C+A\operatorname{Cos}[2\,c+2\,d\,x])\,(a+b\operatorname{Sec}[c+d\,x])^{5/2}\right.$$

$$\sqrt{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left(a\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)$$

Problem 753: Result more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{Cos}[c+d\,x]^2\left(A+C\operatorname{Sec}[c+d\,x]^2\right)}{(a+b\operatorname{Sec}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 645 leaves, 9 steps):

$$-\left(\left(\left(105\,A\,b^4+a^4\,(33\,A-56\,C)-2\,a^2\,b^2\,(85\,A-12\,C)\right)\right.\right.$$
$$\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\left.\left.\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}\right)\Big/\left(12\,a^4\,\sqrt{a+b}\,\left(a^2-b^2\right)\,d\right)\right)+$$
$$\left(\left(35\,a\,A\,b^3+105\,A\,b^4+6\,a^4\,(A-8\,C)-3\,a^2\,b^2\,(45\,A-8\,C)-a^3\,(27\,A\,b-8\,b\,C)\right)\right.$$
$$\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\left.\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}\right)\Big/\left(12\,a^4\,\sqrt{a+b}\,\left(a^2-b^2\right)\,d\right)-$$
$$\frac{1}{4\,a^5\,d}\sqrt{a+b}\,\left(35\,A\,b^2+4\,a^2\,(A+2\,C)\right)\,\mathrm{Cot}[c+d\,x]$$
$$\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-$$
$$\frac{7\,A\,b\,\mathrm{Sin}[c+d\,x]}{4\,a^2\,d\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}+\frac{A\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{2\,a\,d\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}+$$
$$\frac{b^2\,\left(35\,A\,b^2-a^2\,(27\,A-8\,C)\right)\,\mathrm{Tan}[c+d\,x]}{12\,a^3\,\left(a^2-b^2\right)\,d\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}-$$
$$\frac{b^2\,\left(105\,A\,b^4+a^4\,(33\,A-56\,C)-2\,a^2\,b^2\,(85\,A-12\,C)\right)\,\mathrm{Tan}[c+d\,x]}{12\,a^4\,\left(a^2-b^2\right)^2\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 4, 4981 leaves):

$$\frac{1}{2}\left(\left((b+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Sec}[c+d\,x]^3\,\left(\frac{4\,b\,\left(-13\,a^2\,A\,b^2+9\,A\,b^4-7\,a^4\,C+3\,a^2\,b^2\,C\right)\,\mathrm{Sin}[c+d\,x]}{3\,a^4\,\left(-a^2+b^2\right)^2}-\right.\right.\right.$$
$$\frac{4\,\left(A\,b^5\,\mathrm{Sin}[c+d\,x]+a^2\,b^3\,C\,\mathrm{Sin}[c+d\,x]\right)}{3\,a^4\,\left(a^2-b^2\right)\,(b+a\,\mathrm{Cos}[c+d\,x])^2}-\left(8\,\left(-7\,a^2\,A\,b^4\,\mathrm{Sin}[c+d\,x]+\right.\right.$$
$$\left.\left.5\,A\,b^6\,\mathrm{Sin}[c+d\,x]-4\,a^4\,b^2\,C\,\mathrm{Sin}[c+d\,x]+2\,a^2\,b^4\,C\,\mathrm{Sin}[c+d\,x]\right)\right)\Big/$$

$$\left(3\,a^4\,\left(a^2-b^2\right)^2\,\left(b+a\,\text{Cos}[c+d\,x]\right)\right)+\frac{A\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]}{2\,a^3}\Bigg)\Bigg)\Bigg/\left(d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\Bigg(\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\Bigg(\frac{a^2\,A}{\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{4\,A\,b^2}{\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}-$$

$$\frac{7\,A\,b^4}{3\,a^2\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{2\,a^2\,C}{\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{2\,b^2\,C}{3\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}-$$

$$\frac{9\,a\,A\,b\,\sqrt{\text{Sec}[c+d\,x]}}{4\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{31\,A\,b^3\,\sqrt{\text{Sec}[c+d\,x]}}{6\,a\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-$$

$$\frac{35\,A\,b^5\,\sqrt{\text{Sec}[c+d\,x]}}{12\,a^3\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{2\,a\,b\,C\,\sqrt{\text{Sec}[c+d\,x]}}{3\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-$$

$$\frac{2\,b^3\,C\,\sqrt{\text{Sec}[c+d\,x]}}{3\,a\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-\frac{11\,a\,A\,b\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\,\sqrt{\text{Sec}[c+d\,x]}}{4\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+$$

$$\frac{85\,A\,b^3\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\,\sqrt{\text{Sec}[c+d\,x]}}{6\,a\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-\frac{35\,A\,b^5\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\,\sqrt{\text{Sec}[c+d\,x]}}{4\,a^3\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+$$

$$\frac{14\,a\,b\,C\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\,\sqrt{\text{Sec}[c+d\,x]}}{3\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-\frac{2\,b^3\,C\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\,\sqrt{\text{Sec}[c+d\,x]}}{a\,\left(a^2-b^2\right)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}\Bigg)$$

$$\text{Sec}[c+d\,x]^{5/2}\Bigg(-\Bigg(\Bigg(\Bigg(b\,\left(105\,A\,b^4+a^4\,\left(33\,A-56\,C\right)+2\,a^2\,b^2\,\left(-85\,A+12\,C\right)\right)$$

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

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

$$\left((a+b)\left(b\left(105\,A\,b^4+a^4\,(33\,A-56\,C)+2\,a^2\,b^2\,(-85\,A+12\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+2\,a\,\left(21\,a\,A\,b^3-35\,A\,b^4+a^2\,b^2\,(33\,A-8\,C)+6\,a^4\,(A+2\,C)+a^3\,(-9\,A\,b+12\,b\,C)\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+6\,(a-b)^2\,(a+b)\,\left(35\,A\,b^2+4\,a^2\,(A+2\,C)\right)\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}\right)\Big/$$

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

$$\left(d\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\left(-\left(\left(b\,\left(105\,A\,b^4+a^4\,(33\,A-56\,C)+2\,a^2\,b^2\,(-85\,A+12\,C)\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)\Big/\left(12\,a^4\,(a^2-b^2)^2\,\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)\right)+\right.$$

$$\left((a+b)\left(b\left(105\,A\,b^4+a^4\,(33\,A-56\,C)+2\,a^2\,b^2\,(-85\,A+12\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+2\,a\,\left(21\,a\,A\,b^3-35\,A\,b^4+a^2\,b^2\,(33\,A-8\,C)+6\,a^4\,(A+2\,C)+a^3\,(-9\,A\,b+12\,b\,C)\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+6\,(a-b)^2\,(a+b)\,\left(35\,A\,b^2+4\,a^2\,(A+2\,C)\right)\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\right.\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right],\frac{a-b}{a+b}\Big]\Big)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^4}$$

$$\Big(-2\,b\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]^3+$$

$$2\,a\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big)\Big)\Big/\Big(6\,a^4\left(a^2-b^2\right)^2$$

$$\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\right)^2\Big)+$$

$$\Big(\Big((a+b)\Big(b\left(105\,A\,b^4+a^4(33\,A-56\,C)+2\,a^2b^2(-85\,A+12\,C)\right)\text{EllipticE}\Big[\text{ArcSin}\Big[\text{Tan}\Big[$$

$$\frac{1}{2}(c+dx)\Big]\Big],\frac{a-b}{a+b}\Big]+2\,a\left(21\,a\,A\,b^3-35\,A\,b^4+a^2b^2(33\,A-8\,C)+6\,a^4(A+2\,C)+\right.$$

$$\left.a^3(-9\,A\,b+12\,b\,C)\right)\text{EllipticF}\Big[\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\Big],\frac{a-b}{a+b}\Big]+6\,(a-b)^2\,(a+$$

$$b)\left(35\,A\,b^2+4\,a^2(A+2\,C)\right)\text{EllipticPi}\Big[-1,-\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\Big],\frac{a-b}{a+b}\Big]\Big)$$

$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]^3\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\Bigg)\Bigg/$$

$$\Bigg(6\,a^4\left(a^2-b^2\right)^2\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^4}$$

$$\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\right)\Bigg)-$$

$$\Big(\Big(b\left(105\,A\,b^4+a^4(33\,A-56\,C)+2\,a^2b^2(-85\,A+12\,C)\right)\text{EllipticE}\Big[\text{ArcSin}\Big[\text{Tan}\Big[$$

$$\frac{1}{2}(c+d x)\Big]\Big], \frac{a-b}{a+b}\Big] + 2 a \left(21 a A b^3 - 35 A b^4 + a^2 b^2 (33 A - 8 C) + 6 a^4 (A + 2 C) + a^3 (-9 A b + 12 b C)\right) \text{EllipticF}\Big[\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big], \frac{a-b}{a+b}\Big] + 6 (a-b)^2 (a+b) \left(35 A b^2 + 4 a^2 (A+2 C)\right) \text{EllipticPi}\Big[-1, -\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big], \frac{a-b}{a+b}\Big]\Big)$$

$$\left(-a \text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2 \text{Tan}\Big[\frac{1}{2}(c+d x)\Big] + b \text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2 \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\right)$$

$$\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 + b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \sqrt{1-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^4}\Bigg) \Bigg/ \Bigg(12 a^4$$

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

$$\left(b - b \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^4 + a \left(-1+\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\right)^2\right)\Bigg) +$$

$$\Bigg((a+b) \Big(b \left(105 A b^4 + a^4 (33 A - 56 C) + 2 a^2 b^2 (-85 A + 12 C)\right) \text{EllipticE}\Big[\text{ArcSin}\Big[\text{Tan}\Big[$$

$$\frac{1}{2}(c+d x)\Big]\Big], \frac{a-b}{a+b}\Big] + 2 a \left(21 a A b^3 - 35 A b^4 + a^2 b^2 (33 A - 8 C) + 6 a^4 (A + 2 C) + a^3 (-9 A b + 12 b C)\right) \text{EllipticF}\Big[\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big], \frac{a-b}{a+b}\Big] + 6 (a-b)^2 (a+b) \left(35 A b^2 + 4 a^2 (A+2 C)\right) \text{EllipticPi}\Big[-1, -\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big], \frac{a-b}{a+b}\Big]\Big)$$

$$\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2 \text{Tan}\Big[\frac{1}{2}(c+d x)\Big] \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

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

$$\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 + b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \sqrt{1-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^4}\Bigg) \Bigg/$$

$$\left(12 a^4 (a^2-b^2)^2 \left(b - b \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^4 + a \left(-1+\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\right)^2\right)\right) +$$

$$\left(b\left(105 A b^4+a^4(33 A-56 C)+2 a^2 b^2(-85 A+12 C)\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right.$$
$$\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\left(\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}+\right.$$
$$\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right) /$$
$$\left.\left.\left(1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\right) / \left(12 a^4\left(a^2-b^2\right)^2\left(\frac{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{3/2}\right)-$$
$$\left(b\left(105 A b^4+a^4(33 A-56 C)+2 a^2 b^2(-85 A+12 C)\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right.$$
$$\left(\left(-a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+b \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right) /\right.$$
$$\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right.$$
$$\left.\left(a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right) /$$
$$\left.\left.\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\right) / \left(12 a^4\left(a^2-b^2\right)^2 \sqrt{\frac{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$
$$\left.\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)-$$
$$\left((a+b)\left(b\left(105 A b^4+a^4(33 A-56 C)+2 a^2 b^2(-85 A+12 C)\right)\right.\right.$$
$$\operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]+$$
$$2 a\left(21 a A b^3-35 A b^4+a^2 b^2(33 A-8 C)+6 a^4(A+2 C)+a^3(-9 A b+12 b C)\right)$$
$$\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]+6(a-b)^2(a+b)$$
$$\left.\left(35 A b^2+4 a^2(A+2 C)\right) \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]\right)$$
$$\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}} \sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^4}$$
$$\left(\left(-a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+b \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right) /\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Bigg)\Bigg/\Bigg(12$$

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

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

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

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

$$\Bigg(\Big(a\left(21\,a\,A\,b^3-35\,A\,b^4+a^2b^2(33\,A-8\,C)+6\,a^4(A+2\,C)+a^3(-9\,A\,b+12\,b\,C)\right)$$

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

$$\left(3(a-b)^2(a+b)\left(35\,A\,b^2+4\,a^2(A+2\,C)\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big/$$

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

$$\Bigg(b\left(105\,A\,b^4+a^4(33\,A-56\,C)+2\,a^2b^2(-85\,A+12\,C)\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

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

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

$$\left.\left.a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\right)^2\right)\right)\Bigg)\Bigg)\Bigg)$$

Problem 754: Result more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}\left[c+d\,x\right]^2}{\left(a+b\,\text{Sec}\left[c+d\,x\right]\right)^{7/2}}\,dx$$

Optimal (type 4, 626 leaves, 8 steps):

$$-\left(\left(2\left(41 a^2 A b^4-15 A b^6-3 a^6 C-29 a^4 b^2 (2 A+C)\right) \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}\right) \Big/ \left(15 a^3 b^2 \sqrt{a+b}\left(a^2-b^2\right)^2 d\right)\right)+$$

$$\left(2\left(36 a^2 A b^3-5 a A b^4-15 A b^5+3 a^5 C+a^3 b^2(13 A+5 C)-3 a^4 b(15 A+8 C)\right) \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}\right) \Big/ \left(15 a^3 b \sqrt{a+b}\left(a^2-b^2\right)^2 d\right)-\frac{1}{a^4 d}$$

$$2 A \sqrt{a+b} \operatorname{Cot}[c+d x] \operatorname{EllipticPi}\left[\frac{a+b}{a}, \operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}+$$

$$\frac{2\left(A b^2+a^2 C\right) \operatorname{Tan}[c+d x]}{5 a\left(a^2-b^2\right) d(a+b \operatorname{Sec}[c+d x])^{5/2}}-\frac{2\left(5 A b^4-3 a^4 C-a^2 b^2(13 A+5 C)\right) \operatorname{Tan}[c+d x]}{15 a^2\left(a^2-b^2\right)^2 d(a+b \operatorname{Sec}[c+d x])^{3/2}}-\frac{2\left(41 a^2 A b^4-15 A b^6-3 a^6 C-29 a^4 b^2(2 A+C)\right) \operatorname{Tan}[c+d x]}{15 a^3\left(a^2-b^2\right)^3 d \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 4, 2204 leaves):

$$\left((b+a \operatorname{Cos}[c+d x])^4 \operatorname{Sec}[c+d x]^2\left(A+C \operatorname{Sec}[c+d x]^2\right)\right.$$

$$\left(\frac{4\left(58 a^4 A b^2-41 a^2 A b^4+15 A b^6+3 a^6 C+29 a^4 b^2 C\right) \operatorname{Sin}[c+d x]}{15 a^3 b\left(-a^2+b^2\right)^3}+\frac{4\left(A b^4 \operatorname{Sin}[c+d x]+a^2 b^2 C \operatorname{Sin}[c+d x]\right)}{5 a^3\left(a^2-b^2\right)(b+a \operatorname{Cos}[c+d x])^3}+\right.$$

$$\left(4\left(-19 a^2 A b^3 \operatorname{Sin}[c+d x]+11 A b^5 \operatorname{Sin}[c+d x]-9 a^4 b C \operatorname{Sin}[c+d x]+a^2 b^3 C \operatorname{Sin}[c+d x]\right)\right) \Big/ \left(15 a^3\left(a^2-b^2\right)^2(b+a \operatorname{Cos}[c+d x])^2\right)+$$

$$\left(4\left(74 a^4 A b^2 \operatorname{Sin}[c+d x]-65 a^2 A b^4 \operatorname{Sin}[c+d x]+23 A b^6 \operatorname{Sin}[c+d x]+9 a^6 C \operatorname{Sin}[c+d x]+25 a^4 b^2 C \operatorname{Sin}[c+d x]-2 a^2 b^4 C \operatorname{Sin}[c+d x]\right)\right) \Big/ \left(15 a^3 \left(a^2-b^2\right)^3 (b+a \operatorname{Cos}[c+d x])\right)\Bigg)\Bigg) \Big/$$

$$\left(d\,(A+2 C+A \operatorname{Cos}[2 c+2 d x])\,(a+b \operatorname{Sec}[c+d x])^{7/2}\right)-$$

$$\Bigg(4\,(b+a \operatorname{Cos}[c+d x])^{7/2} \operatorname{Sec}[c+d x]^{3/2}$$

$$\left(A+C \operatorname{Sec}[c+d x]^2\right) \sqrt{\frac{1}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

$$\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

$$\Bigg(58 a^5 A b^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+58 a^4 A b^3 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-41 a^3 A b^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$41 a^2 A b^5 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+15 a A b^6 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+15 A b^7 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$3 a^7 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+3 a^6 b C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+29 a^5 b^2 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$29 a^4 b^3 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-116 a^5 A b^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3+82 a^3 A b^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3-$$

$$30 a A b^6 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3-6 a^7 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3-58 a^5 b^2 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3+$$

$$58 a^5 A b^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-58 a^4 A b^3 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-41 a^3 A b^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+$$

$$41 a^2 A b^5 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+15 a A b^6 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-15 A b^7 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+$$

$$3 a^7 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-3 a^6 b C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+29 a^5 b^2 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-$$

$$29 a^4 b^3 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-30 a^6 A b \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$90 a^4 A b^3 \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$90\,a^2\,A\,b^5\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$30\,A\,b^7\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

$$30\,a^6\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$90\,a^4\,A\,b^3\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

$$90\,a^2\,A\,b^5\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$30\,A\,b^7\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$(a+b)\,\left(-41\,a^2\,A\,b^4+15\,A\,b^6+3\,a^6\,C+29\,a^4\,b^2\,(2\,A+C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

$$a\,b\,(a+b)\,\left(-6\,a\,A\,b^3+10\,A\,b^4+3\,a^4\,(5\,A+C)+6\,a^3\,b\,(5\,A+4\,C)+a^2\,b^2\,(-17\,A+5\,C)\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

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

$$\Bigg(15 a^3 b\left(a^2-b^2\right)^3 d\left(A+2 C+A\,\text{Cos}[2 c+2 d x]\right)(a+b\,\text{Sec}[c+d x])^{7/2}$$

$$\sqrt{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

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

Problem 755: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{a^2-b^2\,\text{Sec}[c+d x]^2}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 303 leaves, 7 steps):

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

$$\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{d}2 b\sqrt{a+b}\,\text{Cot}[c+d x]$$

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

$$\frac{1}{d}2 a\sqrt{a+b}\,\text{Cot}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}$$

Result (type 4, 939 leaves):

$$-\Big(\big(4 b\,\text{Cos}[c+d x](b+a\,\text{Cos}[c+d x])\left(a^2-b^2\,\text{Sec}[c+d x]^2\right)\text{Sin}[c+d x]\big)\Big/$$
$$\left(d\left(a^2-2 b^2+a^2\,\text{Cos}[2 c+2 d x]\right)\sqrt{a+b\,\text{Sec}[c+d x]}\right)\Big)-$$

$$\Bigg(4\sqrt{b+a\,\text{Cos}[c+d x]}\left(a^2-b^2\,\text{Sec}[c+d x]^2\right)\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(-a b \sqrt{\frac{-a+b}{a+b}}\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}-\right.$$

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

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

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

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

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

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

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

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

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

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

$$\left(\sqrt{\frac{-a+b}{a+b}}\ d\left(a^2-2 b^2+a^2\,\text{Cos}[2 c+2 d x]\right)\text{Sec}[c+d x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d x]}\right.$$

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

Problem 757: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

$$\frac{1}{\sqrt{a+b}\, d} 4 \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}} - \frac{1}{\sqrt{a+b}\, d} 4 \operatorname{Cot}[c+d x]$$
$$\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}} -$$
$$\frac{1}{a d} 2 \sqrt{a+b} \operatorname{Cot}[c+d x] \operatorname{EllipticPi}\left[\frac{a+b}{a}, \operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}} + \frac{4 b^2 \operatorname{Tan}[c+d x]}{(a^2-b^2)\, d \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 4, 790 leaves):

$$\left((b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]\,(a-b\,\mathrm{Sec}[c+d\,x])\left(\frac{4\,b\,\mathrm{Sin}[c+d\,x]}{-a^2+b^2}-\frac{4\,b^2\,\mathrm{Sin}[c+d\,x]}{(-a^2+b^2)\,(b+a\,\mathrm{Cos}[c+d\,x])}\right)\right)\Big/\left(d\,(-b+a\,\mathrm{Cos}[c+d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\right)+$$

$$\Bigg(2\,(b+a\,\mathrm{Cos}[c+d\,x])^{3/2}\,\sqrt{\mathrm{Sec}[c+d\,x]}\,(a-b\,\mathrm{Sec}[c+d\,x])$$

$$\Bigg(2\,\mathrm{i}\,(a-b)\,b\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

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

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

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+2\,\mathrm{i}\,(a^2-b^2)$$

$$\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

$$2\,b\,\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\left(b-b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\Bigg)\Bigg)\Big/$$

$$\left(\sqrt{\frac{-a+b}{a+b}}\,(a^2-b^2)\,d\,(-b+a\,\mathrm{Cos}[c+d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,\sqrt{\frac{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$

$$\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4\right)\right)$$

Problem 758: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{a^2 - b^2 \operatorname{Sec}[c + d x]^2}{(a + b \operatorname{Sec}[c + d x])^{7/2}} \, dx$$

Optimal (type 4, 445 leaves, 8 steps):

$$\left(2 \left(11 a^2 - 3 b^2\right) \operatorname{Cot}[c + d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a + b \operatorname{Sec}[c + d x]}}{\sqrt{a + b}}\right], \frac{a + b}{a - b}\right] \sqrt{\frac{b (1 - \operatorname{Sec}[c + d x])}{a + b}} \sqrt{-\frac{b (1 + \operatorname{Sec}[c + d x])}{a - b}}\right) \Big/ \left(3 a (a - b) (a + b)^{3/2} d\right) - \left(2 \left(9 a^2 - 2 a b - 3 b^2\right) \operatorname{Cot}[c + d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a + b \operatorname{Sec}[c + d x]}}{\sqrt{a + b}}\right], \frac{a + b}{a - b}\right] \sqrt{\frac{b (1 - \operatorname{Sec}[c + d x])}{a + b}} \sqrt{-\frac{b (1 + \operatorname{Sec}[c + d x])}{a - b}}\right) \Big/ \left(3 a (a - b) (a + b)^{3/2} d\right) - \frac{1}{a^2 d} 2 \sqrt{a + b} \operatorname{Cot}[c + d x] \operatorname{EllipticPi}\left[\frac{a + b}{a}, \operatorname{ArcSin}\left[\frac{\sqrt{a + b \operatorname{Sec}[c + d x]}}{\sqrt{a + b}}\right], \frac{a + b}{a - b}\right] \sqrt{\frac{b (1 - \operatorname{Sec}[c + d x])}{a + b}} \sqrt{-\frac{b (1 + \operatorname{Sec}[c + d x])}{a - b}} + \frac{4 b^2 \operatorname{Tan}[c + d x]}{3 \left(a^2 - b^2\right) d (a + b \operatorname{Sec}[c + d x])^{3/2}} + \frac{2 b^2 \left(11 a^2 - 3 b^2\right) \operatorname{Tan}[c + d x]}{3 a \left(a^2 - b^2\right)^2 d \sqrt{a + b \operatorname{Sec}[c + d x]}}$$

Result (type 4, 1849 leaves):

$$\left((b + a \operatorname{Cos}[c + d x])^3 \operatorname{Sec}[c + d x]^2 (a - b \operatorname{Sec}[c + d x]) \left(\frac{2 b \left(-11 a^2 + 3 b^2\right) \operatorname{Sin}[c + d x]}{3 a \left(-a^2 + b^2\right)^2} - \frac{4 b^3 \operatorname{Sin}[c + d x]}{3 a \left(a^2 - b^2\right) (b + a \operatorname{Cos}[c + d x])^2} - \frac{2 \left(-13 a^2 b^2 \operatorname{Sin}[c + d x] + 5 b^4 \operatorname{Sin}[c + d x]\right)}{3 a \left(a^2 - b^2\right)^2 (b + a \operatorname{Cos}[c + d x])}\right)\right) \Big/ \left(d (-b + a \operatorname{Cos}[c + d x]) (a + b \operatorname{Sec}[c + d x])^{5/2}\right) + \left(2 (b + a \operatorname{Cos}[c + d x])^{5/2} \operatorname{Sec}[c + d x]^{3/2} (a - b \operatorname{Sec}[c + d x]) \sqrt{\frac{a + b - a \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2 + b \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2}{1 + \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2}}\right.$$

$$\Bigg(11\, a^3\, b\, \sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big] + 11\, a^2\, b^2\, \sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big] -$$

$$3\, a\, b^3\, \sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big] - 3\, b^4\, \sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big] -$$

$$22\, a^3\, b\, \sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^3 + 6\, a\, b^3\, \sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^3 +$$

$$11\, a^3\, b\, \sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^5 - 11\, a^2\, b^2\, \sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^5 -$$

$$3\, a\, b^3\, \sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^5 + 3\, b^4\, \sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^5 -$$

$$6\, i\, a^4\, \mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},\, i\, \mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big],\, \frac{a+b}{a-b}\Big]$$

$$\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2}\, \sqrt{\frac{a+b-a\,\mathrm{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2+b\,\mathrm{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2}{a+b}} +$$

$$12\, i\, a^2\, b^2\, \mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},\, i\, \mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big],\, \frac{a+b}{a-b}\Big]$$

$$\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2}\, \sqrt{\frac{a+b-a\,\mathrm{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2+b\,\mathrm{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2}{a+b}} -$$

$$6\, i\, b^4\, \mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},\, i\, \mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big],\, \frac{a+b}{a-b}\Big]$$

$$\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2}\, \sqrt{\frac{a+b-a\,\mathrm{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2+b\,\mathrm{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2}{a+b}} -$$

$$6\, i\, a^4\, \mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},\, i\, \mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big],\, \frac{a+b}{a-b}\Big]\, \mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2$$

$$\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2}\, \sqrt{\frac{a+b-a\,\mathrm{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2+b\,\mathrm{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2}{a+b}} + 12\, i\, a^2\, b^2$$

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

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

$$6\,i\,b^4\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\, i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$i\,b\,\left(11\,a^3-11\,a^2\,b-3\,a\,b^2+3\,b^3\right)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+i\,\left(3\,a^4+9\,a^3\,b-17\,a^2\,b^2-a\,b^3+6\,b^4\right)$$

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

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

$$\Bigg(3\,a\,\sqrt{\frac{-a+b}{a+b}}\,\left(a^2-b^2\right)^2\,d\,\left(-b+a\,\text{Cos}[c+d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}$$

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

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

Problem 759: Unable to integrate problem.

$$\int \frac{A + C\,\mathrm{Sec}[c + d\,x]^2}{\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(a + b\,\mathrm{Sec}[c + d\,x]\right)}\,dx$$

Optimal (type 4, 145 leaves, 8 steps):

$$\frac{2\,A\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}}{a\,d} - \frac{2\,A\,b\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}}{a^2\,d} + \frac{1}{a^2\,(a + b)\,d}2\,\left(A\,b^2 + a^2\,C\right)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{EllipticPi}\left[\frac{2\,a}{a + b},\,\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}$$

Result (type 8, 37 leaves):

$$\int \frac{A + C\,\mathrm{Sec}[c + d\,x]^2}{\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(a + b\,\mathrm{Sec}[c + d\,x]\right)}\,dx$$

Problem 760: Unable to integrate problem.

$$\int \frac{A + C\,\mathrm{Sec}[c + d\,x]^2}{\sqrt{\mathrm{Sec}[c + d\,x]}\,\sqrt{a + b\,\mathrm{Sec}[c + d\,x]}}\,dx$$

Optimal (type 4, 213 leaves, 11 steps):

$$-\frac{2\,A\,b\,\sqrt{\frac{b + a\,\mathrm{Cos}[c + d\,x]}{a + b}}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,\frac{2\,a}{a + b}\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}}{a\,d\,\sqrt{a + b\,\mathrm{Sec}[c + d\,x]}} + \frac{2\,C\,\sqrt{\frac{b + a\,\mathrm{Cos}[c + d\,x]}{a + b}}\,\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c + d\,x),\,\frac{2\,a}{a + b}\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}}{d\,\sqrt{a + b\,\mathrm{Sec}[c + d\,x]}} + \frac{2\,A\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,\frac{2\,a}{a + b}\right]\,\sqrt{a + b\,\mathrm{Sec}[c + d\,x]}}{a\,d\,\sqrt{\frac{b + a\,\mathrm{Cos}[c + d\,x]}{a + b}}\,\sqrt{\mathrm{Sec}[c + d\,x]}}$$

Result (type 8, 39 leaves):

$$\int \frac{A + C\,\mathrm{Sec}[c + d\,x]^2}{\sqrt{\mathrm{Sec}[c + d\,x]}\,\sqrt{a + b\,\mathrm{Sec}[c + d\,x]}}\,dx$$

Problem 761: Attempted integration timed out after 120 seconds.

$$\int \left(a + b\,\mathrm{Sec}[c + d\,x]\right)^{2/3}\,\left(A + C\,\mathrm{Sec}[c + d\,x]^2\right)\,dx$$

Optimal (type 8, 243 leaves, 8 steps):

$$\left(\sqrt{2}\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{5}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sec}[c+d\,x]),\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Tan}[c+d\,x]\right)\bigg/\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\,\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{2/3}\right)-$$
$$\left(\sqrt{2}\,a\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{2}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sec}[c+d\,x]),\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Tan}[c+d\,x]\right)\bigg/$$
$$\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\,\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{2/3}\right)+A\,\text{Int}\left[(a+b\,\text{Sec}[c+d\,x])^{2/3},x\right]$$

Result (type 1, 1 leaves):

???

Problem 763: Attempted integration timed out after 120 seconds.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{(a+b\,\text{Sec}[c+d\,x])^{1/3}}\,dx$$

Optimal (type 8, 240 leaves, 8 steps):

$$\left(\sqrt{2}\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{2}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sec}[c+d\,x]),\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Tan}[c+d\,x]\right)\bigg/\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\,\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{2/3}\right)-$$
$$\left(\sqrt{2}\,a\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sec}[c+d\,x]),\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}\right]\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{1/3}\right.$$
$$\left.\text{Tan}[c+d\,x]\right)\bigg/\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])^{1/3}\right)+A\,\text{Int}\left[\frac{1}{(a+b\,\text{Sec}[c+d\,x])^{1/3}},x\right]$$

Result (type 1, 1 leaves):

???

Problem 766: Result more than twice size of optimal antiderivative.

$$\int\text{Sec}[c+d\,x]^2\,(a+b\,\text{Sec}[c+d\,x])\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 114 leaves, 7 steps):

$$\frac{(4\,a\,B+3\,b\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{(b\,B+a\,C)\,\text{Tan}[c+d\,x]}{d}+$$
$$\frac{(4\,a\,B+3\,b\,C)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{8\,d}+\frac{b\,C\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{4\,d}+\frac{(b\,B+a\,C)\,\text{Tan}[c+d\,x]^3}{3\,d}$$

Result (type 3, 403 leaves):

$$-\frac{a\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}-\frac{3\,b\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{a\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{3\,b\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{b\,C}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{a\,B}{4\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{3\,b\,C}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{b\,C}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}-\frac{a\,B}{4\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{3\,b\,C}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{2\,b\,B\,\text{Tan}[c+d\,x]}{3\,d}+\frac{2\,a\,C\,\text{Tan}[c+d\,x]}{3\,d}+\frac{b\,B\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}+\frac{a\,C\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}$$

Problem 768: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[c+d\,x])\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 61 leaves, 5 steps):

$$\frac{(2\,a\,B+b\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+\frac{(b\,B+a\,C)\,\text{Tan}[c+d\,x]}{d}+\frac{b\,C\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,d}$$

Result (type 3, 164 leaves):

$$\frac{1}{4\,d}\left(-2\,(2\,a\,B+b\,C)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+4\,a\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+2\,b\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{b\,C}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{b\,C}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+4\,(b\,B+a\,C)\,\text{Tan}[c+d\,x]\right)$$

Problem 769: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 35 leaves, 5 steps):

$$a\,B\,x+\frac{(b\,B+a\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{d}+\frac{b\,C\,\text{Tan}[c+d\,x]}{d}$$

Result (type 3, 159 leaves):

$$a B x - \frac{b B \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d} - \frac{a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d} + \frac{b B \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d} + \frac{a C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d} + \frac{b C \operatorname{Tan}[c+d x]}{d}$$

Problem 770: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c+d x]^2 \, (a+b \operatorname{Sec}[c+d x]) \, \left(B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 3, 35 leaves, 4 steps):

$$(b B+a C) \, x+\frac{b C \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{d}+\frac{a B \operatorname{Sin}[c+d x]}{d}$$

Result (type 3, 104 leaves):

$$b B x+a C x-\frac{b C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{b C \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{a B \operatorname{Cos}[d x] \operatorname{Sin}[c]}{d}+\frac{a B \operatorname{Cos}[c] \operatorname{Sin}[d x]}{d}$$

Problem 776: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x] \, (a+b \operatorname{Sec}[c+d x])^2 \, \left(B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 3, 179 leaves, 8 steps):

$$\frac{\left(8 a b B+4 a^2 C+3 b^2 C\right) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}+\frac{\left(4 a^2 b B+4 b^3 B-a^3 C+8 a b^2 C\right) \operatorname{Tan}[c+d x]}{6 b d}+\frac{\left(8 a b B-2 a^2 C+9 b^2 C\right) \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{24 d}+\frac{(4 b B-a C) \, (a+b \operatorname{Sec}[c+d x])^2 \operatorname{Tan}[c+d x]}{12 b d}+\frac{C \, (a+b \operatorname{Sec}[c+d x])^3 \operatorname{Tan}[c+d x]}{4 b d}$$

Result (type 3, 457 leaves):

$$\frac{1}{48\,d}\left(-6\,\left(8\,a\,b\,B+4\,a^2\,C+3\,b^2\,C\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$6\,\left(8\,a\,b\,B+4\,a^2\,C+3\,b^2\,C\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$\frac{3\,b^2\,C}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{12\,a^2\,C+8\,a\,b\,(3\,B+C)+b^2\,(4\,B+9\,C)}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+$$
$$\frac{8\,b\,(b\,B+2\,a\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+\frac{16\,\left(3\,a^2\,B+2\,b^2\,B+4\,a\,b\,C\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}-$$
$$\frac{3\,b^2\,C}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{8\,b\,(b\,B+2\,a\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$
$$\left.\frac{12\,a^2\,C+8\,a\,b\,(3\,B+C)+b^2\,(4\,B+9\,C)}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{16\,\left(3\,a^2\,B+2\,b^2\,B+4\,a\,b\,C\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}\right)$$

Problem 778: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

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

$$a^2\,B\,x+\frac{\left(4\,a\,b\,B+2\,a^2\,C+b^2\,C\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+$$
$$\frac{b\,(2\,b\,B+3\,a\,C)\,\text{Tan}[c+d\,x]}{2\,d}+\frac{b\,C\,(a+b\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]}{2\,d}$$

Result (type 3, 225 leaves):

$$\frac{1}{4\,d}\left(4\,a^2\,B\,c+4\,a^2\,B\,d\,x-2\,\left(4\,a\,b\,B+2\,a^2\,C+b^2\,C\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+8\,a\,b\,B\right.$$
$$\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+4\,a^2\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$2\,b^2\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{b^2\,C}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-$$
$$\left.\frac{b^2\,C}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+4\,b\,(b\,B+2\,a\,C)\,\text{Tan}[c+d\,x]\right)$$

Problem 786: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\mathrm{Sec}[c+d\,x])^3\,\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 180 leaves, 7 steps):

$$\frac{\left(8\,a^3\,B+12\,a\,b^2\,B+12\,a^2\,b\,C+3\,b^3\,C\right)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{8\,d}+\frac{\left(16\,a^2\,b\,B+4\,b^3\,B+3\,a^3\,C+12\,a\,b^2\,C\right)\,\mathrm{Tan}[c+d\,x]}{6\,d}+\frac{b\,\left(20\,a\,b\,B+6\,a^2\,C+9\,b^2\,C\right)\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{24\,d}+\frac{(4\,b\,B+3\,a\,C)\,(a+b\,\mathrm{Sec}[c+d\,x])^2\,\mathrm{Tan}[c+d\,x]}{12\,d}+\frac{C\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,\mathrm{Tan}[c+d\,x]}{4\,d}$$

Result (type 3, 639 leaves):

$$\frac{1}{8\,d}\left(-8\,a^3\,B-12\,a\,b^2\,B-12\,a^2\,b\,C-3\,b^3\,C\right)\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{1}{8\,d}\left(8\,a^3\,B+12\,a\,b^2\,B+12\,a^2\,b\,C+3\,b^3\,C\right)\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{b^3\,C}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{36\,a\,b^2\,B+4\,b^3\,B+36\,a^2\,b\,C+12\,a\,b^2\,C+9\,b^3\,C}{48\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{b^3\,C}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{-36\,a\,b^2\,B-4\,b^3\,B-36\,a^2\,b\,C-12\,a\,b^2\,C-9\,b^3\,C}{48\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{b^3\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,a\,b^2\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{6\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+\frac{b^3\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,a\,b^2\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{6\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+\left(9\,a^2\,b\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,b^3\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,a^3\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+6\,a\,b^2\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/\left(3\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)+\left(9\,a^2\,b\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,b^3\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,a^3\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+6\,a\,b^2\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/\left(3\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)$$

Problem 787: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 137 leaves, 7 steps):

$$a^3 B x+\frac{\left(6 a^2 b B+b^3 B+2 a^3 C+3 a b^2 C\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 d}+\frac{b \left(9 a b B+8 a^2 C+2 b^2 C\right) \text{Tan}[c+d x]}{3 d}+\frac{b^2 (3 b B+5 a C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{6 d}+\frac{b C (a+b \text{Sec}[c+d x])^2 \text{Tan}[c+d x]}{3 d}$$

Result (type 3, 392 leaves):

$$\frac{1}{12 d}\left(12 a^3 B (c+d x)-6 \left(6 a^2 b B+b^3 B+2 a^3 C+3 a b^2 C\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+6 \left(6 a^2 b B+b^3 B+2 a^3 C+3 a b^2 C\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\frac{b^2 (9 a C+b (3 B+C))}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+\frac{2 b^3 C \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3}+\frac{4 b \left(9 a b B+9 a^2 C+2 b^2 C\right) \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]}+\frac{2 b^3 C \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3}-\frac{b^2 (9 a C+b (3 B+C))}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+\frac{4 b \left(9 a b B+9 a^2 C+2 b^2 C\right) \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]}\right)$$

Problem 788: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2 (a+b \text{Sec}[c+d x])^3 \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 3, 131 leaves, 7 steps):

$$a^2 (3 b B+a C) x+\frac{b \left(6 a b B+6 a^2 C+b^2 C\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 d}+\frac{a B (a+b \text{Sec}[c+d x])^2 \text{Sin}[c+d x]}{d}-\frac{b \left(2 a^2 B-b^2 B-3 a b C\right) \text{Tan}[c+d x]}{d}-\frac{b^2 (2 a B-b C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{2 d}$$

Result (type 3, 277 leaves):

$$\frac{1}{4\,d}\left(4\,a^2\,(3\,b\,B+a\,C)\,(c+d\,x)-2\,b\,(6\,a\,b\,B+6\,a^2\,C+b^2\,C)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$2\,b\,(6\,a\,b\,B+6\,a^2\,C+b^2\,C)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$\frac{b^3\,C}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{4\,b^2\,(b\,B+3\,a\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}-$$
$$\left.\frac{b^3\,C}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{4\,b^2\,(b\,B+3\,a\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}+4\,a^3\,B\,\text{Sin}[c+d\,x]\right)$$

Problem 793: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^3\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+b\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 187 leaves, 9 steps):

$$\frac{(2\,a^2+b^2)\,(b\,B-a\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,b^4\,d}-$$
$$\frac{2\,a^3\,(b\,B-a\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]}{\sqrt{a-b}\,b^4\,\sqrt{a+b}\,d}-\frac{(3\,a\,b\,B-3\,a^2\,C-2\,b^2\,C)\,\text{Tan}[c+d\,x]}{3\,b^3\,d}+$$
$$\frac{(b\,B-a\,C)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,b^2\,d}+\frac{C\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,b\,d}$$

Result (type 3, 422 leaves):

$$\frac{1}{12\,b^4\,d}\left(\frac{24\,a^3\,(b\,B-a\,C)\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\right.$$

$$6\,(2\,a^2+b^2)\,(-b\,B+a\,C)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$

$$6\,(2\,a^2+b^2)\,(-b\,B+a\,C)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$

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

$$\frac{4\,b\,(-3\,a\,b\,B+3\,a^2\,C+2\,b^2\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}+\frac{2\,b^3\,C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\left.\frac{b^2\,(-3\,a\,C+b\,(3\,B+C))}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{4\,b\,(-3\,a\,b\,B+3\,a^2\,C+2\,b^2\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}\right)$$

Problem 794: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^2\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+b\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 143 leaves, 8 steps):

$$-\frac{(2\,a\,b\,B-2\,a^2\,C-b^2\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,b^3\,d}+$$

$$\frac{2\,a^2\,(b\,B-a\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]}{\sqrt{a-b}\,b^3\,\sqrt{a+b}\,d}+\frac{(b\,B-a\,C)\,\text{Tan}[c+d\,x]}{b^2\,d}+\frac{C\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,b\,d}$$

Result (type 3, 300 leaves):

$$\frac{1}{4\,b^3\,d}\left(\frac{8\,a^2\,(-b\,B+a\,C)\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}-\right.$$
$$2\,(-2\,a\,b\,B+2\,a^2\,C+b^2\,C)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$2\,(-2\,a\,b\,B+2\,a^2\,C+b^2\,C)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$\frac{b^2\,C}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{4\,b\,(b\,B-a\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}-$$
$$\left.\frac{b^2\,C}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{4\,b\,(b\,B-a\,C)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}\right)$$

Problem 814: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d\,x]^3\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 485 leaves, 8 steps):

$$-\frac{1}{315\,b^5\,d}2\,(a-b)\,\sqrt{a+b}\,\left(24\,a^3\,b\,B+57\,a\,b^3\,B-16\,a^4\,C-24\,a^2\,b^2\,C+147\,b^4\,C\right)$$
$$\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{315\,b^4\,d}$$
$$2\,(a-b)\,\sqrt{a+b}\,\left(3\,b^3\,(25\,B-49\,C)+18\,a\,b^2\,(B-2\,C)+12\,a^2\,b\,(2\,B-C)-16\,a^3\,C\right)\,\text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$
$$\frac{1}{315\,b^3\,d}2\,\left(12\,a^2\,b\,B-75\,b^3\,B-8\,a^3\,C-13\,a\,b^2\,C\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]+$$
$$\frac{1}{315\,b^2\,d}2\,\left(9\,a\,b\,B-6\,a^2\,C+49\,b^2\,C\right)\,\text{Sec}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]+$$
$$\frac{2\,(9\,b\,B+a\,C)\,\text{Sec}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{63\,b\,d}+$$
$$\frac{2\,C\,\text{Sec}[c+d\,x]^3\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{9\,d}$$

Result (type 1, 1 leaves):

???

Problem 815: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^2 \sqrt{a+b \text{Sec}[c+d x]} \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 397 leaves, 7 steps):

$$\frac{1}{105 b^4 d}2 (a-b) \sqrt{a+b} \left(14 a^2 b B-63 b^3 B-8 a^3 C-19 a b^2 C\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{105 b^3 d}2 (a-b) \sqrt{a+b} \left(b^2 (63 B-25 C)+2 a b (7 B-3 C)-8 a^2 C\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 \left(7 a b B-4 a^2 C+25 b^2 C\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{105 b^2 d}+\frac{2 (7 b B+a C) \text{Sec}[c+d x] \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{35 b d}+\frac{2 C \text{Sec}[c+d x]^2 \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{7 d}$$

Result (type 1, 1 leaves):

???

Problem 816: Unable to integrate problem.

$$\int \text{Sec}[c+d x] \sqrt{a+b \text{Sec}[c+d x]} \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 314 leaves, 6 steps):

$$-\frac{1}{15 b^3 d}2 (a-b) \sqrt{a+b} \left(5 a b B-2 a^2 C+9 b^2 C\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{15 b^2 d}2 (a-b) \sqrt{a+b} (5 b B-2 a C-9 b C) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 (5 b B-2 a C) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{15 b d}+\frac{2 C (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{5 b d}$$

Result (type 8, 42 leaves):

$$\int \text{Sec}[c+d x] \sqrt{a+b \text{Sec}[c+d x]} \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Problem 817: Attempted integration timed out after 120 seconds.

$$\int \sqrt{a+b \text{Sec}[c+d x]} \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 256 leaves, 5 steps):

$$-\frac{1}{3 b^2 d}2 (a-b) \sqrt{a+b} (3 b B+a C) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{3 b d}2 (a-b) \sqrt{a+b} (3 B-C) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 C \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{3 d}$$

Result (type 1, 1 leaves):

???

Problem 818: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 320 leaves, 6 steps):

$$-\frac{1}{b\,d}2\,(a-b)\,\sqrt{a+b}\;C\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{b\,d}2\,\sqrt{a+b}\,(b\,(B-C)+a\,C)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{1}{d}2\,\sqrt{a+b}\;B\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}$$

Result (type 4, 863 leaves):

$$\frac{2\,C\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{d}+\left(2\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(a\,\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+b\,\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]-2\,a\,\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+a\,\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-b\,\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+2\,i\,a\,B\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}+2\,i\,a\,B\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right.$$

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

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

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

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

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

$$\left(\sqrt{\frac{-a+b}{a+b}}\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right.$$

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

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

Problem 819: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 344 leaves, 7 steps):

$$\frac{1}{b\,d}(a-b)\sqrt{a+b}\;B\,\mathrm{Cot}[c+d\,x]\;\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{d}\sqrt{a+b}\;(B+2\,C)\;\mathrm{Cot}[c+d\,x]$$
$$\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-$$
$$\frac{1}{a\,d}\sqrt{a+b}\;(b\,B+2\,a\,C)\;\mathrm{Cot}[c+d\,x]\;\mathrm{EllipticPi}\Big[\frac{a+b}{a},\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{B\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{d}$$

Result (type 4, 1107 leaves):

$$\left(\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right.$$
$$\left(a\sqrt{\frac{-a+b}{a+b}}\;B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+b\sqrt{\frac{-a+b}{a+b}}\;B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-2\,a\sqrt{\frac{-a+b}{a+b}}\;B\right.$$
$$\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3+a\sqrt{\frac{-a+b}{a+b}}\;B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-b\sqrt{\frac{-a+b}{a+b}}\;B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-$$
$$2\,i\,b\,B\,\mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},i\,\mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]$$
$$\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-$$
$$4\,i\,a\,C\,\mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},i\,\mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]$$
$$\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-$$
$$2\,i\,b\,B\,\mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},i\,\mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]$$

$$\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}}-$$

$$4\,\mathrm{i}\,a\,C\,\operatorname{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right],\frac{a+b}{a-b}\right]$$

$$\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}}-$$

$$\mathrm{i}\,(a-b)\,B\operatorname{EllipticE}\left[\mathrm{i}\operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right],\frac{a+b}{a-b}\right]\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}$$

$$\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}}+2\,\mathrm{i}\,(a-b)$$

$$C\operatorname{EllipticF}\left[\mathrm{i}\operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right],\frac{a+b}{a-b}\right]\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}$$

$$\left.\left.\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(\sqrt{\frac{-a+b}{a+b}}\,d\sqrt{b+a\operatorname{Cos}[c+dx]}\sqrt{\operatorname{Sec}[c+dx]}\sqrt{\frac{1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{1-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\right.$$

$$\left.\left(b-b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^4+a\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\right)\right)$$

Problem 820: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c+dx]^3\sqrt{a+b\operatorname{Sec}[c+dx]}\left(B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)dx$$

Optimal (type 4, 429 leaves, 8 steps):

$$\frac{1}{4\,a\,b\,d}(a-b)\sqrt{a+b}\,(b\,B+4\,a\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{4\,a\,d}$$
$$\sqrt{a+b}\,(b\,B+2\,a\,(B+2\,C))\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{4\,a^2\,d}$$
$$\sqrt{a+b}\,(4\,a^2\,B-b^2\,B+4\,a\,b\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{(b\,B+4\,a\,C)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,a\,d}+\frac{B\,\text{Cos}[c+d\,x]\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 1161 leaves):

$$\frac{B\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[2\,(c+d\,x)]}{4\,d}+$$
$$\left(\sqrt{a+b\,\text{Sec}[c+d\,x]}\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\left(a\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+b^2\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\right.\right.$$
$$4\,a^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+4\,a\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-2\,a\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-8\,a^2\,C$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+a\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-b^2\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+4\,a^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-$$
$$4\,a\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-8\,a^2\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}+$$
$$2\,b^2\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-$$
$$8\,a\,b\,C\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

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

$$8 a^2 B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$2 b^2 B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$8 a b C\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$(a+b)(b B+4 a C)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$
$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

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

$$\left(4 a d\sqrt{b+a\,\text{Cos}[c+d x]}\sqrt{\text{Sec}[c+d x]}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}\right.$$
$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)$$

Problem 821: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^3 \left(a+b\,\text{Sec}[c+d x]\right)^{3/2} \left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 573 leaves, 9 steps):

$$-\frac{1}{3465\,b^5\,d}2\,(a-b)\,\sqrt{a+b}\,\left(88\,a^4\,b\,B+363\,a^2\,b^3\,B+1617\,b^5\,B-48\,a^5\,C-108\,a^3\,b^2\,C+2088\,a\,b^4\,C\right) \text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}} - \frac{1}{3465\,b^4\,d}2\,(a-b)\,\sqrt{a+b}\,\left(3\,a\,b^3\,(143\,B-471\,C)-3\,b^4\,(539\,B-225\,C)+6\,a^2\,b^2\,(11\,B-24\,C)+4\,a^3\,b\,(22\,B-9\,C)-48\,a^4\,C\right) \text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}} + \frac{1}{3465\,b^3\,d} 2\,\left(88\,a^3\,b\,B+429\,a\,b^3\,B-48\,a^4\,C-144\,a^2\,b^2\,C+675\,b^4\,C\right)\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x] + \frac{1}{3465\,b^3\,d}2\,\left(88\,a^2\,b\,B+539\,b^3\,B-48\,a^3\,C-204\,a\,b^2\,C\right)\left(a+b\,\text{Sec}[c+d x]\right)^{3/2}\text{Tan}[c+d x] - \frac{2\,\left(44\,a\,b\,B-24\,a^2\,C-81\,b^2\,C\right)\left(a+b\,\text{Sec}[c+d x]\right)^{5/2}\text{Tan}[c+d x]}{693\,b^3\,d} + \frac{2\,(11\,b\,B-6\,a\,C)\,\text{Sec}[c+d x]\left(a+b\,\text{Sec}[c+d x]\right)^{5/2}\text{Tan}[c+d x]}{99\,b^2\,d} + \frac{2\,C\,\text{Sec}[c+d x]^2\left(a+b\,\text{Sec}[c+d x]\right)^{5/2}\text{Tan}[c+d x]}{11\,b\,d}$$

Result (type 1, 1 leaves):

???

Problem 822: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^2 \left(a+b\,\text{Sec}[c+d x]\right)^{3/2} \left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 475 leaves, 8 steps):

$$\frac{1}{315\, b^4\, d}2\, (a-b)\, \sqrt{a+b}\, \left(18\, a^3\, b\, B - 246\, a\, b^3\, B - 8\, a^4\, C - 33\, a^2\, b^2\, C - 147\, b^4\, C\right)$$

$$\text{Cot}[c+d\,x]\ \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\ \frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\ \sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}} - \frac{1}{315\, b^3\, d}$$

$$2\,(a-b)\,\sqrt{a+b}\,\left(3\, b^3\,(25\, B - 49\, C) - 3\, a\, b^2\,(57\, B - 13\, C) - 6\, a^2\, b\,(3\, B - C) + 8\, a^3\, C\right)\ \text{Cot}[c+d\,x]$$

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

$$\frac{1}{315\, b^2\, d}2\,\left(18\, a^2\, b\, B - 75\, b^3\, B - 8\, a^3\, C - 39\, a\, b^2\, C\right)\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Tan}[c+d\,x] -$$

$$\frac{2\,\left(18\, a\, b\, B - 8\, a^2\, C - 49\, b^2\, C\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Tan}[c+d\,x]}{315\, b^2\, d} +$$

$$\frac{2\,(9\, b\, B - 4\, a\, C)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\text{Tan}[c+d\,x]}{63\, b^2\, d} +$$

$$\frac{2\, C\,\text{Sec}[c+d\,x]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\text{Tan}[c+d\,x]}{9\, b\, d}$$

Result (type 1, 1 leaves) :

???

Problem 823: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d\,x]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2\right)\, dx$$

Optimal (type 4, 387 leaves, 7 steps) :

$$-\frac{1}{105 b^3 d}2 (a-b) \sqrt{a+b} \left(21 a^2 b B+63 b^3 B-6 a^3 C+82 a b^2 C\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{105 b^2 d}2 (a-b) \sqrt{a+b} \left(a b (21 B-57 C)-b^2 (63 B-25 C)-6 a^2 C\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 \left(21 a b B-6 a^2 C+25 b^2 C\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{105 b d}+\frac{2 (7 b B-2 a C) (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{35 b d}+\frac{2 C (a+b \text{Sec}[c+d x])^{5/2} \text{Tan}[c+d x]}{7 b d}$$

Result (type 1, 1 leaves):

???

Problem 824: Attempted integration timed out after 120 seconds.

$$\int (a+b \text{Sec}[c+d x])^{3/2} \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 312 leaves, 6 steps):

$$-\frac{1}{15 b^2 d}2 (a-b) \sqrt{a+b} \left(20 a b B+3 a^2 C+9 b^2 C\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{15 b d}2 (a-b) \sqrt{a+b} (15 a B-5 b B-3 a C+9 b C) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 (5 b B+3 a C) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{15 d}+\frac{2 C (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{5 d}$$

Result (type 1, 1 leaves):

???

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

$$\int \text{Cos}[c+d x]^2 \left(a+b \text{Sec}[c+d x]\right)^{3/2} \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 361 leaves, 7 steps):

$$\frac{1}{b d}(a-b) \sqrt{a+b} \, (a B-2 b C) \text{Cot}[c+d x] \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{d}\sqrt{a+b} \, (2 b (B-C)+a (B+4 C)) \text{Cot}[c+d x] \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{d}\sqrt{a+b} \, (3 b B+2 a C) \text{Cot}[c+d x] \, \text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{a B \sqrt{a+b \text{Sec}[c+d x]} \, \text{Sin}[c+d x]}{d}$$

Result (type 4, 979 leaves):

$$\frac{2 b C \text{Cos}[c+d x] \left(a+b \text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]}{d \left(b+a \text{Cos}[c+d x]\right)}+\left(\left(a+b \text{Sec}[c+d x]\right)^{3/2} \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \left(a^2 B \text{Tan}\left[\frac{1}{2}(c+d x)\right]+a b B \text{Tan}\left[\frac{1}{2}(c+d x)\right]-2 a b C \text{Tan}\left[\frac{1}{2}(c+d x)\right]-2 b^2 C \text{Tan}\left[\frac{1}{2}(c+d x)\right]-2 a^2 B \text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+4 a b C \text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+a^2 B \text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-a b B \text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-2 a b C \text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+2 b^2 C \text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-6 a b B \, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-4 a^2 C \, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right.\right.$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\;-$$

$$6\,a\,b\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\;-$$

$$4\,a^2\,C\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\;+$$

$$(a+b)\,(a\,B-2\,b\,C)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\;-$$

$$2\,\left(2\,a\,b\,(B-C)+a^2\,C-b^2\,(B+C)\right)\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\;\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left.\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(d\,(b+a\,\mathrm{Cos}[c+d\,x])^{3/2}\,\mathrm{Sec}[c+d\,x]^{3/2}\,\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)$$

Problem 827: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^3\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 428 leaves, 8 steps):

$$\frac{1}{4\,b\,d}(a-b)\sqrt{a+b}\,(5\,b\,B+4\,a\,C)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{4\,d}$$
$$\sqrt{a+b}\,(2\,a\,B+5\,b\,B+4\,a\,C+8\,b\,C)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{1}{4\,a\,d}\sqrt{a+b}\,(4\,a^2\,B+3\,b^2\,B+12\,a\,b\,C)$$
$$\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{(5\,b\,B+4\,a\,C)\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{4\,d}+\frac{a\,B\,\mathrm{Cos}[c+d\,x]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 1580 leaves):

$$\frac{a\,B\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[2\,(c+d\,x)]}{4\,d}-$$
$$\left(\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(5\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+5\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\right.\right.$$
$$4\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,C\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+4\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,C\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$
$$10\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-8\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,C\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+$$
$$5\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-5\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+$$
$$4\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,C\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-4\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,C\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-$$
$$8\,i\,a^2\,B\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},i\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$

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

$$6\,i\,b^2 B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$24\,i\,a\,b\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$8\,i\,a^2 B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a+b}{a-b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

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

$$6\,i\,b^2 B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a+b}{a-b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-24\,i\,a\,b\,C$$

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

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

$$i\,(a-b)\,(5\,b\,B+4\,a\,C)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+2\,\text{i}\,(a-b)\,\left(2\,a\,B+b\,(B+4\,C)\right)$$

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

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

$$\left(4\,\sqrt{\frac{-a+b}{a+b}}\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$

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

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

Problem 828: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^4\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 520 leaves, 9 steps):

$$\frac{1}{24\,a\,b\,d}(a-b)\sqrt{a+b}\,\left(16\,a^2\,B+3\,b^2\,B+30\,a\,b\,C\right)\,\text{Cot}[c+d\,x]$$
$$\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{1}{24\,a\,d}\sqrt{a+b}\,\left(16\,a^2\,B+14\,a\,b\,B+3\,b^2\,B+12\,a^2\,C+30\,a\,b\,C\right)\,\text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$
$$\frac{1}{8\,a^2\,d}\sqrt{a+b}\,\left(12\,a^2\,b\,B-b^3\,B+8\,a^3\,C+6\,a\,b^2\,C\right)\,\text{Cot}[c+d\,x]$$
$$\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}$$
$$\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{\left(16\,a^2\,B+3\,b^2\,B+30\,a\,b\,C\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,a\,d}+$$
$$\frac{(7\,b\,B+6\,a\,C)\,\text{Cos}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{12\,d}+$$
$$\frac{a\,B\,\text{Cos}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 1532 leaves):

$$\frac{1}{d}\sqrt{a+b\,\text{Sec}[c+d\,x]}$$
$$\left(\frac{1}{12}\,a\,B\,\text{Sin}[c+d\,x]+\frac{1}{24}\,(7\,b\,B+6\,a\,C)\,\text{Sin}[2\,(c+d\,x)]+\frac{1}{12}\,a\,B\,\text{Sin}[3\,(c+d\,x)]\right)+$$
$$\Bigg(\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\Bigg(16\,a^3\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+16\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$3\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,b^3\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+30\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$30\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-32\,a^3\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-6\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-$$
$$60\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+16\,a^3\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-16\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$
$$3\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-3\,b^3\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+30\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$
$$30\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-72\,a^2\,b\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$6\, b^3\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}$$

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

$$48\, a^3\, C\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right], \frac{a-b}{a+b}\right]$$

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

$$36\, a\, b^2\, C\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right], \frac{a-b}{a+b}\right]$$

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

$$72\, a^2\, b\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right], \frac{a-b}{a+b}\right] \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

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

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

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

$$48\, a^3\, C\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right], \frac{a-b}{a+b}\right] \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

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

$$36\, a\, b^2\, C\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right], \frac{a-b}{a+b}\right] \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

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

$$\left(a+b\right)\left(16\, a^2\, B+3\, b^2\, B+30\, a\, b\, C\right) \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right], \frac{a-b}{a+b}\right]$$

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

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

$$2\,a\,\left(a\,b\,(26\,B-6\,C)+12\,a^2\,C+b^2\,(-7\,B+24\,C)\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

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

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

$$\left(24\,a\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{3/2}\right.$$

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

Problem 829: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d\,x]^2\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 565 leaves, 9 steps):

$$\frac{1}{3465\, b^4\, d}2\,(a-b)\,\sqrt{a+b}\,\left(110\, a^4\, b\, B-3069\, a^2\, b^3\, B-1617\, b^5\, B-40\, a^5\, C-255\, a^3\, b^2\, C-3705\, a\, b^4\, C\right)$$

$$\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{3465\, b^3\, d}2\,(a-b)\,\sqrt{a+b}$$

$$\left(6\, a\, b^3\,(209\, B-505\, C)-3\, b^4\,(539\, B-225\, C)-a^3\, b\,(110\, B-30\, C)-15\, a^2\, b^2\,(121\, B-19\, C)+40\, a^4\, C\right)$$

$$\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{3465\, b^2\, d}$$

$$2\,\left(110\, a^3\, b\, B-1254\, a\, b^3\, B-40\, a^4\, C-285\, a^2\, b^2\, C-675\, b^4\, C\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]-$$

$$\frac{1}{3465\, b^2\, d}2\,\left(110\, a^2\, b\, B-539\, b^3\, B-40\, a^3\, C-335\, a\, b^2\, C\right)\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]-$$

$$\frac{2\,\left(22\, a\, b\, B-8\, a^2\, C-81\, b^2\, C\right)\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]}{693\, b^2\, d}+$$

$$\frac{2\,(11\, b\, B-4\, a\, C)\,(a+b\,\text{Sec}[c+d\,x])^{7/2}\,\text{Tan}[c+d\,x]}{99\, b^2\, d}+$$

$$\frac{2\, C\,\text{Sec}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^{7/2}\,\text{Tan}[c+d\,x]}{11\, b\, d}$$

Result (type 1, 1 leaves):

???

Problem 830: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 469 leaves, 8 steps):

$$-\frac{1}{315 b^3 d}2 (a-b) \sqrt{a+b} \left(45 a^3 b B+435 a b^3 B-10 a^4 C+279 a^2 b^2 C+147 b^4 C\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{315 b^2 d} 2 (a-b) \sqrt{a+b} \left(3 b^3 (25 B-49 C)-6 a b^2 (60 B-19 C)+15 a^2 b (3 B-11 C)-10 a^3 C\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{315 b d}2 \left(45 a^2 b B+75 b^3 B-10 a^3 C+114 a b^2 C\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]+\frac{2 \left(45 a b B-10 a^2 C+49 b^2 C\right) (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{315 b d}+\frac{2 (9 b B-2 a C) (a+b \text{Sec}[c+d x])^{5/2} \text{Tan}[c+d x]}{63 b d}+\frac{2 C (a+b \text{Sec}[c+d x])^{7/2} \text{Tan}[c+d x]}{9 b d}$$

Result (type 1, 1 leaves):

???

Problem 831: Attempted integration timed out after 120 seconds.

$$\int (a+b \text{Sec}[c+d x])^{5/2} \left(B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 384 leaves, 7 steps):

$$-\frac{1}{105 b^2 d}2 (a-b) \sqrt{a+b} \left(161 a^2 b B+63 b^3 B+15 a^3 C+145 a b^2 C\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{105 b d} 2 (a-b) \sqrt{a+b} \left(b^2 (63 B-25 C)-8 a b (7 B-15 C)+15 a^2 (7 B-C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 \left(56 a b B+15 a^2 C+25 b^2 C\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{105 d}+\frac{2 (7 b B+5 a C) (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{35 d}+\frac{2 C (a+b \text{Sec}[c+d x])^{5/2} \text{Tan}[c+d x]}{7 d}$$

Result (type 1, 1 leaves):

???

Problem 833: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2 (a+b\,\text{Sec}[c+d x])^{5/2} \left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 433 leaves, 8 steps):

$$\frac{1}{3 b d}(a-b)\sqrt{a+b}\left(3 a^2 B-6 b^2 B-14 a b C\right)\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{3 d}\sqrt{a+b}\left(2 a b (9 B-7 C)-2 b^2 (3 B-C)+3 a^2 (B+6 C)\right)\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{d}a\sqrt{a+b}\,(5 b B+2 a C)\,\text{Cot}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{a B\,(a+b\,\text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{d}-\frac{b\,(3 a B-2 b C)\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{3 d}$$

Result (type 4, 1146 leaves):

$$\left((a+b\,\text{Sec}[c+d x])^{5/2}\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$
$$\left(3 a^3 B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+3 a^2 b B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-6 a b^2 B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-\right.$$
$$6 b^3 B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-14 a^2 b C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-14 a b^2 C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$
$$6 a^3 B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+12 a b^2 B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+28 a^2 b C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+$$
$$3 a^3 B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-3 a^2 b B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-6 a b^2 B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+$$
$$6 b^3 B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-14 a^2 b C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+14 a b^2 C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-$$
$$30 a^2 b B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -$$

$$12\,a^3\,C\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -$$

$$30\,a^2\,b\,B\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -$$

$$12\,a^3\,C\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ +$$

$$(a+b)\left(3\,a^2\,B-6\,b^2\,B-14\,a\,b\,C\right)\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -$$

$$2\left(9\,a^2\,b\,(B-C)+3\,a^3\,C-b^3\,(3\,B+C)-a\,b^2\,(9\,B+7\,C)\right)$$

$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\left(3\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^{5/2}\,\mathrm{Sec}[c+d\,x]^{5/2}\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)\ +$$

$$\left(\text{Cos}[c+d x]^2 \,(a+b\,\text{Sec}[c+d x])^{5/2}\left(\frac{2}{3} b\,(3 b B+7 a C)\,\text{Sin}[c+d x]+\frac{2}{3} b^2 C\,\text{Tan}[c+d x]\right)\right)\Big/\left(d\,(b+a\,\text{Cos}[c+d x])^2\right)$$

Problem 834: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3\,(a+b\,\text{Sec}[c+d x])^{5/2}\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 4, 450 leaves, 8 steps):

$$\frac{1}{4 b d}(a-b)\sqrt{a+b}\,\left(9 a b B+4 a^2 C-8 b^2 C\right)\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{4 d}\sqrt{a+b}\,\left(8 b^2 (B-C)+2 a^2 (B+2 C)+3 a b\,(3 B+8 C)\right)\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{4 d}\sqrt{a+b}\,\left(4 a^2 B+15 b^2 B+20 a b C\right)\text{Cot}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{a\,(7 b B+4 a C)\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{4 d}+\frac{a B\,\text{Cos}[c+d x]\,(a+b\,\text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{2 d}$$

Result (type 4, 1338 leaves):

$$\left(\text{Cos}[c+d x]^2\,(a+b\,\text{Sec}[c+d x])^{5/2}\left(2 b^2 C\,\text{Sin}[c+d x]+\frac{1}{4} a^2 B\,\text{Sin}[2 (c+d x)]\right)\right)\Big/\left(d\,(b+a\,\text{Cos}[c+d x])^2\right)+\left((a+b\,\text{Sec}[c+d x])^{5/2}\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$
$$\left(9 a^2 b B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+9 a b^2 B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+4 a^3 C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\right.$$
$$4 a^2 b C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-8 a b^2 C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-8 b^3 C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$18\, a^2\, b\, B\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3 - 8\, a^3\, C\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3 + 16\, a\, b^2\, C\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3 +$$

$$9\, a^2\, b\, B\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5 - 9\, a\, b^2\, B\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5 + 4\, a^3\, C\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5 -$$

$$4\, a^2\, b\, C\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5 - 8\, a\, b^2\, C\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5 + 8\, b^3\, C\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5 -$$

$$8\, a^3\, B\, \mathrm{EllipticPi}\left[-1,\, -\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}} -$$

$$30\, a\, b^2\, B\, \mathrm{EllipticPi}\left[-1,\, -\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}} -$$

$$40\, a^2\, b\, C\, \mathrm{EllipticPi}\left[-1,\, -\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}} -$$

$$8\, a^3\, B\, \mathrm{EllipticPi}\left[-1,\, -\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}} -$$

$$30\, a\, b^2\, B\, \mathrm{EllipticPi}\left[-1,\, -\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}} -$$

$$40\, a^2\, b\, C\, \mathrm{EllipticPi}\left[-1,\, -\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]\, \mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}} +$$

$$(a+b)\, \left(9\, a\, b\, B + 4\, a^2\, C - 8\, b^2\, C\right)\, \mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\ \left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\;-$$

$$2\left(2\,a^3\,B-a^2\,b\,(B-12\,C)+12\,a\,b^2\,(B-C)-4\,b^3\,(B+C)\right)$$

$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(4\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^{5/2}\,\mathrm{Sec}[c+d\,x]^{5/2}\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)$$

Problem 835: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^4\,(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}\,\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 518 leaves, 9 steps):

$$\frac{1}{24\,b\,d}(a-b)\sqrt{a+b}\left(16\,a^2\,B+33\,b^2\,B+54\,a\,b\,C\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{24\,d}\sqrt{a+b}\left(4\,a^2\,(4\,B+3\,C)+3\,b^2\,(11\,B+16\,C)+a\,b\,(26\,B+54\,C)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{8\,a\,d}\sqrt{a+b}\left(20\,a^2\,b\,B+5\,b^3\,B+8\,a^3\,C+30\,a\,b^2\,C\right)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{\left(16\,a^2\,B+33\,b^2\,B+54\,a\,b\,C\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,d}+\frac{a\,(3\,b\,B+2\,a\,C)\,\text{Cos}[c+d\,x]\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d}+\frac{a\,B\,\text{Cos}[c+d\,x]^2\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 1546 leaves):

$$\frac{1}{d}\sqrt{a+b\,\text{Sec}[c+d\,x]}\left(\frac{1}{12}\,a^2\,B\,\text{Sin}[c+d\,x]+\frac{1}{24}\,a\,(13\,b\,B+6\,a\,C)\,\text{Sin}[2\,(c+d\,x)]+\frac{1}{12}\,a^2\,B\,\text{Sin}[3\,(c+d\,x)]\right)+\left(\sqrt{a+b\,\text{Sec}[c+d\,x]}\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\left(16\,a^3\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+16\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+33\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+33\,b^3\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+54\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+54\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-32\,a^3\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-66\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-108\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+16\,a^3\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-16\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+33\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-33\,b^3\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+54\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-54\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-120\,a^2\,b\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-\right.\right.$$

$$30\, b^3\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]$$

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

$$48\, a^3\, C\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]$$

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

$$180\, a\, b^2\, C\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]$$

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

$$120\, a^2\, b\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$30\, b^3\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$48\, a^3\, C\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$180\, a\, b^2\, C\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$(a+b)\,\left(16\, a^2\, B+33\, b^2\, B+54\, a\, b\, C\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]$$

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

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\;-$$

$$2\left(a^2\,b\,(38\,B-6\,C)+24\,b^3\,(B-C)+12\,a^3\,C+a\,b^2\,(-13\,B+72\,C)\right)$$

$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\;\Bigg)\Bigg)\Bigg/$$

$$\left(24\,d\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\;\sqrt{\mathrm{Sec}[c+d\,x]}\;\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)$$

Problem 837: Attempted integration timed out after 120 seconds.

$$\int\frac{\mathrm{Sec}[c+d\,x]^3\left(B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 411 leaves, 7 steps):

$$-\frac{1}{105\,b^5\,d}2\,(a-b)\,\sqrt{a+b}\,\left(56\,a^2\,b\,B+63\,b^3\,B-48\,a^3\,C-44\,a\,b^2\,C\right)$$

$$\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}\;-\frac{1}{105\,b^4\,d}$$

$$2\,\sqrt{a+b}\,\left(b^3\,(63\,B-25\,C)-48\,a^3\,C+4\,a^2\,b\,(14\,B+3\,C)-2\,a\,b^2\,(7\,B+22\,C)\right)\,\mathrm{Cot}[c+d\,x]$$

$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}\;-$$

$$\frac{2\,(28\,a\,b\,B-24\,a^2\,C-25\,b^2\,C)\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Tan}[c+d\,x]}{105\,b^3\,d}+$$

$$\frac{2\,(7\,b\,B-6\,a\,C)\,\mathrm{Sec}[c+d\,x]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Tan}[c+d\,x]}{35\,b^2\,d}+$$

$$\frac{2\,C\,\mathrm{Sec}[c+d\,x]^2\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Tan}[c+d\,x]}{7\,b\,d}$$

Result (type 1, 1 leaves):

???

Problem 838: Unable to integrate problem.

$$\int \frac{\text{Sec}[c+d x]^2 \left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 329 leaves, 6 steps):

$$\frac{1}{15 b^4 d}2 (a-b) \sqrt{a+b} \left(10 a b B-8 a^2 C-9 b^2 C\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{15 b^3 d}2 \sqrt{a+b} \left(b^2 (5 B-9 C)-8 a^2 C+2 a b (5 B+C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 (5 b B-4 a C) \sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{15 b^2 d}+\frac{2 C\,\text{Sec}[c+d x] \sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{5 b d}$$

Result (type 8, 44 leaves):

$$\int \frac{\text{Sec}[c+d x]^2 \left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Problem 839: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Sec}[c+d x] \left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 261 leaves, 5 steps):

$$-\frac{1}{3 b^3 d}2 (a-b) \sqrt{a+b} (3 b B-2 a C) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{3 b^2 d}2 \sqrt{a+b} (3 b B-2 a C-b C) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 C \sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{3 b d}$$

Result (type 1, 1 leaves):

???

Problem 840: Unable to integrate problem.

$$\int \frac{B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2}{\sqrt{a+b \operatorname{Sec}[c+d x]}} \, dx$$

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

$$-\frac{1}{b^2 d} 2 (a-b) \sqrt{a+b}\ C \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}}+\frac{1}{b d} 2 \sqrt{a+b}\ (B-C) \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}}$$

Result (type 8, 36 leaves):

$$\int \frac{B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2}{\sqrt{a+b \operatorname{Sec}[c+d x]}} \, dx$$

Problem 842: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]^2 \left(B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\sqrt{a+b \operatorname{Sec}[c+d x]}} \, dx$$

Optimal (type 4, 348 leaves, 7 steps):

$$\frac{1}{a\,b\,d}(a-b)\sqrt{a+b}\,B\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{a\,d}\sqrt{a+b}\,B\,\text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{1}{a^2\,d}\sqrt{a+b}\,(b\,B-2\,a\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{B\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{a\,d}$$

Result (type 4, 1027 leaves):

$$\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right.$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\left(a\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}+\right.$$
$$b\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}-a\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}+b\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}+$$
$$2\,i\,b\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-$$
$$4\,i\,a\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}+$$

$$2\,\mathrm{i}\,b\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\ \mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\ \frac{a+b}{a-b}\right]$$

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

$$4\,\mathrm{i}\,a\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\ \mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\ \frac{a+b}{a-b}\right]$$

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

$$\mathrm{i}\,(a-b)\,B\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\ \frac{a+b}{a-b}\right]$$

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

$$2\,\mathrm{i}\,(b\,B-a\,C)\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\ \frac{a+b}{a-b}\right]$$

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

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

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

Problem 843: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+d\,x]^3\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 471 leaves, 7 steps):

$$\frac{1}{15\, b^5 \sqrt{a+b}\, d} 2 \left(40 a^3 b B - 25 a b^3 B - 48 a^4 C + 24 a^2 b^2 C + 9 b^4 C\right) \mathrm{Cot}[c+d x]\, \mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}} + \frac{1}{15\, b^4 \sqrt{a+b}\, d} 2 \left(b^3 (5 B - 9 C) + 4 a^2 b (10 B - 9 C) + 6 a b^2 (5 B - 2 C) - 48 a^3 C\right) \mathrm{Cot}[c+d x]\, \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}} + \frac{2 a (b B - a C)\, \mathrm{Sec}[c+d x]^2\, \mathrm{Tan}[c+d x]}{b \left(a^2-b^2\right) d \sqrt{a+b\,\mathrm{Sec}[c+d x]}} + \frac{1}{15\, b^3 \left(a^2-b^2\right) d} 2 \left(20 a^2 b B - 5 b^3 B - 24 a^3 C + 9 a b^2 C\right) \sqrt{a+b\,\mathrm{Sec}[c+d x]}\, \mathrm{Tan}[c+d x] - \frac{2 \left(5 a b B - 6 a^2 C + b^2 C\right) \mathrm{Sec}[c+d x] \sqrt{a+b\,\mathrm{Sec}[c+d x]}\, \mathrm{Tan}[c+d x]}{5 b^2 \left(a^2-b^2\right) d}$$

Result (type 1, 1 leaves):

???

Problem 844: Attempted integration timed out after 120 seconds.

$$\int \frac{\mathrm{Sec}[c+d x]^2 \left(B\,\mathrm{Sec}[c+d x] + C\,\mathrm{Sec}[c+d x]^2\right)}{\left(a+b\,\mathrm{Sec}[c+d x]\right)^{3/2}}\, dx$$

Optimal (type 4, 329 leaves, 6 steps):

$$-\frac{1}{3\, b^4 \sqrt{a+b}\, d} 2 \left(6 a^2 b B - 3 b^3 B - 8 a^3 C + 5 a b^2 C\right) \mathrm{Cot}[c+d x]\, \mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}} - \frac{1}{3\, b^3 \sqrt{a+b}\, d} 2 (2 a + b) (3 b B - 4 a C - b C) \mathrm{Cot}[c+d x]\, \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}} - \frac{2 a^2 (b B - a C)\, \mathrm{Tan}[c+d x]}{b^2 \left(a^2-b^2\right) d \sqrt{a+b\,\mathrm{Sec}[c+d x]}} + \frac{2 C \sqrt{a+b\,\mathrm{Sec}[c+d x]}\, \mathrm{Tan}[c+d x]}{3 b^2 d}$$

Result (type 1, 1 leaves):

???

Problem 845: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Sec}[c+d x] \left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\left(a+b\,\text{Sec}[c+d x]\right)^{3/2}}\,dx$$

Optimal (type 4, 275 leaves, 5 steps):

$$\frac{1}{b^3 \sqrt{a+b}\, d} 2 \left(a b B-2 a^2 C+b^2 C\right) \text{Cot}[c+d x]\, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b \left(1-\text{Sec}[c+d x]\right)}{a+b}} \sqrt{-\frac{b \left(1+\text{Sec}[c+d x]\right)}{a-b}} + \frac{1}{b^2 \sqrt{a+b}\, d} 2 \left(b \left(B-C\right)-2 a C\right) \text{Cot}[c+d x]\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b \left(1-\text{Sec}[c+d x]\right)}{a+b}} \sqrt{-\frac{b \left(1+\text{Sec}[c+d x]\right)}{a-b}} + \frac{2 a \left(b B-a C\right) \text{Tan}[c+d x]}{b \left(a^2-b^2\right) d \sqrt{a+b\,\text{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 846: Attempted integration timed out after 120 seconds.

$$\int \frac{B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{\left(a+b\,\text{Sec}[c+d x]\right)^{3/2}}\,dx$$

Optimal (type 4, 254 leaves, 5 steps):

$$-\frac{1}{b^2 \sqrt{a+b}\, d} 2 \left(b B-a C\right) \text{Cot}[c+d x]\, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b \left(1-\text{Sec}[c+d x]\right)}{a+b}} \sqrt{-\frac{b \left(1+\text{Sec}[c+d x]\right)}{a-b}} + \frac{1}{b \sqrt{a+b}\, d} 2 \left(B+C\right) \text{Cot}[c+d x]\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b \left(1-\text{Sec}[c+d x]\right)}{a+b}} \sqrt{-\frac{b \left(1+\text{Sec}[c+d x]\right)}{a-b}} - \frac{2 \left(b B-a C\right) \text{Tan}[c+d x]}{\left(a^2-b^2\right) d \sqrt{a+b\,\text{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 847: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]\,\left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}}\,dx$$

Optimal (type 4, 376 leaves, 7 steps):

$$\frac{1}{a\,b\,\sqrt{a+b}\,d}2\,\left(b\,B-a\,C\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}-\frac{1}{a\,b\,\sqrt{a+b}\,d}2\,\left(b\,B-a\,C\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}-\frac{1}{a^2\,d}2\,\sqrt{a+b}\,B\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}+\frac{2\,b\,\left(b\,B-a\,C\right)\,\text{Tan}[c+d\,x]}{a\,\left(a^2-b^2\right)\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 1445 leaves):

$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c+d\,x]\left(\frac{2\,\left(-b\,B+a\,C\right)\,\text{Sin}[c+d\,x]}{a\,\left(a^2-b^2\right)}-\frac{2\,\left(-b^2\,B\,\text{Sin}[c+d\,x]+a\,b\,C\,\text{Sin}[c+d\,x]\right)}{a\,\left(a^2-b^2\right)\,\left(b+a\,\text{Cos}[c+d\,x]\right)}\right)\right)\Big/\left(d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$

$$\left(2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$

$$\left(a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+b^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-\right.$$

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

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

$$a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-b^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$a^2 \sqrt{\frac{-a+b}{a+b}}\ C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5 + a b \sqrt{\frac{-a+b}{a+b}}\ C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5 -$$

$$2 i a^2 B \operatorname{EllipticPi}\left[-\frac{a+b}{a-b}, i \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a+b}{a-b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}} +$$

$$2 i b^2 B \operatorname{EllipticPi}\left[-\frac{a+b}{a-b}, i \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a+b}{a-b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}} -$$

$$2 i a^2 B \operatorname{EllipticPi}\left[-\frac{a+b}{a-b}, i \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a+b}{a-b}\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}} +$$

$$2 i b^2 B \operatorname{EllipticPi}\left[-\frac{a+b}{a-b}, i \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a+b}{a-b}\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}} +$$

$$i (a-b) (-b B + a C) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a+b}{a-b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}} + i (a-b) (2 b B + a (B-C))$$

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

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

$$\Bigg(a\sqrt{\frac{-a+b}{a+b}}\left(a^2-b^2\right) d\sqrt{a+b\,\text{Sec}[c+d x]}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Bigg)$$

Problem 848: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d x]^2\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{(a+b\,\text{Sec}[c+d x])^{3/2}}\,dx$$

Optimal (type 4, 427 leaves, 8 steps):

$$\frac{1}{a^2 b\sqrt{a+b}\,d}\left(a^2 B-3 b^2 B+2 a b C\right)\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{a^2\sqrt{a+b}\,d}$$

$$(3 b B+a(B-2 C))\,\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{a^3 d}$$

$$\sqrt{a+b}\,(3 b B-2 a C)\,\text{Cot}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}+$$

$$\frac{B\,\text{Sin}[c+d x]}{a d\sqrt{a+b\,\text{Sec}[c+d x]}}+\frac{b\left(a^2 B-3 b^2 B+2 a b C\right)\text{Tan}[c+d x]}{a^2\left(a^2-b^2\right) d\sqrt{a+b\,\text{Sec}[c+d x]}}$$

Result (type 4, 1613 leaves):

$$\Bigg((b+a\,\text{Cos}[c+d x])^2\,\text{Sec}[c+d x]^2$$

$$\left(-\frac{2 b(b B-a C)\,\text{Sin}[c+d x]}{a^2\left(-a^2+b^2\right)}+\frac{2\left(-b^3 B\,\text{Sin}[c+d x]+a b^2 C\,\text{Sin}[c+d x]\right)}{a^2\left(a^2-b^2\right)(b+a\,\text{Cos}[c+d x])}\right)\Bigg)\Big/$$

$$\left(d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-\left(\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\,\text{Sec}[c+d\,x]^{3/2}\right.$$

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

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

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

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

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

$$3\,b^3\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+2\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-2\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$6\,a^2\,b\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

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

$$6\,b^3\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

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

$$4\,a^3\,C\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

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

$$4\,a\,b^2\,C\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

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

$$6\,a^2\,b\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

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

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

$$4 a^3 C\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

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

$$4 a b^2 C\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

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

$$\left(a^2 B-3 b^2 B+2 a b C\right)\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

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

$$2 a(a+b)(-b B+a C)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

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

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

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

Problem 849: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+d x]^3\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\left(a+b\,\text{Sec}[c+d x]\right)^{5/2}}\,dx$$

Optimal (type 4, 509 leaves, 7 steps):

$$-\left(\left(2\left(8 a^4 b B-15 a^2 b^3 B+3 b^5 B-16 a^5 C+28 a^3 b^2 C-8 a b^4 C\right)\right.\right.$$
$$\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\left.\left.\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}\right)\Big/\left(3\,(a-b)\,b^5\,(a+b)^{3/2} d\right)\right)-$$
$$\left(2\left(a^3 b\,(8 B-12 C)-9 a b^3\,(B-C)-b^4\,(3 B-C)-16 a^4 C+2 a^2 b^2\,(3 B+8 C)\right)\right.$$
$$\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\left.\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}\right)\Big/$$
$$\left(3 b^4\sqrt{a+b}\,\left(a^2-b^2\right) d\right)+\frac{2 a\,(b B-a C)\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]}{3 b\,\left(a^2-b^2\right) d\,(a+b\,\text{Sec}[c+d x])^{3/2}}-$$
$$\frac{2 a^2\left(3 a^2 b B-7 b^3 B-6 a^3 C+10 a b^2 C\right)\text{Tan}[c+d x]}{3 b^3\left(a^2-b^2\right)^2 d\sqrt{a+b\,\text{Sec}[c+d x]}}-$$
$$\frac{2\left(a b B-2 a^2 C+b^2 C\right)\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{3 b^3\left(a^2-b^2\right) d}$$

Result (type 1, 1 leaves):

???

Problem 850: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+d x]^2\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{(a+b\,\text{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 4, 417 leaves, 6 steps):

$$\left(2\left(2a^3 b B-6ab^3 B-8a^4 C+15a^2 b^2 C-3b^4 C\right)\right.$$
$$\text{Cot}[c+dx]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\left.\sqrt{\frac{b\,(1-\text{Sec}[c+dx])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+dx])}{a-b}}\right)\Big/\left(3\,(a-b)\,b^4\,(a+b)^{3/2}\,d\right)+$$
$$\left(2\left(2a^2 b\,(B-3C)-3b^3\,(B-C)-8a^3 C+3ab^2\,(B+3C)\right)\text{Cot}[c+dx]\,\text{EllipticF}\left[\right.\right.$$
$$\left.\left.\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+dx])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+dx])}{a-b}}\right)\Big/$$
$$\left(3b^3\sqrt{a+b}\,\left(a^2-b^2\right)d\right)-\frac{2a^2\,(bB-aC)\,\text{Tan}[c+dx]}{3b^2\,\left(a^2-b^2\right)d\,(a+b\,\text{Sec}[c+dx])^{3/2}}+$$
$$\frac{2a\,\left(2a^2 bB-6b^3 B-5a^3 C+9ab^2 C\right)\text{Tan}[c+dx]}{3b^2\,\left(a^2-b^2\right)^2 d\,\sqrt{a+b\,\text{Sec}[c+dx]}}$$

Result (type 1, 1 leaves):

???

Problem 851: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+dx]\,\left(B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)}{(a+b\,\text{Sec}[c+dx])^{5/2}}\,dx$$

Optimal (type 4, 387 leaves, 6 steps):

$$\left(2\left(a^2 b B+3 b^3 B+2 a^3 C-6 a b^2 C\right) \text{Cot}[c+d x] \,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3(a-b) b^3 (a+b)^{3/2} d\right)+$$

$$\left(2\left(2 a^2 C-3 b^2(B+C)+a b(B+3 C)\right) \text{Cot}[c+d x] \,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3 b^2 \sqrt{a+b}\left(a^2-b^2\right) d\right)+$$

$$\frac{2 a(b B-a C) \text{Tan}[c+d x]}{3 b\left(a^2-b^2\right) d(a+b \,\text{Sec}[c+d x])^{3/2}}+\frac{2\left(a^2 b B+3 b^3 B+2 a^3 C-6 a b^2 C\right) \text{Tan}[c+d x]}{3 b\left(a^2-b^2\right)^2 d \sqrt{a+b \,\text{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 852: Unable to integrate problem.

$$\int \frac{B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2}{(a+b \,\text{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 4, 353 leaves, 6 steps):

$$-\left(\left(\left(2\left(4 a b B-a^2 C-3 b^2 C\right) \text{Cot}[c+d x] \,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3(a-b) b^2 (a+b)^{3/2} d\right)\right)+$$

$$\left(2(3 a B-b B+a C-3 b C) \text{Cot}[c+d x] \,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3(a-b) b (a+b)^{3/2} d\right)-$$

$$\frac{2(b B-a C) \text{Tan}[c+d x]}{3\left(a^2-b^2\right) d(a+b \,\text{Sec}[c+d x])^{3/2}}-\frac{2\left(4 a b B-a^2 C-3 b^2 C\right) \text{Tan}[c+d x]}{3\left(a^2-b^2\right)^2 d \sqrt{a+b \,\text{Sec}[c+d x]}}$$

Result (type 8, 36 leaves):

$$\int \frac{B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2}{(a+b\,\mathrm{Sec}[c+d x])^{5/2}}\,dx$$

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

$$\int \frac{\mathrm{Cos}[c+d x]\,\left(B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)}{(a+b\,\mathrm{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 4, 495 leaves, 8 steps):

$$\left(2\left(7 a^2 b B-3 b^3 B-4 a^3 C\right) \mathrm{Cot}[c+d x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}}\right)\Big/\left(3 a^2\,(a-b)\,b\,(a+b)^{3/2} d\right)-$$
$$\left(2\left(6 a^2 b B-a b^2 B-3 b^3 B-3 a^3 C+a^2 b C\right) \mathrm{Cot}[c+d x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}}\right)\Big/\left(3 a^2\,(a-b)\,b\,(a+b)^{3/2} d\right)-$$
$$\frac{1}{a^3 d}2\sqrt{a+b}\;B\,\mathrm{Cot}[c+d x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\mathrm{Sec}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d x])}{a-b}}+$$
$$\frac{2 b\,(b B-a C)\,\mathrm{Tan}[c+d x]}{3 a\,\left(a^2-b^2\right) d\,(a+b\,\mathrm{Sec}[c+d x])^{3/2}}+\frac{2 b\,\left(7 a^2 b B-3 b^3 B-4 a^3 C\right) \mathrm{Tan}[c+d x]}{3 a^2\,\left(a^2-b^2\right)^2 d\,\sqrt{a+b\,\mathrm{Sec}[c+d x]}}$$

Result (type 4, 2039 leaves):

$$\Bigg((b+a\,\mathrm{Cos}[c+d x])^3\,\mathrm{Sec}[c+d x]^3$$
$$\Bigg(\frac{2\left(-7 a^2 b B+3 b^3 B+4 a^3 C\right) \mathrm{Sin}[c+d x]}{3 a^2\left(a^2-b^2\right)^2}-\frac{2\left(b^3 B\,\mathrm{Sin}[c+d x]-a b^2 C\,\mathrm{Sin}[c+d x]\right)}{3 a^2\left(a^2-b^2\right)\,(b+a\,\mathrm{Cos}[c+d x])^2}-$$
$$\left(2\left(-8 a^2 b^2 B\,\mathrm{Sin}[c+d x]+4 b^4 B\,\mathrm{Sin}[c+d x]+5 a^3 b C\,\mathrm{Sin}[c+d x]-a b^3 C\,\mathrm{Sin}[c+d x]\right)\right)\Big/$$
$$\left(3 a^2\left(a^2-b^2\right)^2\,(b+a\,\mathrm{Cos}[c+d x])\right)\Bigg)\Bigg)\Big/\left(d\,(a+b\,\mathrm{Sec}[c+d x])^{5/2}\right)+$$

$$\left(2\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Sec}[c+d\,x]^{5/2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right.$$

$$\left(7\,a^3\,b\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+7\,a^2\,b^2\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-3\,a\,b^3\sqrt{\frac{-a+b}{a+b}}\,B\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-3\,b^4\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-4\,a^4\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$

$$4\,a^3\,b\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-14\,a^3\,b\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+$$

$$6\,a\,b^3\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+8\,a^4\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+$$

$$7\,a^3\,b\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-7\,a^2\,b^2\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-$$

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

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

$$6\,i\,a^4\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$12\,i\,a^2\,b^2\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$6\,i\,b^4\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$6\,i\,a^4\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a+b}{a-b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+12\,i\,a^2\,b^2\,B$$

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

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

$$6\,i\,b^4\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a+b}{a-b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

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

$$i\,(a-b)\left(-7\,a^2\,b\,B+3\,b^3\,B+4\,a^3\,C\right)\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

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

$$i\,(a-b)\left(-4\,a\,b^2\,B-6\,b^3\,B+3\,a^3\,(B-C)+a^2\,b\,(9\,B+C)\right)$$

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

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

$$\left(3\,a^2\sqrt{\frac{-a+b}{a+b}}\left(a^2-b^2\right)^2 d\,(a+b\,\text{Sec}[c+d x])^{5/2}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right.$$

$$\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

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

Problem 854: Attempted integration timed out after 120 seconds.

$$\int \frac{B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{(a+b\,\text{Sec}[c+d x])^{7/2}}\,dx$$

Optimal (type 4, 446 leaves, 7 steps):

$$-\left(\left(2\left(23 a^2 b B+9 b^3 B-3 a^3 C-29 a b^2 C\right)\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}\right)\Big/\left(15(a-b)^2 b^2(a+b)^{5/2} d\right)\right)+$$

$$\left(2\left(3 a^2(5 B+C)-8 a b(B+3 C)+b^2(9 B+5 C)\right)\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}\right)\Big/$$

$$\left(15 b\sqrt{a+b}\left(a^2-b^2\right)^2 d\right)-\frac{2(b B-a C)\,\text{Tan}[c+d x]}{5\left(a^2-b^2\right) d\,(a+b\,\text{Sec}[c+d x])^{5/2}}-$$

$$\frac{2\left(8 a b B-3 a^2 C-5 b^2 C\right)\text{Tan}[c+d x]}{15\left(a^2-b^2\right)^2 d\,(a+b\,\text{Sec}[c+d x])^{3/2}}-$$

$$\frac{2\left(23 a^2 b B+9 b^3 B-3 a^3 C-29 a b^2 C\right)\text{Tan}[c+d x]}{15\left(a^2-b^2\right)^3 d\sqrt{a+b\,\text{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 857: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[c+d x])^{2/3}\left(B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 6, 229 leaves, 8 steps):

$$\left(\sqrt{2}\ (a+b)\ C\ \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{5}{3},\frac{3}{2},\frac{1}{2}\ (1-\text{Sec}[c+d\,x]),\frac{b\ (1-\text{Sec}[c+d\,x])}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Tan}[c+d\,x]\right)\Big/\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\ \left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{2/3}\right)+$$
$$\left(\sqrt{2}\ (b\,B-a\,C)\ \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{2}{3},\frac{3}{2},\frac{1}{2}\ (1-\text{Sec}[c+d\,x]),\frac{b\ (1-\text{Sec}[c+d\,x])}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Tan}[c+d\,x]\right)\Big/\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\ \left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{2/3}\right)$$

Result (type 6, 33 208 leaves): Display of huge result suppressed!

Problem 858: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[c+d\,x])^{1/3}\ \left(B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 6, 229 leaves, 8 steps):

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

Result (type 6, 33 199 leaves): Display of huge result suppressed!

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

$$\int \frac{B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{(a+b\,\text{Sec}[c+d\,x])^{1/3}}\,dx$$

Optimal (type 6, 226 leaves, 8 steps):

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

Result (type 6, 18 676 leaves):

$$\left(3\,(b+a\,\mathrm{Cos}[c+d\,x])^{1/3}\left(-\frac{C}{2\,(b+a\,\mathrm{Cos}[c+d\,x])^{1/3}\,\mathrm{Sec}[c+d\,x]^{1/3}}+\frac{B\,\mathrm{Sec}[c+d\,x]^{2/3}}{(b+a\,\mathrm{Cos}[c+d\,x])^{1/3}}-\right.\right.$$

$$\left.\frac{3\,a\,C\,\mathrm{Sec}[c+d\,x]^{2/3}}{4\,b\,(b+a\,\mathrm{Cos}[c+d\,x])^{1/3}}-\frac{3\,a\,C\,\mathrm{Cos}\left[2\,(c+d\,x)\right]\,\mathrm{Sec}[c+d\,x]^{2/3}}{4\,b\,(b+a\,\mathrm{Cos}[c+d\,x])^{1/3}}\right)$$

$$\mathrm{Sec}[c+d\,x]^{1/3}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\left(\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^{2/3}$$

$$\left(\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^{2/3}\left(C\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)-\right.$$

$$\left(12\,b\,(a+b)\,B\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right.$$

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

$$\left(-9\,(a+b)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-\right.$$

$$2\left((a-b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+\right.$$

$$2\,(a+b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

$$\left.\left.\left.\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right)\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)-$$

$$\left(3\,b\,(a+b)\,C\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right.$$

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

$$\left(-9\,(a+b)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-\right.$$

$$2\left((a-b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+\right.$$

$$2\,(a+b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(5 b (a+b) C \operatorname{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(\left(a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\Bigg(-15 (a+b)\operatorname{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]-$$

$$2\Bigg((a-b)\operatorname{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+$$

$$2 (a+b)\operatorname{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(9 a (a+b) C \operatorname{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(\Bigg(9 (a+b)\operatorname{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+$$

$$2\Bigg((a-b)\operatorname{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+$$

$$2 (a+b)\operatorname{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\Bigg)$$

$$\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\left(a\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Bigg)-$$

$$\Bigg(5 a (a+b) C \operatorname{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 \left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg) \Bigg/$$

$$\Bigg(\Bigg(15 (a+b) \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, \frac{1}{3}, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right] +$$

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

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

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg) \left(a \left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) - b \left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Bigg)\Bigg)\Bigg) \Bigg/$$

$$\Bigg(2 b d \left(a+b \text{Sec}[c+d x]\right)^{1/3} \left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1/3}$$

$$\Bigg(-\frac{1}{2 b \left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{4/3}} \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 \left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{2/3}$$

$$\left(\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{2/3} \Bigg(C \left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) -$$

$$\Bigg(12 b (a+b) B \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, \frac{1}{3}, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg) \Bigg/ \Bigg(\left(a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\Bigg(-9 (a+b) \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, \frac{1}{3}, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right] -$$

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

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

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

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

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

$$\Bigg(-9\left(a+b\right)\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\right]-$$

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

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

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

$$\Bigg(5\,b\,\left(a+b\right)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\right]$$

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

$$b\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big)\ \Bigg(-15\left(a+b\right)\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,$$

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

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

$$\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big]\Bigg)\ \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(9\,a\,\left(a+b\right)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)\Bigg)\Bigg/\Bigg(\Bigg(\Bigg(9\left(a+b\right)\text{AppellF1}\Big[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,$$

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

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

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

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

$$\left(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

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

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

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

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

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

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

$$\left(C\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-\right.$$

$$\left(12\, b\, (a+b)\, B\, \text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$
$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$
$$2\left((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$
$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$
$$\left(3\, b\, (a+b)\, C\, \text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$
$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$
$$2\left((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$
$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$
$$\left(5\, b\, (a+b)\, C\, \text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$
$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$

$$\left(-15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\left(9\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$

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

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

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

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

$$\left(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

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

$$\frac{1}{b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1/3}}\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

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

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

$$\Big(C\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-$$

$$\Big(12\,b\,(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

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

$$\Big(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]-$$

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

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

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

$$\Big(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]-$$

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

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

$$\left(-15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\left(9\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left.\left(a\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)-$$

$$\Bigg(5\,a\,(a+b)\,C\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(\Bigg(15\,(a+b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+$$

$$2\Bigg((a-b)\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+$$

$$2\,(a+b)\,\mathrm{AppellF1}\Bigg[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\Bigg)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left.\left.\left(a\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\right)+$$

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

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\left(\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{2/3}$$

$$\Bigg(\Bigg(-a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+b\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)\Big/$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-$$

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

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\Bigg)\Bigg(C\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-$$

$$\left(12\,b\,(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$
$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$
$$2\left((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$
$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$
$$\left(3\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$
$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$
$$2\left((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$
$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$
$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$
$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$

$$\left(-15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\left(9\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

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

$$\left(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

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

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

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

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

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

$$\Big(C\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\Big(12\,b\,(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

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

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

$$\Big(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-$$

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

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

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

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

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

$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\left(12\,b\,(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big/$$

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

$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

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

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big/$$

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

$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$

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

$$2(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

$$\left(12\,b\,(a+b)\,B\left(\frac{1}{9(a+b)}(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{9}$$

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

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-9(a+b)\right.\right.$$

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

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

$$2(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

$$\left(3\,b\,(a+b)\,C\left(\frac{1}{9(a+b)}(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{9}$$

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

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\left(-9\,(a+b)\right.\right.$$

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

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

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

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

$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right.$$

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

$$\left.\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\left(-15\,(a+b)\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-2$$

$$\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+\right.$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

$$\left.\left.\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+$$

$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right.$$

$$\left(-15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$
$$2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$
$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$
$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$
$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$
$$\left(-15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$
$$2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$
$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$
$$\left(5\,b\,(a+b)\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\frac{1}{5\,(a+b)}(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\right.\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$

$$\left(-15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$
$$2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$
$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$
$$\left(9\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left(a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-b\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$
$$\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$
$$2\left((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$
$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)^2\right)+$$
$$\left(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-b\right.$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$
$$\left(\left(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

$$2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)^2\right)+$$

$$\left(9\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big/$$

$$\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

$$2\left((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)+$$

$$\left(9\,a\,(a+b)\,C\left(\frac{1}{9\,(a+b)}(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{9}$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

$$2\left((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)-$$

$$\left(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3\right)\Bigg/$$

$$\left(\left(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

$$2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)-$$

$$\left(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Bigg/$$

$$\left(\left(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

$$2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Bigg)-\Bigg(5\,a\,(a+b)$$

$$C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\frac{1}{5\,(a+b)}(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(\Bigg(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+$$

$$2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Bigg)+$$

$$\Bigg(12\,b\,(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg(-2\Bigg((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]\Bigg)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-9\,(a+b)\,\Bigg(\frac{1}{9\,(a+b)}(a-b)\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},\frac{4}{3},$$

$$\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{9}\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)-2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\,\Bigg((a-b)\,\Bigg(\frac{1}{5\,(a+b)}4\,(a-b)\,\text{AppellF1}\Big[\frac{5}{2},\frac{2}{3},\frac{7}{3},\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)+$$

$$2\,(a+b)\,\Bigg(\frac{1}{5\,(a+b)}(a-b)\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$\text{AppellF1}\Big[\frac{5}{2},\frac{8}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\,\Bigg(-9\,(a+b)\,\text{AppellF1}\Big[$$

$$\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]-$$

$$2\,\Bigg((a-b)\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big] + 2\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)^2\Big)+$$

$$\Big(3\,b\,(a+b)\,C\,\text{AppellF1}\Big[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\,\Big(-2\,\Big((a-b)\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]+2\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]\Big)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-9\,(a+b)\,\Big(\frac{1}{9\,(a+b)}(a-b)\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},\frac{4}{3},$$

$$\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{9}\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)-2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\,\Big((a-b)\,\Big(\frac{1}{5\,(a+b)}4\,(a-b)\,\text{AppellF1}\Big[\frac{5}{2},\frac{2}{3},\frac{7}{3},\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)+$$

$$2\,(a+b)\,\Big(\frac{1}{5\,(a+b)}(a-b)\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left.\left.\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-9(a+b)\,\text{AppellF1}\left[\right.\right.\right.$$

$$\left.\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]-$$

$$2\left((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+2(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\right.$$

$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)-$$

$$\left(9a(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(2\left((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+2(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+9(a+b)\left(\frac{1}{9(a+b)}(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\right.\right.$$

$$\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{9}\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left((a-b)\left(\frac{1}{5(a+b)}4(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{7}{3},\frac{7}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+$$

$$2(a+b)\left(\frac{1}{5(a+b)}(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\left.\left.\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\right)\Big/$$

$$\left(\left(9(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},\frac{1}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

$$2\left((a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{4}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+2(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},\frac{1}{3},\frac{5}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2$$

$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)-$$

$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left(-2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\Bigg)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-15$$

$$(a+b)\left(\frac{1}{5\,(a+b)}(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\right.$$

$$\frac{2}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\left((a-b)\left(\frac{1}{21\,(a+b)}20\,(a-b)\,\text{AppellF1}\left[\frac{7}{2},\frac{2}{3},\frac{7}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$\frac{10}{21}\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},\frac{4}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+2\,(a+b)$$

$$\left(\frac{1}{21\,(a+b)}5\,(a-b)\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},\frac{4}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$\frac{25}{21}\text{AppellF1}\left[\frac{7}{2},\frac{8}{3},\frac{1}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left.\left.\left.\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-15\,(a+b)\,\text{AppellF1}\left[\right.\right.\right.$$

$$\left.\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]-$$

$$2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)^2\Bigg)+$$

$$\Bigg(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\Bigg(2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+15$$

$$(a+b)\left(\frac{1}{5\,(a+b)}(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\Bigg((a-b)\left(\frac{1}{21\,(a+b)}20\,(a-b)\,\text{AppellF1}\left[\frac{7}{2},\frac{2}{3},\frac{7}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{10}{21}\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},\frac{4}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,(a+b)$$

$$\left(\frac{1}{21\,(a+b)}5\,(a-b)\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},\frac{4}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{25}{21}\,\text{AppellF1}\left[\frac{7}{2},\frac{8}{3},\frac{1}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(\left(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},\frac{1}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+2\left((a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},\frac{4}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+2\,(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},\frac{1}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\left(a\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\right)\Bigg)\Bigg)+$$

$$\frac{3\,C\,(b+a\,\text{Cos}[c+d\,x])\,\text{Tan}[c+d\,x]}{2\,b\,d\,(a+b\,\text{Sec}[c+d\,x])^{1/3}}$$

Problem 860: Result more than twice size of optimal antiderivative.

$$\int\frac{B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{(a+b\,\text{Sec}[c+d\,x])^{2/3}}\,dx$$

Optimal (type 6, 226 leaves, 8 steps):

$$\left(\sqrt{2}\ C\ \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{1}{3},\frac{3}{2},\frac{1}{2}\left(1-\text{Sec}[c+d\,x]\right),\frac{b\left(1-\text{Sec}[c+d\,x]\right)}{a+b}\right]\right.$$
$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{1/3}\text{Tan}[c+d\,x]\right)\Big/\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{1/3}\right)+$$
$$\left(\sqrt{2}\left(b\,B-a\,C\right)\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{2}{3},\frac{3}{2},\frac{1}{2}\left(1-\text{Sec}[c+d\,x]\right),\frac{b\left(1-\text{Sec}[c+d\,x]\right)}{a+b}\right]\right.$$
$$\left.\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{2/3}\text{Tan}[c+d\,x]\right)\Big/\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\left(a+b\,\text{Sec}[c+d\,x]\right)^{2/3}\right)$$

Result (type 6, 18 666 leaves):

$$\left(3\left(b+a\,\text{Cos}[c+d\,x]\right)^{2/3}\left(-\frac{2\,C}{\left(b+a\,\text{Cos}[c+d\,x]\right)^{2/3}\text{Sec}[c+d\,x]^{2/3}}+\frac{B\,\text{Sec}[c+d\,x]^{1/3}}{\left(b+a\,\text{Cos}[c+d\,x]\right)^{2/3}}-\right.\right.$$
$$\left.\frac{3\,a\,C\,\text{Sec}[c+d\,x]^{1/3}}{2\,b\left(b+a\,\text{Cos}[c+d\,x]\right)^{2/3}}-\frac{3\,a\,C\,\text{Cos}\left[2\left(c+d\,x\right)\right]\text{Sec}[c+d\,x]^{1/3}}{2\,b\left(b+a\,\text{Cos}[c+d\,x]\right)^{2/3}}\right)$$
$$\text{Sec}[c+d\,x]^{2/3}\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}\right)^{1/3}$$
$$\left(\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}\right)^{1/3}\left(C\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right)-\right.$$
$$\left(6\,b\left(a+b\right)B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}{a+b}\right]\right.$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right)\right)\Big/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right)\right.$$
$$\left(-9\left(a+b\right)\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}{a+b}\right]-\right.$$
$$2\left(2\left(a-b\right)\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}{a+b}\right]+\right.$$
$$\left(a+b\right)\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\right.$$
$$\left.\left.\left.\left.\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right)\right)+$$
$$\left(3\,b\left(a+b\right)C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}{a+b}\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Bigg)\Bigg/\Bigg(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)$$

$$\Bigg(-9\left(a+b\right)\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]-$$

$$2\Bigg(2\left(a-b\right)\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]+$$

$$\left(a+b\right)\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

$$\left.\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(5\,b\left(a+b\right)C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)$$

$$\Bigg(-15\left(a+b\right)\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]-$$

$$2\Bigg(2\left(a-b\right)\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]+$$

$$\left(a+b\right)\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

$$\left.\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(9\,a\left(a+b\right)C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(\Bigg(9\left(a+b\right)\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]+$$

$$2\left(2(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\right]+\right.$$

$$\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\Bigg)-$$

$$\left(5a(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\Bigg/$$

$$\left(\left(15(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\right]+\right.\right.$$

$$2\left(2(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\right]+\right.$$

$$\left.(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\right]\right)$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\right)\right)\Bigg/$$

$$\left(b\,d\,(a+b\,\text{Sec}[c+dx])^{2/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{2/3}\right.$$

$$\left(-\frac{1}{b\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{5/3}}\,2\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{1/3}\right.$$

$$\left(\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{1/3}\left(C\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)-\right.$$

$$\left(6b(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\bigg/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right.$$

$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-\right.$$

$$2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+$$

$$\left(3\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\bigg/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right.$$

$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-\right.$$

$$2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+$$

$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\bigg/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+\right.\right.$$

$$\left.b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\left(-15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\right.\right.\right.$$

$$\frac{1}{2}\left(c+d x\right)\Big]^2, \frac{\left(a-b\right) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big] + \left(a+b\right) \operatorname{AppellF1}\Big[\frac{5}{2}, \frac{4}{3}, \frac{2}{3},$$

$$\frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, \frac{\left(a-b\right) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big]\Bigg) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(9 a \left(a+b\right) C \operatorname{AppellF1}\Big[\frac{1}{2}, \frac{1}{3}, \frac{2}{3}, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, \frac{\left(a-b\right) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big]$$

$$\left(1+\operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)\Bigg) \Bigg/ \Bigg(\Bigg(9 \left(a+b\right) \operatorname{AppellF1}\Big[\frac{1}{2}, \frac{1}{3}, \frac{2}{3}, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,$$

$$\frac{\left(a-b\right) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big] + 2 \Bigg(2 \left(a-b\right) \operatorname{AppellF1}\Big[\frac{3}{2}, \frac{1}{3}, \frac{5}{3}, \frac{5}{2},$$

$$\operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, \frac{\left(a-b\right) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big] + \left(a+b\right) \operatorname{AppellF1}\Big[\frac{3}{2}, \frac{4}{3},$$

$$\frac{2}{3}, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, \frac{\left(a-b\right) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big]\Bigg) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Bigg)$$

$$\left(a \left(-1+\operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right) - b \left(1+\operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)\right)\Bigg) -$$

$$\Bigg(5 a \left(a+b\right) C \operatorname{AppellF1}\Big[\frac{3}{2}, \frac{1}{3}, \frac{2}{3}, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, \frac{\left(a-b\right) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big]$$

$$\operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \left(1+\operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)\Bigg) \Bigg/$$

$$\Bigg(\Bigg(15 \left(a+b\right) \operatorname{AppellF1}\Big[\frac{3}{2}, \frac{1}{3}, \frac{2}{3}, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, \frac{\left(a-b\right) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big] +$$

$$2 \Bigg(2 \left(a-b\right) \operatorname{AppellF1}\Big[\frac{5}{2}, \frac{1}{3}, \frac{5}{3}, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,$$

$$\frac{\left(a-b\right) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big] + \left(a+b\right) \operatorname{AppellF1}\Big[\frac{5}{2}, \frac{4}{3}, \frac{2}{3}, \frac{7}{2},$$

$$\operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2, \frac{\left(a-b\right) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}\Big]\Bigg) \operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Bigg)$$

$$\left(a \left(-1+\operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right) - b \left(1+\operatorname{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)\right)\Bigg) +$$

$$\frac{1}{2\,b\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{2/3}}\,3\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^{1/3}$$

$$\left(\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^{1/3}$$

$$\left(C\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)-\left(6\,b\,(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{3},\,\frac{2}{3},\,\frac{3}{2},\right.\right.\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{3},\,\frac{2}{3},\,\frac{3}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-2\,\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{3},\,\frac{5}{3},\right.\right.$$

$$\left.\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{4}{3},\right.$$

$$\left.\left.\left.\left.\frac{2}{3},\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+$$

$$\left(3\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{3},\,\frac{2}{3},\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\Big/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right.$$

$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{3},\,\frac{2}{3},\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-\right.$$

$$2\,\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{3},\,\frac{5}{3},\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{4}{3},\,\frac{2}{3},\,\frac{5}{2},\right.$$

$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+$$

$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$
$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\right.\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\right.\right.$$
$$\left.\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\right.$$
$$\left.\left.\left.\left.\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$
$$\left(9\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.\right.$$
$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\right.$$
$$\left.\left.\left.\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\left.\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\right)-$$
$$\left(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$
$$\left(\left(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

$$2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Bigg)\Bigg)+$$

$$\frac{1}{b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{2/3}}\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{4/3}$$

$$\left(\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{1/3}$$

$$\Bigg(C\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-$$

$$\Bigg(6\,b\,(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg/\Bigg(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\Bigg(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-$$

$$2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(3\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right.$$

$$\left(-9(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]-\right.$$

$$2\left(2(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$

$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Bigg/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-15(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]-2\left(2(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\right.\right.$$

$$\left.\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\right.$$

$$\left.\left.\left.\left.\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$

$$\left(9\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Bigg/\left(\left(\left(9(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+2\left(2(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\right.$$

$$\frac{2}{3}, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\Bigg)\Bigg)-$$

$$\Bigg(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, \frac{2}{3}, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(\Bigg(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, \frac{2}{3}, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\right]+$$

$$2\Bigg(2\,(a-b)\,\text{AppellF1}\Big[\frac{5}{2}, \frac{1}{3}, \frac{5}{3}, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\Big]+(a+b)\,\text{AppellF1}\Big[\frac{5}{2}, \frac{4}{3}, \frac{2}{3}, \frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\Bigg)\Bigg)+$$

$$\frac{1}{b\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{2/3}\left(\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{2/3}}$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]$$

$$\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{1/3}$$

$$\Bigg(\left(-a\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+b\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\Bigg/$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)-$$

$$\left(\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\Bigg/$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\Bigg)$$

$$\left(C\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-\left(6\,b\,(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\right.\right.\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\right.\right.$$

$$\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\right.$$

$$\left.\left.\left.\left.\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$

$$\left(3\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$

$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-\right.$$

$$2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\right.$$

$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$

$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]-2\left(2\left(a-b\right)\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\right.\right.$$

$$\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]+\left(a+b\right)\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\right.$$

$$\left.\left.\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\left(9\,a\left(a+b\right)C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/$$

$$\Bigg(\Bigg(9\left(a+b\right)\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]+$$

$$2\left(2\left(a-b\right)\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

$$\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]+\left(a+b\right)\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Bigg)-$$

$$\left(5\,a\left(a+b\right)C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/$$

$$\Bigg(\Bigg(15\left(a+b\right)\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]+$$

$$2\left(2\left(a-b\right)\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

$$\frac{\left(a-b\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]+\left(a+b\right)\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]\Bigg)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)$$

$$\left(a\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-b\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Bigg)\Bigg)+$$

$$\frac{1}{b\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^{2/3}}\,3\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^{1/3}$$

$$\left(\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^{1/3}$$

$$\Bigg(C\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$

$$\Bigg(6\,b\left(a+b\right)B\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]$$

$$\left(-a\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+b\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Bigg)\Bigg/\Bigg(\left(a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2$$

$$\Bigg(-9\left(a+b\right)\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]-$$

$$2\Bigg(2\left(a-b\right)\mathrm{AppellF1}\Big[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,$$

$$\frac{\left(a-b\right)\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]+\left(a+b\right)\mathrm{AppellF1}\Big[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]\Bigg)\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(3\,b\left(a+b\right)C\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]$$

$$\left(-a\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+b\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Bigg)\Bigg/\Bigg(\left(a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2$$

$$\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{3},\,\frac{2}{3},\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-\right.$$

$$2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{3},\,\frac{5}{3},\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{4}{3},\,\frac{2}{3},\,\frac{5}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)-$$

$$\left(6\,b\,(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{3},\,\frac{2}{3},\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{3},\,\frac{2}{3},\,\frac{3}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{3},\,\frac{5}{3},\right.\right.$$

$$\left.\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{4}{3},\right.$$

$$\left.\left.\left.\left.\frac{2}{3},\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+$$

$$\left(3\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{3},\,\frac{2}{3},\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\left(-9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{3},\,\frac{2}{3},\,\frac{3}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{3},\,\frac{5}{3},\right.\right.$$

$$\left.\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{4}{3},\right.$$

$$\left.\left.\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$

$$\left(6 b (a+b) B\left(\frac{1}{9 (a+b)}2 (a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{9}$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-9 (a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]-2\left(2 (a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\right.\right.$$

$$\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\right.$$

$$\left.\left.\left.\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$

$$\left(3 b (a+b) C\left(\frac{1}{9 (a+b)}2 (a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{9}$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/$$

$$\left(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-9 (a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]-2\left(2 (a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\right.\right.$$

$$\frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right] + (a+b)\operatorname{AppellF1}\left[\frac{3}{2}, \frac{4}{3},$$

$$\frac{2}{3}, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\Bigg)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg) -$$

$$\Bigg(5 b (a+b) C \operatorname{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, \frac{2}{3}, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2 \Bigg(-a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right] + b$$

$$\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg) \Bigg/$$

$$\Bigg(\left(a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2 + b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2 \Bigg(-15 (a+b)$$

$$\operatorname{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, \frac{2}{3}, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right] - 2$$

$$\Bigg(2 (a-b)\operatorname{AppellF1}\left[\frac{5}{2}, \frac{1}{3}, \frac{5}{3}, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right] + (a+b)\operatorname{AppellF1}\left[\frac{5}{2}, \frac{4}{3}, \frac{2}{3}, \frac{7}{2},\right.$$

$$\left.\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\Bigg)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(5 b (a+b) C \operatorname{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, \frac{2}{3}, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3\Bigg) \Bigg/$$

$$\Bigg(\left(a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2 + b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg(-15 (a+b)\operatorname{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, \frac{2}{3}, \frac{5}{2},\right.$$

$$\left.\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right] - 2\Bigg(2 (a-b)\operatorname{AppellF1}\left[\frac{5}{2}, \frac{1}{3}, \frac{5}{3},\right.$$

$$\left.\frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right] + (a+b)\operatorname{AppellF1}\left[\frac{5}{2}, \frac{4}{3},\right.$$

$$\frac{2}{3},\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]\Bigg)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(5\,b\,\left(a+b\right)\,C\,\text{AppellF1}\left[\frac{3}{2},\ \frac{1}{3},\ \frac{2}{3},\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\,\Bigg(-15\,\left(a+b\right)\,\text{AppellF1}\Big[\frac{3}{2},\ \frac{1}{3},\ \frac{2}{3},\ \frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]-2\,\Bigg(2\,\left(a-b\right)\,\text{AppellF1}\Big[\frac{5}{2},\ \frac{1}{3},\ \frac{5}{3},$$

$$\frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]+\left(a+b\right)\,\text{AppellF1}\Big[\frac{5}{2},\ \frac{4}{3},$$

$$\frac{2}{3},\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]\Bigg)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(5\,b\,\left(a+b\right)\,C\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\Bigg(\frac{1}{5\,\left(a+b\right)}2\,\left(a-b\right)\,\text{AppellF1}\Big[\frac{5}{2},\ \frac{1}{3},\ \frac{5}{3},\ \frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{5}\,\text{AppellF1}\Big[\frac{5}{2},\ \frac{4}{3},\ \frac{2}{3},\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,$$

$$\frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Bigg)\Bigg/\,\Bigg(\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)$$

$$\Bigg(-15\,\left(a+b\right)\,\text{AppellF1}\left[\frac{3}{2},\ \frac{1}{3},\ \frac{2}{3},\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]-$$

$$2\,\Bigg(2\,\left(a-b\right)\,\text{AppellF1}\Big[\frac{5}{2},\ \frac{1}{3},\ \frac{5}{3},\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,$$

$$\frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]+\left(a+b\right)\,\text{AppellF1}\Big[\frac{5}{2},\ \frac{4}{3},\ \frac{2}{3},\ \frac{7}{2},$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\ \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(9\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left(a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-b\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(\Bigg(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+$$

$$2\Bigg(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\Bigg)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)^2\Bigg)+$$

$$\Bigg(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg(a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-b$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(\Bigg(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+$$

$$2\Bigg(2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\right.$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)^2\Bigg)+$$

$$\Bigg(9\,a\,\left(a+b\right)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)\Bigg/$$

$$\Bigg(\Bigg(9\left(a+b\right)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]+$$

$$2\,\Bigg(2\left(a-b\right)\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,$$

$$\frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]+\left(a+b\right)\,\text{AppellF1}\Big[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Bigg)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Bigg)+$$

$$\Bigg(9\,a\,\left(a+b\right)\,C\,\Bigg(\frac{1}{9\left(a+b\right)}2\left(a-b\right)\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,$$

$$\frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{9}$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Bigg)\,\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(\Bigg(9\left(a+b\right)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\frac{\left(a-b\right)\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]+$$

$$2\,\Bigg(2\left(a-b\right)\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,$$

$$\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big] + (a+b)\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]\Bigg)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left(a\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Bigg)\Bigg) -$$

$$\Bigg(5\,a\,(a+b)\,C\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3\Bigg)\Bigg/$$

$$\Bigg(\Bigg(15\,(a+b)\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]+$$

$$2\Bigg(2\,(a-b)\,\mathrm{AppellF1}\Big[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big] + (a+b)\,\mathrm{AppellF1}\Big[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]\Bigg)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\left(a\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Bigg)\Bigg) -$$

$$\Bigg(5\,a\,(a+b)\,C\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(\Bigg(15\,(a+b)\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]+$$

$$2\Bigg(2\,(a-b)\,\mathrm{AppellF1}\Big[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big] + (a+b)\,\mathrm{AppellF1}\Big[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big)\Big)-\Big(5\,a\,(a+b)$$

$$C\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(\frac{1}{5\,(a+b)}2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5}$$

$$\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\Big/$$

$$\Big(\Big(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+$$

$$2\,\Big(2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\Big[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big)+$$

$$\Big(6\,b\,(a+b)\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big(-2\,\Big(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\Big[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\Big]\Big)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-9\,(a+b)\,\left(\frac{1}{9\,(a+b)}2\,(a-b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{9}\mathrm{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)-2$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\left(2\,(a-b)\,\left(\frac{1}{a+b}(a-b)\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{8}{3},\frac{7}{2},\right.\right.\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{5}\mathrm{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{5}{3},\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+$$

$$(a+b)\,\left(\frac{1}{5\,(a+b)}2\,(a-b)\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{5}{3},\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$

$$\frac{4}{5}\mathrm{AppellF1}\left[\frac{5}{2},\frac{7}{3},\frac{2}{3},\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]$$

$$\left.\left.\left.\left.\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\right)\right)\Bigg/$$

$$\left(\left(a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\left(-9\,(a+b)\,\mathrm{AppellF1}\left[\right.\right.\right.$$

$$\left.\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]-$$

$$2\left(2\,(a-b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\right.$$

$$\left.\left.\left.\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\right)\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)-$$

$$\left(3\,b\,\left(a+b\right)\,C\,\mathrm{AppellF1}\left[\frac{1}{2},\ \frac{1}{3},\ \frac{2}{3},\ \frac{3}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\right.$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\left(-2\left(2\,\left(a-b\right)\,\mathrm{AppellF1}\left[\frac{3}{2},\ \frac{1}{3},\ \frac{5}{3},\ \frac{5}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.\right.$$

$$\left.\frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]+\left(a+b\right)\,\mathrm{AppellF1}\left[\frac{3}{2},\ \frac{4}{3},\ \frac{2}{3},\ \frac{5}{2},\right.$$

$$\left.\left.\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\right)\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-9\,\left(a+b\right)\,\left(\frac{1}{9\,\left(a+b\right)}2\,\left(a-b\right)\,\mathrm{AppellF1}\left[\frac{3}{2},\ \frac{1}{3},\ \frac{5}{3},\right.\right.$$

$$\left.\frac{5}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{9}\,\mathrm{AppellF1}\left[\frac{3}{2},\ \frac{4}{3},\ \frac{2}{3},\ \frac{5}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

$$\left.\left.\frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)-2$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\left(2\,\left(a-b\right)\,\left(\frac{1}{a+b}\left(a-b\right)\,\mathrm{AppellF1}\left[\frac{5}{2},\ \frac{1}{3},\ \frac{8}{3},\ \frac{7}{2},\right.\right.\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{5}\,\mathrm{AppellF1}\left[\frac{5}{2},\ \frac{4}{3},\ \frac{5}{3},\ \frac{7}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

$$\left.\left.\frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+$$

$$\left(a+b\right)\,\left(\frac{1}{5\,\left(a+b\right)}2\,\left(a-b\right)\,\mathrm{AppellF1}\left[\frac{5}{2},\ \frac{4}{3},\ \frac{5}{3},\ \frac{7}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

$$\left.\frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$

$$\frac{4}{5}\,\mathrm{AppellF1}\left[\frac{5}{2},\ \frac{7}{3},\ \frac{2}{3},\ \frac{7}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ \frac{\left(a-b\right)\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}\right]$$

$$\left.\left.\left.\left.\left.\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\right)\right)\Big/$$

$$\left(\left(a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-9\,(a+b)\,\mathrm{AppellF1}\left[\right.\right.\right.$$

$$\left.\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]-$$

$$2\left(2\,(a-b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\right.$$

$$\left.\left.\left.\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)-$$

$$\left(9\,a\,(a+b)\,C\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(2\left(2\,(a-b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$

$$\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\right.$$

$$\left.\left.\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+9\,(a+b)\left(\frac{1}{9\,(a+b)}2\,(a-b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\right.\right.$$

$$\left.\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{9}\mathrm{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(2\,(a-b)\left(\frac{1}{a+b}(a-b)\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{8}{3},\frac{7}{2},\right.\right.\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)+$$

$$(a+b)\left(\frac{1}{5\,(a+b)}2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{4}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{7}{3},\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\left.\left.\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\right)\Bigg/$$

$$\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},\frac{2}{3},\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+\right.\right.$$

$$2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{5}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},\frac{2}{3},\frac{5}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2$$

$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)-$$

$$\left(5\,b\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\right.$$

$$\left.\left.\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]-15(a+b)\left(\frac{1}{5(a+b)}2(a-b)\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5}\mathrm{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-2\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(2(a-b)\left(\frac{1}{21(a+b)}25(a-b)\,\mathrm{AppellF1}\left[\frac{7}{2},\frac{1}{3},\frac{8}{3},\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{21}\mathrm{AppellF1}\left[\frac{7}{2},\frac{4}{3},\frac{5}{3},\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+(a+b)\left(\frac{1}{21(a+b)}10(a-b)\,\mathrm{AppellF1}\left[\frac{7}{2},\frac{4}{3},\frac{5}{3},\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{20}{21}\mathrm{AppellF1}\left[\frac{7}{2},\frac{7}{3},\frac{2}{3},\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\left(\left(a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-15(a+b)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]-2\left(2(a-b)\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+(a+b)\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\right.\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)^2\Big)+$$

$$\Bigg(5\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(2\,\Bigg(2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]+$$

$$(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\Bigg)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+15$$

$$(a+b)\,\Bigg(\frac{1}{5\,(a+b)}2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{1}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\Bigg(2\,(a-b)\,\Bigg(\frac{1}{21\,(a+b)}25\,(a-b)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{3},\frac{8}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{5}{21}\,\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},\frac{5}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)+(a+b)$$

$$\Bigg(\frac{1}{21\,(a+b)}10\,(a-b)\,\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},\frac{5}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}\right]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},\frac{2}{3},\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]$$

$$\left.\left.\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\Big/$$

$$\left(\left(15\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},\frac{2}{3},\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+\right.\right.$$

$$2\left(2\,(a-b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},\frac{5}{3},\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},\frac{2}{3},\frac{7}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)^2$$

$$\left.\left.\left.\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)\right)\right)\right)+$$

$$\frac{3\,C\,(b+a\,\text{Cos}[c+d x])\,\text{Tan}[c+d x]}{b\,d\,(a+b\,\text{Sec}[c+d x])^{2/3}}$$

Problem 861: Result more than twice size of optimal antiderivative.

$$\int\text{Sec}[c+d x]^3\,(a+b\,\text{Sec}[c+d x])\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\,dx$$

Optimal (type 3, 165 leaves, 7 steps):

$$\frac{(4 a A+3 b B+3 a C)\,\text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{(5 A b+5 a B+4 b C)\,\text{Tan}[c+d x]}{5 d}+$$

$$\frac{(4 a A+3 b B+3 a C)\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{8 d}+\frac{(b B+a C)\,\text{Sec}[c+d x]^3\,\text{Tan}[c+d x]}{4 d}+$$

$$\frac{b\,C\,\text{Sec}[c+d x]^4\,\text{Tan}[c+d x]}{5 d}+\frac{(5 A b+5 a B+4 b C)\,\text{Tan}[c+d x]^3}{15 d}$$

Result (type 3, 660 leaves):

$$-\frac{a A \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}-\frac{3 b B \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}-\frac{3 a C \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{a A \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}+\frac{3 b B \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{3 a C \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{b B}{16 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{a C}{16 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{a A}{4 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{3 b B}{16 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{3 a C}{16 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{b B}{16 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{a C}{16 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{a A}{4 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{3 b B}{16 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{3 a C}{16 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{2 A b \text{Tan}[c+d x]}{3 d}+\frac{2 a B \text{Tan}[c+d x]}{3 d}+\frac{8 b C \text{Tan}[c+d x]}{15 d}+\frac{A b \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{3 d}+\frac{a B \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{3 d}+\frac{4 b C \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{15 d}+\frac{b C \text{Sec}[c+d x]^4 \text{Tan}[c+d x]}{5 d}$$

Problem 862: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^2 (a+b \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 137 leaves, 7 steps):

$$\frac{(4 A b+4 a B+3 b C) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{(3 a A+2 b B+2 a C) \text{Tan}[c+d x]}{3 d}+\frac{(4 A b+4 a B+3 b C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{8 d}+\frac{(b B+a C) \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{3 d}+\frac{b C \text{Sec}[c+d x]^3 \text{Tan}[c+d x]}{4 d}$$

Result (type 3, 545 leaves):

$$-\frac{A\,b\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}-\frac{a\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}-\frac{3\,b\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{A\,b\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{a\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{3\,b\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{b\,C}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{A\,b}{4\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{a\,B}{4\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{3\,b\,C}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{b\,C}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}-\frac{A\,b}{4\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{a\,B}{4\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{3\,b\,C}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{a\,A\,\text{Tan}[c+d\,x]}{d}+\frac{2\,b\,B\,\text{Tan}[c+d\,x]}{3\,d}+\frac{2\,a\,C\,\text{Tan}[c+d\,x]}{3\,d}+\frac{b\,B\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}+\frac{a\,C\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}$$

Problem 865: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 52 leaves, 5 steps):

$$(A\,b+a\,B)\,x+\frac{(b\,B+a\,C)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{d}+\frac{a\,A\,\text{Sin}[c+d\,x]}{d}+\frac{b\,C\,\text{Tan}[c+d\,x]}{d}$$

Result (type 3, 187 leaves):

$$A\,b\,x+a\,B\,x-\frac{b\,B\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}-\frac{a\,C\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{b\,B\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{a\,C\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{a\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{d}+\frac{a\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{d}+\frac{b\,C\,\text{Tan}[c+d\,x]}{d}$$

Problem 872: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 134 leaves, 6 steps):

$$a^2 A x+\frac{\left(2 a^2 B+b^2 B+2 a b (2 A+C)\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 d}+\frac{\left(3 A b^2+6 a b B+2 a^2 C+2 b^2 C\right) \text{Tan}[c+d x]}{3 d}+\frac{b (3 b B+2 a C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{6 d}+\frac{C (a+b \text{Sec}[c+d x])^2 \text{Tan}[c+d x]}{3 d}$$

Result (type 3, 322 leaves):

$$\frac{1}{24 d}\text{Sec}[c+d x]^3 \Bigg(9 \text{Cos}[c+d x] \Bigg(2 a^2 A (c+d x)-\left(2 a^2 B+b^2 B+2 a b (2 A+C)\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\left(2 a^2 B+b^2 B+2 a b (2 A+C)\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\Bigg)+3 \text{Cos}[3 (c+d x)] \Bigg(2 a^2 A (c+d x)-\left(2 a^2 B+b^2 B+2 a b (2 A+C)\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\left(2 a^2 B+b^2 B+2 a b (2 A+C)\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\Bigg)+4 \left(3 A b^2+6 a b B+3 a^2 C+4 b^2 C+3 b (b B+2 a C) \text{Cos}[c+d x]+\left(3 A b^2+6 a b B+3 a^2 C+2 b^2 C\right) \text{Cos}[2 (c+d x)]\right) \text{Sin}[c+d x]\Bigg)$$

Problem 873: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x] (a+b \text{Sec}[c+d x])^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 126 leaves, 6 steps):

$$a (2 A b+a B) x+\frac{\left(2 A b^2+4 a b B+2 a^2 C+b^2 C\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 d}+\frac{A (a+b \text{Sec}[c+d x])^2 \text{Sin}[c+d x]}{d}-\frac{b (2 a A-b B-2 a C) \text{Tan}[c+d x]}{d}-\frac{b^2 (2 A-C) \text{Sec}[c+d x] \text{Tan}[c+d x]}{2 d}$$

Result (type 3, 453 leaves):

$$\frac{1}{4d}\text{Sec}[c+dx]^2\left(4aAbc+2a^2Bc+4aAbdx+2a^2Bdx-2Ab^2\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-4abB\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-2a^2C\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-b^2C\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+2Ab^2\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+4abB\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+2a^2C\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+b^2C\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+\text{Cos}[2(c+dx)]\left(2a(2Ab+aB)(c+dx)-(2Ab^2+4abB+2a^2C+b^2C)\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+(2Ab^2+4abB+2a^2C+b^2C)\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)+(a^2A+2b^2C)\text{Sin}[c+dx]+2b^2B\text{Sin}[2(c+dx)]+4abC\text{Sin}[2(c+dx)]+a^2A\text{Sin}[3(c+dx)]\right)$$

Problem 880: Result more than twice size of optimal antiderivative.

$$\int(a+b\,\text{Sec}[c+dx])^3\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)dx$$

Optimal (type 3, 207 leaves, 7 steps):

$$a^3Ax+\frac{1}{8d}\left(8a^3B+12ab^2B+12a^2b(2A+C)+b^3(4A+3C)\right)\text{ArcTanh}[\text{Sin}[c+dx]]+\frac{(16a^2bB+4b^3B+3a^3C+6ab^2(3A+2C))\text{Tan}[c+dx]}{6d}+\frac{b(12Ab^2+20abB+6a^2C+9b^2C)\text{Sec}[c+dx]\text{Tan}[c+dx]}{24d}+\frac{(4bB+3aC)(a+b\,\text{Sec}[c+dx])^2\text{Tan}[c+dx]}{12d}+\frac{C(a+b\,\text{Sec}[c+dx])^3\text{Tan}[c+dx]}{4d}$$

Result (type 3, 687 leaves):

$$\left(\left(-24 a^2 A b-4 A b^3-8 a^3 B-12 a b^2 B-12 a^2 b C-3 b^3 C\right) \mathrm{Cos}[c+d x]^5 \mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right] (a+b \mathrm{Sec}[c+d x])^3 \left(A+B \mathrm{Sec}[c+d x]+C \mathrm{Sec}[c+d x]^2\right)\right) \Big/ \left(4 d (b+a \mathrm{Cos}[c+d x])^3 (A+2 C+2 B \mathrm{Cos}[c+d x]+A \mathrm{Cos}[2 c+2 d x])\right)+$$
$$\left(\left(24 a^2 A b+4 A b^3+8 a^3 B+12 a b^2 B+12 a^2 b C+3 b^3 C\right) \mathrm{Cos}[c+d x]^5 \mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right] (a+b \mathrm{Sec}[c+d x])^3 \left(A+B \mathrm{Sec}[c+d x]+C \mathrm{Sec}[c+d x]^2\right)\right) \Big/ \left(4 d (b+a \mathrm{Cos}[c+d x])^3 (A+2 C+2 B \mathrm{Cos}[c+d x]+A \mathrm{Cos}[2 c+2 d x])\right)+$$
$$\left(1 \Big/ \left(48 d (b+a \mathrm{Cos}[c+d x])^3 (A+2 C+2 B \mathrm{Cos}[c+d x]+A \mathrm{Cos}[2 c+2 d x])\right)\right) \mathrm{Cos}[c+d x] (a+b \mathrm{Sec}[c+d x])^3 \left(A+B \mathrm{Sec}[c+d x]+C \mathrm{Sec}[c+d x]^2\right) \left(36 a^3 A (c+d x)+48 a^3 A (c+d x) \mathrm{Cos}[2 (c+d x)]+12 a^3 A (c+d x) \mathrm{Cos}[4 (c+d x)]+12 A b^3 \mathrm{Sin}[c+d x]+36 a b^2 B \mathrm{Sin}[c+d x]+36 a^2 b C \mathrm{Sin}[c+d x]+33 b^3 C \mathrm{Sin}[c+d x]+72 a A b^2 \mathrm{Sin}[2 (c+d x)]+72 a^2 b B \mathrm{Sin}[2 (c+d x)]+32 b^3 B \mathrm{Sin}[2 (c+d x)]+24 a^3 C \mathrm{Sin}[2 (c+d x)]+96 a b^2 C \mathrm{Sin}[2 (c+d x)]+12 A b^3 \mathrm{Sin}[3 (c+d x)]+36 a b^2 B \mathrm{Sin}[3 (c+d x)]+36 a^2 b C \mathrm{Sin}[3 (c+d x)]+9 b^3 C \mathrm{Sin}[3 (c+d x)]+36 a A b^2 \mathrm{Sin}[4 (c+d x)]+36 a^2 b B \mathrm{Sin}[4 (c+d x)]+8 b^3 B \mathrm{Sin}[4 (c+d x)]+12 a^3 C \mathrm{Sin}[4 (c+d x)]+24 a b^2 C \mathrm{Sin}[4 (c+d x)]\right)$$

Problem 881: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d x] (a+b \mathrm{Sec}[c+d x])^3 \left(A+B \mathrm{Sec}[c+d x]+C \mathrm{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 192 leaves, 7 steps):

$$a^2 (3 A b+a B) x+\frac{\left(6 a^2 b B+b^3 B+2 a^3 C+3 a b^2 (2 A+C)\right) \mathrm{ArcTanh}[\mathrm{Sin}[c+d x]]}{2 d}+\frac{A (a+b \mathrm{Sec}[c+d x])^3 \mathrm{Sin}[c+d x]}{d}+\frac{b \left(9 a b B-a^2 (6 A-8 C)+b^2 (3 A+2 C)\right) \mathrm{Tan}[c+d x]}{3 d}-\frac{b^2 (6 a A-3 b B-5 a C) \mathrm{Sec}[c+d x] \mathrm{Tan}[c+d x]}{6 d}-\frac{b (3 A-C) (a+b \mathrm{Sec}[c+d x])^2 \mathrm{Tan}[c+d x]}{3 d}$$

Result (type 3, 1335 leaves):

$$\left(2 a^2 (3 A b+a B) (c+d x) \mathrm{Cos}[c+d x]^5 (a+b \mathrm{Sec}[c+d x])^3 \left(A+B \mathrm{Sec}[c+d x]+C \mathrm{Sec}[c+d x]^2\right)\right) \Big/ \left(d (b+a \mathrm{Cos}[c+d x])^3 (A+2 C+2 B \mathrm{Cos}[c+d x]+A \mathrm{Cos}[2 c+2 d x])\right)+$$
$$\left(\left(-6 a A b^2-6 a^2 b B-b^3 B-2 a^3 C-3 a b^2 C\right) \mathrm{Cos}[c+d x]^5 \mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right] (a+b \mathrm{Sec}[c+d x])^3 \left(A+B \mathrm{Sec}[c+d x]+C \mathrm{Sec}[c+d x]^2\right)\right) \Big/ \left(d (b+a \mathrm{Cos}[c+d x])^3 (A+2 C+2 B \mathrm{Cos}[c+d x]+A \mathrm{Cos}[2 c+2 d x])\right)+$$

$$\left(\left(6\,a\,A\,b^2+6\,a^2\,b\,B+b^3\,B+2\,a^3\,C+3\,a\,b^2\,C\right)\,\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left(\left(3\,b^3\,B+9\,a\,b^2\,C+b^3\,C\right)\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(6\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)+$$
$$\left(b^3\,C\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$
$$\left(b^3\,C\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$
$$\left(\left(-3\,b^3\,B-9\,a\,b^2\,C-b^3\,C\right)\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(6\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)+$$
$$\left(2\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\left(3\,A\,b^3\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.\right.$$
$$\left.\left.9\,a\,b^2\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+9\,a^2\,b\,C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,b^3\,C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)+$$
$$\left(2\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\left(3\,A\,b^3\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.\right.$$
$$\left.\left.9\,a\,b^2\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+9\,a^2\,b\,C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,b^3\,C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)+$$
$$\left(2\,a^3\,A\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c+d\,x]\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 887: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^2\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 491 leaves, 10 steps):

$$\frac{1}{16\,d}\left(8\,a^4\,B+36\,a^2\,b^2\,B+5\,b^4\,B+8\,a^3\,b\,\left(4\,A+3\,C\right)+4\,a\,b^3\,\left(6\,A+5\,C\right)\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]-$$
$$\frac{1}{420\,b^2\,d}\left(28\,a^5\,b\,B-847\,a^3\,b^3\,B-896\,a\,b^5\,B-8\,a^6\,C-32\,b^6\,\left(7\,A+6\,C\right)-\right.$$
$$\left.4\,a^4\,b^2\,\left(42\,A+23\,C\right)-32\,a^2\,b^4\,\left(49\,A+39\,C\right)\right)\,\text{Tan}[c+d\,x]-\frac{1}{1680\,b\,d}$$
$$\left(56\,a^4\,b\,B-1246\,a^2\,b^3\,B-525\,b^5\,B-16\,a^5\,C-48\,a^3\,b^2\,\left(7\,A+4\,C\right)-4\,a\,b^4\,\left(406\,A+333\,C\right)\right)\,\text{Sec}[c+d\,x]$$
$$\text{Tan}[c+d\,x]-\frac{1}{840\,b^2\,d}\left(28\,a^3\,b\,B-371\,a\,b^3\,B-8\,a^4\,C-32\,b^4\,\left(7\,A+6\,C\right)-12\,a^2\,b^2\,\left(14\,A+9\,C\right)\right)$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\text{Tan}[c+d\,x]-\frac{1}{840\,b^2\,d}$$
$$\left(28\,a^2\,b\,B-175\,b^3\,B-8\,a^3\,C-4\,a\,b^2\,\left(42\,A+31\,C\right)\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\text{Tan}[c+d\,x]+$$
$$\frac{\left(42\,A\,b^2-7\,a\,b\,B+2\,a^2\,C+36\,b^2\,C\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4\,\text{Tan}[c+d\,x]}{210\,b^2\,d}+$$
$$\frac{\left(7\,b\,B-2\,a\,C\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^5\,\text{Tan}[c+d\,x]}{42\,b^2\,d}+\frac{C\,\text{Sec}[c+d\,x]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^5\,\text{Tan}[c+d\,x]}{7\,b\,d}$$

Result (type 3, 1348 leaves):

$$\left(\left(-32 a^3 A b-24 a A b^3-8 a^4 B-36 a^2 b^2 B-5 b^4 B-24 a^3 b C-20 a b^3 C\right)\right.$$
$$\operatorname{Cos}[c+d x]^6 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]$$
$$\left.(a+b \operatorname{Sec}[c+d x])^4\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right) /$$
$$\left(8 d(b+a \operatorname{Cos}[c+d x])^4(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right)+$$
$$\left(\left(32 a^3 A b+24 a A b^3+8 a^4 B+36 a^2 b^2 B+5 b^4 B+24 a^3 b C+20 a b^3 C\right)\right.$$
$$\operatorname{Cos}[c+d x]^6 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]$$
$$\left.(a+b \operatorname{Sec}[c+d x])^4\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right) /$$
$$\left(8 d(b+a \operatorname{Cos}[c+d x])^4(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right)+$$
$$\left((a+b \operatorname{Sec}[c+d x])^4\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left.\left(b^4 B \operatorname{Sin}[c+d x]+4 a b^3 C \operatorname{Sin}[c+d x]\right)\right) /$$
$$\left(3 d(b+a \operatorname{Cos}[c+d x])^4(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right)+$$
$$\left(\operatorname{Cos}[c+d x]^2(a+b \operatorname{Sec}[c+d x])^4\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\left(24 a A b^3 \operatorname{Sin}[c+d x]+\right.\right.$$
$$\left.\left.36 a^2 b^2 B \operatorname{Sin}[c+d x]+5 b^4 B \operatorname{Sin}[c+d x]+24 a^3 b C \operatorname{Sin}[c+d x]+20 a b^3 C \operatorname{Sin}[c+d x]\right)\right) /$$
$$\left(12 d(b+a \operatorname{Cos}[c+d x])^4(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right)+$$
$$\left(\operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^4\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left(32 a^3 A b \operatorname{Sin}[c+d x]+24 a A b^3 \operatorname{Sin}[c+d x]+8 a^4 B \operatorname{Sin}[c+d x]+36 a^2 b^2 B \operatorname{Sin}[c+d x]+\right.$$
$$\left.\left.5 b^4 B \operatorname{Sin}[c+d x]+24 a^3 b C \operatorname{Sin}[c+d x]+20 a b^3 C \operatorname{Sin}[c+d x]\right)\right) /$$
$$\left(8 d(b+a \operatorname{Cos}[c+d x])^4(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right)+$$
$$\left(2 \operatorname{Cos}[c+d x](a+b \operatorname{Sec}[c+d x])^4\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left.\left(7 A b^4 \operatorname{Sin}[c+d x]+28 a b^3 B \operatorname{Sin}[c+d x]+42 a^2 b^2 C \operatorname{Sin}[c+d x]+6 b^4 C \operatorname{Sin}[c+d x]\right)\right) /$$
$$\left(35 d(b+a \operatorname{Cos}[c+d x])^4(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right)+$$
$$\left(2 \operatorname{Cos}[c+d x]^3(a+b \operatorname{Sec}[c+d x])^4\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left(210 a^2 A b^2 \operatorname{Sin}[c+d x]+28 A b^4 \operatorname{Sin}[c+d x]+140 a^3 b B \operatorname{Sin}[c+d x]+112 a b^3 B \operatorname{Sin}[c+d x]+\right.$$
$$\left.\left.35 a^4 C \operatorname{Sin}[c+d x]+168 a^2 b^2 C \operatorname{Sin}[c+d x]+24 b^4 C \operatorname{Sin}[c+d x]\right)\right) /$$
$$\left(105 d(b+a \operatorname{Cos}[c+d x])^4(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right)+$$
$$\left(2 \operatorname{Cos}[c+d x]^5(a+b \operatorname{Sec}[c+d x])^4\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left(105 a^4 A \operatorname{Sin}[c+d x]+420 a^2 A b^2 \operatorname{Sin}[c+d x]+56 A b^4 \operatorname{Sin}[c+d x]+280 a^3 b B \operatorname{Sin}[c+d x]+\right.$$
$$\left.\left.224 a b^3 B \operatorname{Sin}[c+d x]+70 a^4 C \operatorname{Sin}[c+d x]+336 a^2 b^2 C \operatorname{Sin}[c+d x]+48 b^4 C \operatorname{Sin}[c+d x]\right)\right) /$$
$$\left(105 d(b+a \operatorname{Cos}[c+d x])^4(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right)+$$
$$\left(2 b^4 C(a+b \operatorname{Sec}[c+d x])^4\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Tan}[c+d x]\right) /$$
$$\left(7 d(b+a \operatorname{Cos}[c+d x])^4(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right)$$

Problem 889: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 3, 290 leaves, 8 steps):

$$a^4 A x+\frac{1}{8 d}\left(8 a^4 B+24 a^2 b^2 B+3 b^4 B+16 a^3 b\,(2 A+C)+4 a b^3\,(4 A+3 C)\right)\text{ArcTanh}[\text{Sin}[c+d x]]+\frac{1}{30 d}\left(95 a^3 b B+80 a b^3 B+12 a^4 C+4 b^4\,(5 A+4 C)+2 a^2 b^2\,(85 A+56 C)\right)\text{Tan}[c+d x]+\frac{1}{120 d}b\,\left(130 a^2 b B+45 b^3 B+24 a^3 C+4 a b^2\,(40 A+29 C)\right)\text{Sec}[c+d x]\,\text{Tan}[c+d x]+\frac{\left(20 A b^2+35 a b B+12 a^2 C+16 b^2 C\right)(a+b\,\text{Sec}[c+d x])^2\,\text{Tan}[c+d x]}{60 d}+\frac{(5 b B+4 a C)\,(a+b\,\text{Sec}[c+d x])^3\,\text{Tan}[c+d x]}{20 d}+\frac{C\,(a+b\,\text{Sec}[c+d x])^4\,\text{Tan}[c+d x]}{5 d}$$

Result (type 3, 915 leaves):

$$\Big(\left(-32 a^3 A b-16 a A b^3-8 a^4 B-24 a^2 b^2 B-3 b^4 B-16 a^3 b C-12 a b^3 C\right)\text{Cos}[c+d x]^6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+b\,\text{Sec}[c+d x])^4\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Big)\Big/\left(4 d\,(b+a\,\text{Cos}[c+d x])^4\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\right)+\Big(\left(32 a^3 A b+16 a A b^3+8 a^4 B+24 a^2 b^2 B+3 b^4 B+16 a^3 b C+12 a b^3 C\right)\text{Cos}[c+d x]^6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+b\,\text{Sec}[c+d x])^4\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\Big)\Big/\left(4 d\,(b+a\,\text{Cos}[c+d x])^4\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\right)+\Big(\text{Cos}[c+d x]\,(a+b\,\text{Sec}[c+d x])^4\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\big(600 a^4 A\,(c+d x)\,\text{Cos}[c+d x]+300 a^4 A\,(c+d x)\,\text{Cos}[3 (c+d x)]+60 a^4 A\,(c+d x)\,\text{Cos}[5 (c+d x)]+720 a^2 A b^2\,\text{Sin}[c+d x]+160 A b^4\,\text{Sin}[c+d x]+480 a^3 b B\,\text{Sin}[c+d x]+640 a b^3 B\,\text{Sin}[c+d x]+120 a^4 C\,\text{Sin}[c+d x]+960 a^2 b^2 C\,\text{Sin}[c+d x]+320 b^4 C\,\text{Sin}[c+d x]+480 a A b^3\,\text{Sin}[2 (c+d x)]+720 a^2 b^2 B\,\text{Sin}[2 (c+d x)]+210 b^4 B\,\text{Sin}[2 (c+d x)]+480 a^3 b C\,\text{Sin}[2 (c+d x)]+840 a b^3 C\,\text{Sin}[2 (c+d x)]+1080 a^2 A b^2\,\text{Sin}[3 (c+d x)]+200 A b^4\,\text{Sin}[3 (c+d x)]+720 a^3 b B\,\text{Sin}[3 (c+d x)]+800 a b^3 B\,\text{Sin}[3 (c+d x)]+180 a^4 C\,\text{Sin}[3 (c+d x)]+1200 a^2 b^2 C\,\text{Sin}[3 (c+d x)]+160 b^4 C\,\text{Sin}[3 (c+d x)]+240 a A b^3\,\text{Sin}[4 (c+d x)]+360 a^2 b^2 B\,\text{Sin}[4 (c+d x)]+45 b^4 B\,\text{Sin}[4 (c+d x)]+240 a^3 b C\,\text{Sin}[4 (c+d x)]+180 a b^3 C\,\text{Sin}[4 (c+d x)]+360 a^2 A b^2\,\text{Sin}[5 (c+d x)]+40 A b^4\,\text{Sin}[5 (c+d x)]+240 a^3 b B\,\text{Sin}[5 (c+d x)]+160 a b^3 B\,\text{Sin}[5 (c+d x)]+60 a^4 C\,\text{Sin}[5 (c+d x)]+240 a^2 b^2 C\,\text{Sin}[5 (c+d x)]+32 b^4 C\,\text{Sin}[5 (c+d x)]\big)\Big)\Big/\left(480 d\,(b+a\,\text{Cos}[c+d x])^4\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\right)$$

Problem 890: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 3, 273 leaves, 8 steps):

$$a^3\,(4\,A\,b+a\,B)\,x+\frac{1}{8\,d}(32\,a^3\,b\,B+16\,a\,b^3\,B+8\,a^4\,C+24\,a^2\,b^2\,(2\,A+C)+b^4\,(4\,A+3\,C))\,\text{ArcTanh}[\text{Sin}[c+d\,x]]+\frac{A\,(a+b\,\text{Sec}[c+d\,x])^4\,\text{Sin}[c+d\,x]}{d}+\frac{b\,(34\,a^2\,b\,B+4\,b^3\,B-a^3\,(12\,A-19\,C)+8\,a\,b^2\,(3\,A+2\,C))\,\text{Tan}[c+d\,x]}{6\,d}+\frac{1}{24\,d}b^2\,(32\,a\,b\,B-a^2\,(24\,A-26\,C)+3\,b^2\,(4\,A+3\,C))\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]-\frac{b\,(12\,a\,A-4\,b\,B-7\,a\,C)\,(a+b\,\text{Sec}[c+d\,x])^2\,\text{Tan}[c+d\,x]}{12\,d}-\frac{b\,(4\,A-C)\,(a+b\,\text{Sec}[c+d\,x])^3\,\text{Tan}[c+d\,x]}{4\,d}$$

Result (type 3, 813 leaves):

$$\Big(\big(-48\,a^2\,A\,b^2-4\,A\,b^4-32\,a^3\,b\,B-16\,a\,b^3\,B-8\,a^4\,C-24\,a^2\,b^2\,C-3\,b^4\,C\big)\,\text{Cos}[c+d\,x]^6\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\Big)\Big/\big(4\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\big)+\Big(\big(48\,a^2\,A\,b^2+4\,A\,b^4+32\,a^3\,b\,B+16\,a\,b^3\,B+8\,a^4\,C+24\,a^2\,b^2\,C+3\,b^4\,C\big)\,\text{Cos}[c+d\,x]^6\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\Big)\Big/\big(4\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\big)+\big(1\big/\big(48\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\big)\big)\,\text{Cos}[c+d\,x]^2\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,(144\,a^3\,A\,b\,(c+d\,x)+36\,a^4\,B\,(c+d\,x)+192\,a^3\,A\,b\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+48\,a^4\,B\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+48\,a^3\,A\,b\,(c+d\,x)\,\text{Cos}[4\,(c+d\,x)]+12\,a^4\,B\,(c+d\,x)\,\text{Cos}[4\,(c+d\,x)]+12\,a^4\,A\,\text{Sin}[c+d\,x]+12\,A\,b^4\,\text{Sin}[c+d\,x]+48\,a\,b^3\,B\,\text{Sin}[c+d\,x]+72\,a^2\,b^2\,C\,\text{Sin}[c+d\,x]+33\,b^4\,C\,\text{Sin}[c+d\,x]+96\,a\,A\,b^3\,\text{Sin}[2\,(c+d\,x)]+144\,a^2\,b^2\,B\,\text{Sin}[2\,(c+d\,x)]+32\,b^4\,B\,\text{Sin}[2\,(c+d\,x)]+96\,a^3\,b\,C\,\text{Sin}[2\,(c+d\,x)]+128\,a\,b^3\,C\,\text{Sin}[2\,(c+d\,x)]+18\,a^4\,A\,\text{Sin}[3\,(c+d\,x)]+12\,A\,b^4\,\text{Sin}[3\,(c+d\,x)]+48\,a\,b^3\,B\,\text{Sin}[3\,(c+d\,x)]+72\,a^2\,b^2\,C\,\text{Sin}[3\,(c+d\,x)]+9\,b^4\,C\,\text{Sin}[3\,(c+d\,x)]+48\,a\,A\,b^3\,\text{Sin}[4\,(c+d\,x)]+72\,a^2\,b^2\,B\,\text{Sin}[4\,(c+d\,x)]+8\,b^4\,B\,\text{Sin}[4\,(c+d\,x)]+48\,a^3\,b\,C\,\text{Sin}[4\,(c+d\,x)]+32\,a\,b^3\,C\,\text{Sin}[4\,(c+d\,x)]+6\,a^4\,A\,\text{Sin}[5\,(c+d\,x)])$$

Problem 898: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\mathrm{Sec}[c+d\,x])^2\,\left(a\,b\,B-a^2\,C+b^2\,B\,\mathrm{Sec}[c+d\,x]+b^2\,C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 149 leaves, 7 steps):

$$a^3\,(b\,B-a\,C)\,x+\frac{b\,\left(6\,a^2\,b\,B+b^3\,B-4\,a^3\,C+2\,a\,b^2\,C\right)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,d}+\frac{b^2\,\left(9\,a\,b\,B-a^2\,C+2\,b^2\,C\right)\,\mathrm{Tan}[c+d\,x]}{3\,d}+\frac{b^3\,(3\,b\,B+2\,a\,C)\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{6\,d}+\frac{b^2\,C\,(a+b\,\mathrm{Sec}[c+d\,x])^2\,\mathrm{Tan}[c+d\,x]}{3\,d}$$

Result (type 3, 462 leaves):

$$-\frac{a^3\,(-b\,B+a\,C)\,(c+d\,x)}{d}+\frac{1}{2\,d}\left(-6\,a^2\,b^2\,B-b^4\,B+4\,a^3\,b\,C-2\,a\,b^3\,C\right)\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{1}{2\,d}\left(6\,a^2\,b^2\,B+b^4\,B-4\,a^3\,b\,C+2\,a\,b^3\,C\right)\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{3\,b^4\,B+6\,a\,b^3\,C+b^4\,C}{12\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{b^4\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{6\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+\frac{b^4\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{6\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+\frac{-3\,b^4\,B-6\,a\,b^3\,C-b^4\,C}{12\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{9\,a\,b^3\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,b^4\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{3\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}+\frac{9\,a\,b^3\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,b^4\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{3\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}$$

Problem 899: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\mathrm{Sec}[c+d\,x])\,\left(a\,b\,B-a^2\,C+b^2\,B\,\mathrm{Sec}[c+d\,x]+b^2\,C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 97 leaves, 6 steps):

$$a^2\,(b\,B-a\,C)\,x+\frac{b\,\left(4\,a\,b\,B-2\,a^2\,C+b^2\,C\right)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,d}+\frac{b^2\,(2\,b\,B+a\,C)\,\mathrm{Tan}[c+d\,x]}{2\,d}+\frac{b^2\,C\,(a+b\,\mathrm{Sec}[c+d\,x])\,\mathrm{Tan}[c+d\,x]}{2\,d}$$

Result (type 3, 379 leaves):

$$-\frac{1}{4d}\text{Sec}[c+dx]^2\left(-2a^2bBc+2a^3cC-2a^2bBdx+2a^3Cdx+4ab^2B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-2a^2bC\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+b^3C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-4ab^2B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+2a^2bC\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-b^3C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+\text{Cos}[2(c+dx)]\left(2a^2(-bB+aC)(c+dx)+b(4abB-2a^2C+b^2C)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-b(4abB-2a^2C+b^2C)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)-2b^3C\,\text{Sin}[c+dx]-2b^3B\,\text{Sin}[2(c+dx)]-2ab^2C\,\text{Sin}[2(c+dx)]\right)$$

Problem 900: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]^3\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)}{a+b\,\text{Sec}[c+dx]}\,dx$$

Optimal (type 3, 215 leaves, 8 steps):

$$\frac{\left(2a^2bB+b^3B-2a^3C-ab^2(2A+C)\right)\text{ArcTanh}[\text{Sin}[c+dx]]}{2b^4d}+\frac{2a^2\left(Ab^2-a(bB-aC)\right)\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a+b}}\right]}{\sqrt{a-b}\,b^4\sqrt{a+b}\,d}+\frac{\left(3Ab^2-3abB+3a^2C+2b^2C\right)\text{Tan}[c+dx]}{3b^3d}+\frac{(bB-aC)\,\text{Sec}[c+dx]\,\text{Tan}[c+dx]}{2b^2d}+\frac{C\,\text{Sec}[c+dx]^2\,\text{Tan}[c+dx]}{3bd}$$

Result (type 3, 965 leaves):

$$\left(\left(2\,a\,A\,b^2-2\,a^2\,b\,B-b^3\,B+2\,a^3\,C+a\,b^2\,C\right)\,\text{Cos}[c+d\,x]\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(b^4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)\right)+$$

$$\left(\left(-2\,a\,A\,b^2+2\,a^2\,b\,B+b^3\,B-2\,a^3\,C-a\,b^2\,C\right)\,\text{Cos}[c+d\,x]\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(b^4\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)\right)+$$

$$\left(\left(A\,b^2-a\,b\,B+a^2\,C\right)\,\text{Cos}[c+d\,x]\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(-\left(\left(4\,i\,a^2\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}-\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}\right)\left(-i\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+i\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\,\text{Cos}[c]\right)\Big/\left(b^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}\right)\right)-\left(4\,a^2\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}-\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}\right)\left(-i\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+i\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\,\text{Sin}[c]\right)\Big/\left(b^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}\right)\right)\right)\Big/\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)\right)+$$

$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(12\,A\,b^2\,\text{Sin}[d\,x]-12\,a\,b\,B\,\text{Sin}[d\,x]+12\,a^2\,C\,\text{Sin}[d\,x]+12\,b^2\,C\,\text{Sin}[d\,x]-6\,A\,b^2\,\text{Sin}[2\,c+d\,x]+6\,a\,b\,B\,\text{Sin}[2\,c+d\,x]-6\,a^2\,C\,\text{Sin}[2\,c+d\,x]+3\,b^2\,B\,\text{Sin}[c+2\,d\,x]-3\,a\,b\,C\,\text{Sin}[c+2\,d\,x]+3\,b^2\,B\,\text{Sin}[3\,c+2\,d\,x]-3\,a\,b\,C\,\text{Sin}[3\,c+2\,d\,x]+6\,A\,b^2\,\text{Sin}[2\,c+3\,d\,x]-6\,a\,b\,B\,\text{Sin}[2\,c+3\,d\,x]+6\,a^2\,C\,\text{Sin}[2\,c+3\,d\,x]+4\,b^2\,C\,\text{Sin}[2\,c+3\,d\,x]\right)\right)\Big/\left(12\,b^3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 901: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+b\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 153 leaves, 7 steps):

$$\frac{\left(b^2 (2 A+C)-2 a (b B-a C)\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 b^3 d}-\frac{2 a \left(A b^2-a (b B-a C)\right) \text{ArcTanh}\left[\frac{\sqrt{a-b} \text{ Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]}{\sqrt{a-b}\, b^3 \sqrt{a+b}\, d}+\frac{(b B-a C) \text{Tan}[c+d x]}{b^2 d}+\frac{C \text{Sec}[c+d x] \text{Tan}[c+d x]}{2 b d}$$

Result (type 3, 472 leaves):

$$\Bigg(\text{Cos}[c+d x] (b+a \text{Cos}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\Bigg(-2 \left(2 A b^2-2 a b B+2 a^2 C+b^2 C\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+$$
$$2 \left(2 A b^2-2 a b B+2 a^2 C+b^2 C\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+$$
$$\Bigg(8 a \left(A b^2+a (-b B+a C)\right) \text{ArcTan}\Big[$$
$$\frac{(\mathrm{i} \text{Cos}[c]+\text{Sin}[c]) \left(a \text{Sin}[c]+(-b+a \text{Cos}[c]) \text{Tan}\left[\frac{d x}{2}\right]\right)}{\sqrt{a^2-b^2} \sqrt{(\text{Cos}[c]-\mathrm{i} \text{Sin}[c])^2}}\Big] (\mathrm{i} \text{Cos}[c]+\text{Sin}[c])\Bigg)\Bigg/$$
$$\left(\sqrt{a^2-b^2} \sqrt{(\text{Cos}[c]-\mathrm{i} \text{Sin}[c])^2}\right)+\frac{b^2 C}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+$$
$$\frac{4 b (b B-a C) \text{Sin}\left[\frac{d x}{2}\right]}{\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}-$$
$$\frac{b^2 C}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+$$
$$\frac{4 b (b B-a C) \text{Sin}\left[\frac{d x}{2}\right]}{\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}\Bigg)\Bigg)\Bigg/$$
$$\left(2 b^3 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 (c+d x)]) (a+b \text{Sec}[c+d x])\right)$$

Problem 902: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{a+b \text{Sec}[c+d x]} \, dx$$

Optimal (type 3, 106 leaves, 6 steps):

$$\frac{(b B-a C) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{b^2 d}+\frac{2 \left(A b^2-a (b B-a C)\right) \operatorname{ArcTanh}\left[\frac{\sqrt{a-b} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]}{\sqrt{a-b}\, b^2 \sqrt{a+b}\, d}+\frac{C \operatorname{Tan}[c+d x]}{b d}$$

Result (type 3, 365 leaves):

$$\frac{1}{b^2 d\, (A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 (c+d x)])\, (a+b \operatorname{Sec}[c+d x])}$$
$$2 \operatorname{Cos}[c+d x]\, (b+a \operatorname{Cos}[c+d x])\, \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\left(-(b B-a C) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\right.$$
$$(b B-a C) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-$$
$$\left(2 i \left(A b^2+a (-b B+a C)\right) \operatorname{ArcTan}\left[\frac{(i \operatorname{Cos}[c]+\operatorname{Sin}[c]) \left(a \operatorname{Sin}[c]+(-b+a \operatorname{Cos}[c]) \operatorname{Tan}\left[\frac{d x}{2}\right]\right)}{\sqrt{a^2-b^2} \sqrt{(\operatorname{Cos}[c]-i \operatorname{Sin}[c])^2}}\right]\right.$$
$$\left.(\operatorname{Cos}[c]-i \operatorname{Sin}[c])\right) \Big/ \left(\sqrt{a^2-b^2} \sqrt{(\operatorname{Cos}[c]-i \operatorname{Sin}[c])^2}\right)+$$
$$\frac{b C \operatorname{Sin}\left[\frac{d x}{2}\right]}{\left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}+$$
$$\left.\frac{b C \operatorname{Sin}\left[\frac{d x}{2}\right]}{\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}\right)$$

Problem 903: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2}{a+b \operatorname{Sec}[c+d x]}\, dx$$

Optimal (type 3, 94 leaves, 6 steps):

$$\frac{A x}{a}+\frac{C \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{b d}-\frac{2 \left(A b^2-a (b B-a C)\right) \operatorname{ArcTanh}\left[\frac{\sqrt{a-b} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]}{a \sqrt{a-b}\, b \sqrt{a+b}\, d}$$

Result (type 3, 261 leaves):

$$\left(2\left(C+B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[c+d\,x]^2\right)\left(\sqrt{a^2-b^2}\left(A\,b\,d\,x-a\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+a\,C\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}+2\left(A\,b^2+a(-b\,B+a\,C)\right)\text{ArcTan}\left[\frac{(i\,\text{Cos}[c]+\text{Sin}[c])\left(a\,\text{Sin}[c]+(-b+a\,\text{Cos}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}\right](i\,\text{Cos}[c]+\text{Sin}[c])\right)\right)\Big/\left(a\,b\sqrt{a^2-b^2}\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2(c+d\,x)]\right)\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}\right)$$

Problem 908: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(a+b\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 3, 407 leaves, 9 steps):

$$\frac{\left(6\,a^2\,b\,B+b^3\,B-8\,a^3\,C-2\,a\,b^2\,(2\,A+C)\right)\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,b^5\,d}+\left(2\,a^2\left(2\,a^2\,A\,b^2-3\,A\,b^4-3\,a^3\,b\,B+4\,a\,b^3\,B+4\,a^4\,C-5\,a^2\,b^2\,C\right)\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/\left((a-b)^{3/2}\,b^5\,(a+b)^{3/2}\,d\right)-\frac{1}{3\,b^4\left(a^2-b^2\right)d}\left(9\,a^3\,b\,B-6\,a\,b^3\,B-a^2\,b^2\,(6\,A-7\,C)-12\,a^4\,C+b^4\,(3\,A+2\,C)\right)\text{Tan}[c+d\,x]+\frac{\left(3\,a^2\,b\,B-b^3\,B-2\,a\,b^2\,(A-C)-4\,a^3\,C\right)\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,b^3\left(a^2-b^2\right)d}+\frac{\left(3\,A\,b^2-3\,a\,b\,B+4\,a^2\,C-b^2\,C\right)\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,b^2\left(a^2-b^2\right)d}-\frac{\left(A\,b^2-a\,(b\,B-a\,C)\right)\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{b\left(a^2-b^2\right)d\,(a+b\,\text{Sec}[c+d\,x])}$$

Result (type 3, 973 leaves):

$$-\left(\left(4 a^2 \left(-2 a^2 A b^2+3 A b^4+3 a^3 b B-4 a b^3 B-4 a^4 C+5 a^2 b^2 C\right) \text{ArcTanh}\left[\frac{(-a+b) \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right] (b+a \text{Cos}[c+d x])^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(b^5 \sqrt{a^2-b^2} \left(-a^2+b^2\right) d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+b \text{Sec}[c+d x])^2\right)\right)+$$

$$\left(\left(4 a A b^2-6 a^2 b B-b^3 B+8 a^3 C+2 a b^2 C\right) (b+a \text{Cos}[c+d x])^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(b^5 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+b \text{Sec}[c+d x])^2\right)+$$

$$\left(\left(-4 a A b^2+6 a^2 b B+b^3 B-8 a^3 C-2 a b^2 C\right) (b+a \text{Cos}[c+d x])^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right) \Big/ \left(b^5 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+b \text{Sec}[c+d x])^2\right)+$$

$$\Big(\left((b+a \text{Cos}[c+d x]) \text{Sec}[c+d x]^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right.$$
$$\left(-6 a^2 A b^3 \text{Sin}[c+d x]+6 A b^5 \text{Sin}[c+d x]+9 a^3 b^2 B \text{Sin}[c+d x]-9 a b^4 B \text{Sin}[c+d x]-\right.$$
$$12 a^4 b C \text{Sin}[c+d x]+12 b^5 C \text{Sin}[c+d x]-12 a^3 A b^2 \text{Sin}[2 (c+d x)]+$$
$$6 a A b^4 \text{Sin}[2 (c+d x)]+18 a^4 b B \text{Sin}[2 (c+d x)]-18 a^2 b^3 B \text{Sin}[2 (c+d x)]+$$
$$6 b^5 B \text{Sin}[2 (c+d x)]-24 a^5 C \text{Sin}[2 (c+d x)]+22 a^3 b^2 C \text{Sin}[2 (c+d x)]-$$
$$4 a b^4 C \text{Sin}[2 (c+d x)]-6 a^2 A b^3 \text{Sin}[3 (c+d x)]+6 A b^5 \text{Sin}[3 (c+d x)]+$$
$$9 a^3 b^2 B \text{Sin}[3 (c+d x)]-9 a b^4 B \text{Sin}[3 (c+d x)]-12 a^4 b C \text{Sin}[3 (c+d x)]+$$
$$8 a^2 b^3 C \text{Sin}[3 (c+d x)]+4 b^5 C \text{Sin}[3 (c+d x)]-6 a^3 A b^2 \text{Sin}[4 (c+d x)]+$$
$$3 a A b^4 \text{Sin}[4 (c+d x)]+9 a^4 b B \text{Sin}[4 (c+d x)]-6 a^2 b^3 B \text{Sin}[4 (c+d x)]-$$
$$\left.\left.12 a^5 C \text{Sin}[4 (c+d x)]+7 a^3 b^2 C \text{Sin}[4 (c+d x)]+2 a b^4 C \text{Sin}[4 (c+d x)]\right)\right) \Big/$$
$$\left(12 b^4 \left(-a^2+b^2\right) d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+b \text{Sec}[c+d x])^2\right)$$

Problem 910: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+b \text{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 177 leaves, 7 steps):

$$\frac{(b B-2 a C) \text{ArcTanh}[\text{Sin}[c+d x]]}{b^3 d}-\frac{2 \left(A b^4+a^3 b B-2 a b^3 B-2 a^4 C+3 a^2 b^2 C\right) \text{ArcTanh}\left[\frac{\sqrt{a-b} \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a+b}}\right]}{(a-b)^{3/2} b^3 (a+b)^{3/2} d}+$$
$$\frac{C \text{Tan}[c+d x]}{b^2 d}+\frac{a \left(A b^2-a (b B-a C)\right) \text{Tan}[c+d x]}{b^2 \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])}$$

Result (type 3, 382 leaves):

$$\left(1\Big/\left(b^3\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,(c+d\,x)]\right)\,(a+b\,\mathrm{Sec}[c+d\,x])^2\right)\right)$$
$$2\,(b+a\,\mathrm{Cos}[c+d\,x])\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\frac{1}{\left(a^2-b^2\right)^{3/2}}2\,\left(A\,b^4+a\,\left(a^2\,b\,B-2\,b^3\,B-2\,a^3\,C+3\,a\,b^2\,C\right)\right)\,\mathrm{ArcTanh}\left[\frac{(-a+b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]\right.$$
$$(b+a\,\mathrm{Cos}[c+d\,x])-(b\,B-2\,a\,C)\,(b+a\,\mathrm{Cos}[c+d\,x])$$
$$\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+(b\,B-2\,a\,C)\,(b+a\,\mathrm{Cos}[c+d\,x])$$
$$\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{b\,C\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}+$$
$$\left.\frac{b\,C\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}+\frac{a\,b\,\left(A\,b^2+a\,(-b\,B+a\,C)\right)\,\mathrm{Sin}[c+d\,x]}{(a-b)\,(a+b)}\right)$$

Problem 911: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{(a+b\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 3, 148 leaves, 6 steps):

$$\frac{C\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{b^2\,d}+$$
$$\frac{2\,\left(a\,A\,b^2-b^3\,B-a^3\,C+2\,a\,b^2\,C\right)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a-b}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]}{(a-b)^{3/2}\,b^2\,(a+b)^{3/2}\,d}-\frac{\left(A\,b^2-a\,(b\,B-a\,C)\right)\,\mathrm{Tan}[c+d\,x]}{b\,\left(a^2-b^2\right)\,d\,(a+b\,\mathrm{Sec}[c+d\,x])}$$

Result (type 3, 356 leaves):

$$\left(1\Big/\left(b^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2\right)\right)$$
$$2\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-C\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]+\right.$$
$$C\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]+\left(2\,\left(b^3\,B+a^3\,C-a\,b^2\,\left(A+2\,C\right)\right)\right.$$
$$\text{ArcTan}\left[\frac{\left(\mathrm{i}\,\text{Cos}[c]+\text{Sin}[c]\right)\,\left(a\,\text{Sin}[c]+\left(-b+a\,\text{Cos}[c]\right)\,\text{Tan}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{\left(\text{Cos}[c]-\mathrm{i}\,\text{Sin}[c]\right)^2}}\right]$$
$$\left.\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(\mathrm{i}\,\text{Cos}[c]+\text{Sin}[c]\right)\right)\Big/\left(\left(a^2-b^2\right)^{3/2}\,\sqrt{\left(\text{Cos}[c]-\mathrm{i}\,\text{Sin}[c]\right)^2}\right)+$$
$$\left.\frac{b\,\left(A\,b^2+a\,\left(-b\,B+a\,C\right)\right)\,\left(b\,\text{Sin}[c]-a\,\text{Sin}[d\,x]\right)}{a\,\left(a-b\right)\,\left(a+b\right)\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\right)$$

Problem 912: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\left(a+b\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 3, 138 leaves, 5 steps):

$$\frac{A\,x}{a^2}-\frac{2\,\left(2\,a^2\,A\,b-A\,b^3-a^3\,B+a^2\,b\,C\right)\,\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]}{a^2\,\left(a-b\right)^{3/2}\,\left(a+b\right)^{3/2}\,d}+\frac{\left(A\,b^2-a\,\left(b\,B-a\,C\right)\right)\,\text{Tan}[c+d\,x]}{a\,\left(a^2-b^2\right)\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)}$$

Result (type 3, 299 leaves):

$$\left(2\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(A\,x\,\left(b+a\,\text{Cos}[c+d\,x]\right)-\left(2\,\mathrm{i}\,\left(A\,b^3+a^3\,B-a^2\,b\,\left(2\,A+C\right)\right)\right.\right.$$

$$\text{ArcTan}\left[\frac{\left(\mathrm{i}\,\text{Cos}[c]+\text{Sin}[c]\right)\,\left(a\,\text{Sin}[c]+\left(-b+a\,\text{Cos}[c]\right)\,\text{Tan}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{\left(\text{Cos}[c]-\mathrm{i}\,\text{Sin}[c]\right)^2}}\right]$$

$$\left.\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(\text{Cos}[c]-\mathrm{i}\,\text{Sin}[c]\right)\right)\Big/\left(\left(a^2-b^2\right)^{3/2}\,d\,\sqrt{\left(\text{Cos}[c]-\mathrm{i}\,\text{Sin}[c]\right)^2}\right)+$$

$$\left.\left.\frac{\left(A\,b^2+a\,\left(-b\,B+a\,C\right)\right)\,\left(-b\,\text{Sin}[c]+a\,\text{Sin}[d\,x]\right)}{\left(a-b\right)\,\left(a+b\right)\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\right)\right)\Big/$$

$$\left(a^2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2\right)$$

Problem 916: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 3, 465 leaves, 9 steps):

$$\frac{\left(2\,A\,b^2-6\,a\,b\,B+12\,a^2\,C+b^2\,C\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,b^5\,d}-$$

$$\left(a\,\left(6\,A\,b^6-6\,a^5\,b\,B+15\,a^3\,b^3\,B-12\,a\,b^5\,B+a^4\,b^2\,\left(2\,A-29\,C\right)-5\,a^2\,b^4\,\left(A-4\,C\right)+12\,a^6\,C\right)\right.$$

$$\left.\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]}{\sqrt{a+b}}\right]\right)\Big/\left(\left(a-b\right)^{5/2}\,b^5\,\left(a+b\right)^{5/2}\,d\right)+\frac{1}{2\,b^4\,\left(a^2-b^2\right)^2\,d}$$

$$\left(6\,a^4\,b\,B-11\,a^2\,b^3\,B+2\,b^5\,B-a^3\,b^2\,\left(2\,A-21\,C\right)+a\,b^4\,\left(5\,A-6\,C\right)-12\,a^5\,C\right)\,\text{Tan}[c+d\,x]-$$

$$\frac{1}{2\,b^3\,\left(a^2-b^2\right)^2\,d}\left(3\,a^3\,b\,B-6\,a\,b^3\,B-a^2\,b^2\,\left(A-10\,C\right)+b^4\,\left(4\,A-C\right)-6\,a^4\,C\right)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]-$$

$$\frac{\left(A\,b^2-a\,\left(b\,B-a\,C\right)\right)\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{2\,b\,\left(a^2-b^2\right)\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2}+$$

$$\left(\left(3\,A\,b^4+a\,\left(2\,a^2\,b\,B-5\,b^3\,B-4\,a^3\,C+7\,a\,b^2\,C\right)\right)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)\Big/$$

$$\left(2\,b^2\,\left(a^2-b^2\right)^2\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)\right)$$

Result (type 3, 1124 leaves):

$$\left(2\,a\,\left(2\,a^4\,A\,b^2-5\,a^2\,A\,b^4+6\,A\,b^6-6\,a^5\,b\,B+15\,a^3\,b^3\,B-12\,a\,b^5\,B+12\,a^6\,C-29\,a^4\,b^2\,C+20\,a^2\,b^4\,C\right)\right.$$
$$\text{ArcTanh}\left[\frac{\left(-a+b\right)\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]}{\sqrt{a^2-b^2}}\right]\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3$$
$$\left.\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(b^5\,\sqrt{a^2-b^2}\,\left(-a^2+b^2\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(\left(-2\,A\,b^2+6\,a\,b\,B-12\,a^2\,C-b^2\,C\right)\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]\right.$$
$$\left.\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(b^5\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(\left(2\,A\,b^2-6\,a\,b\,B+12\,a^2\,C+b^2\,C\right)\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]\right.$$
$$\left.\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(b^5\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c+d\,x]^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-6\,a^4\,A\,b^3\,\text{Sin}[c+d\,x]+12\,a^2\,A\,b^5\,\text{Sin}[c+d\,x]+18\,a^5\,b^2\,B\,\text{Sin}[c+d\,x]-32\,a^3\,b^4\,B\,\text{Sin}[c+d\,x]+\right.$$
$$8\,a\,b^6\,B\,\text{Sin}[c+d\,x]-36\,a^6\,b\,C\,\text{Sin}[c+d\,x]+72\,a^4\,b^3\,C\,\text{Sin}[c+d\,x]-38\,a^2\,b^5\,C\,\text{Sin}[c+d\,x]+$$
$$8\,b^7\,C\,\text{Sin}[c+d\,x]-4\,a^5\,A\,b^2\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]+10\,a^3\,A\,b^4\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]+$$
$$12\,a^6\,b\,B\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]-14\,a^4\,b^3\,B\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]-12\,a^2\,b^5\,B\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]+$$
$$8\,b^7\,B\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]-24\,a^7\,C\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]+26\,a^5\,b^2\,C\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]+$$
$$20\,a^3\,b^4\,C\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]-16\,a\,b^6\,C\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]-6\,a^4\,A\,b^3\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]+$$
$$12\,a^2\,A\,b^5\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]+18\,a^5\,b^2\,B\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]-32\,a^3\,b^4\,B\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]+$$
$$8\,a\,b^6\,B\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]-36\,a^6\,b\,C\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]+64\,a^4\,b^3\,C\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]-$$
$$22\,a^2\,b^5\,C\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]-2\,a^5\,A\,b^2\,\text{Sin}\left[4\,\left(c+d\,x\right)\right]+5\,a^3\,A\,b^4\,\text{Sin}\left[4\,\left(c+d\,x\right)\right]+$$
$$6\,a^6\,b\,B\,\text{Sin}\left[4\,\left(c+d\,x\right)\right]-11\,a^4\,b^3\,B\,\text{Sin}\left[4\,\left(c+d\,x\right)\right]+2\,a^2\,b^5\,B\,\text{Sin}\left[4\,\left(c+d\,x\right)\right]-$$
$$\left.\left.12\,a^7\,C\,\text{Sin}\left[4\,\left(c+d\,x\right)\right]+21\,a^5\,b^2\,C\,\text{Sin}\left[4\,\left(c+d\,x\right)\right]-6\,a^3\,b^4\,C\,\text{Sin}\left[4\,\left(c+d\,x\right)\right]\right)\right)\Big/$$
$$\left(8\,b^4\,\left(-a^2+b^2\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 918: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 3, 242 leaves, 7 steps):

$$\frac{C\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{b^3\,d}+$$

$$\left(\left(a^2\,b^3\,B+2\,b^5\,B-2\,a^5\,C+5\,a^3\,b^2\,C-3\,a\,b^4\,(A+2\,C)\right)\,\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/$$

$$\left((a-b)^{5/2}\,b^3\,(a+b)^{5/2}\,d\right)+\frac{a\,\left(A\,b^2-a\,(b\,B-a\,C)\right)\,\text{Tan}[c+d\,x]}{2\,b^2\,\left(a^2-b^2\right)\,d\,(a+b\,\text{Sec}[c+d\,x])^2}+$$

$$\frac{\left(2\,A\,b^4+a^3\,b\,B-4\,a\,b^3\,B-3\,a^4\,C+a^2\,b^2\,(A+6\,C)\right)\,\text{Tan}[c+d\,x]}{2\,b^2\,\left(a^2-b^2\right)^2\,d\,(a+b\,\text{Sec}[c+d\,x])}$$

Result (type 3, 1071 leaves) :

$$-\Bigg(\Bigg(2\,C\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]-\mathrm{Sin}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]\Big]\,\mathrm{Sec}[c+d\,x]\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\Bigg)\Big/\Big(b^3\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^3\Big)\Bigg)+$$

$$\Big(2\,C\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]+\mathrm{Sin}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]\Big]\,\mathrm{Sec}[c+d\,x]\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)\Big)\Big/\Big(b^3\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^3\Big)+$$

$$\Bigg(\Big(-3\,a\,A\,b^4+a^2\,b^3\,B+2\,b^5\,B-2\,a^5\,C+5\,a^3\,b^2\,C-6\,a\,b^4\,C\Big)\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Sec}[c+d\,x]\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)$$
$$\Bigg(-\Bigg(\Bigg(2\,\mathrm{i}\,\mathrm{ArcTan}\Big[\mathrm{Sec}\Big[\frac{d\,x}{2}\Big]\Big(\frac{\mathrm{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}-\frac{\mathrm{i}\,\mathrm{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}\Big)\Big(-\mathrm{i}\,b\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]+\mathrm{i}\,a\,\mathrm{Sin}\Big[c+\frac{d\,x}{2}\Big]\Big)\Big]$$
$$\mathrm{Cos}[c]\Bigg)\Big/\Big(b^3\,\sqrt{a^2-b^2}\,d\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}\Big)\Bigg)-$$
$$\Bigg(2\,\mathrm{ArcTan}\Big[\mathrm{Sec}\Big[\frac{d\,x}{2}\Big]\Big(\frac{\mathrm{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}-\frac{\mathrm{i}\,\mathrm{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}}\Big)$$
$$\Big(-\mathrm{i}\,b\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]+\mathrm{i}\,a\,\mathrm{Sin}\Big[c+\frac{d\,x}{2}\Big]\Big)\Big]\,\mathrm{Sin}[c]\Bigg)\Big/$$
$$\Big(b^3\,\sqrt{a^2-b^2}\,d\,\sqrt{\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c]}\Big)\Bigg)\Bigg)\Big/$$
$$\Big((-a^2+b^2)^2\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^3\Big)+$$

$$\Big((b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)$$
$$\big(-2\,a^4\,A\,b^2\,\mathrm{Sin}[c]-5\,a^2\,A\,b^4\,\mathrm{Sin}[c]-2\,A\,b^6\,\mathrm{Sin}[c]+3\,a^3\,b^3\,B\,\mathrm{Sin}[c]+6\,a\,b^5\,B\,\mathrm{Sin}[c]+$$
$$2\,a^6\,C\,\mathrm{Sin}[c]-a^4\,b^2\,C\,\mathrm{Sin}[c]-10\,a^2\,b^4\,C\,\mathrm{Sin}[c]+5\,a^3\,A\,b^3\,\mathrm{Sin}[d\,x]+4\,a\,A\,b^5\,\mathrm{Sin}[d\,x]+$$
$$a^4\,b^2\,B\,\mathrm{Sin}[d\,x]-10\,a^2\,b^4\,B\,\mathrm{Sin}[d\,x]-7\,a^5\,b\,C\,\mathrm{Sin}[d\,x]+16\,a^3\,b^3\,C\,\mathrm{Sin}[d\,x]-$$
$$3\,a^3\,A\,b^3\,\mathrm{Sin}[2\,c+d\,x]+a^4\,b^2\,B\,\mathrm{Sin}[2\,c+d\,x]+2\,a^2\,b^4\,B\,\mathrm{Sin}[2\,c+d\,x]+a^5\,b\,C\,\mathrm{Sin}[2\,c+d\,x]-$$
$$4\,a^3\,b^3\,C\,\mathrm{Sin}[2\,c+d\,x]+2\,a^4\,A\,b^2\,\mathrm{Sin}[c+2\,d\,x]+a^2\,A\,b^4\,\mathrm{Sin}[c+2\,d\,x]-$$
$$3\,a^3\,b^3\,B\,\mathrm{Sin}[c+2\,d\,x]-2\,a^6\,C\,\mathrm{Sin}[c+2\,d\,x]+5\,a^4\,b^2\,C\,\mathrm{Sin}[c+2\,d\,x]\big)\Big)\Big/$$
$$\Big(2\,a\,b^2\,(-a^2+b^2)^2\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^3\Big)$$

Problem 919: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[c+d\,x]\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)}{(a+b\,\mathrm{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 202 leaves, 6 steps):

$$-\frac{\left(3 a b B-a^2 (2 A+C)-b^2 (A+2 C)\right) \text{ArcTanh}\left[\frac{\sqrt{a-b} \tan\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a+b}}\right]}{(a-b)^{5/2} (a+b)^{5/2} d}-\frac{\left(A b^2-a (b B-a C)\right) \tan[c+d x]}{2 b \left(a^2-b^2\right) d (a+b \sec[c+d x])^2}+\frac{\left(a^2 b B+2 b^3 B+a^3 C-a b^2 (3 A+4 C)\right) \tan[c+d x]}{2 b \left(a^2-b^2\right)^2 d (a+b \sec[c+d x])}$$

Result (type 3, 800 leaves):

$$\Big(\left(2 a^2 A+A b^2-3 a b B+a^2 C+2 b^2 C\right) (b+a \cos[c+d x])^3 \sec[c+d x] \left(A+B \sec[c+d x]+C \sec[c+d x]^2\right) \Bigg(-\Bigg(\Bigg(2 i \text{ArcTan}\left[\sec\left[\frac{d x}{2}\right] \left(\frac{\cos[c]}{\sqrt{a^2-b^2} \sqrt{\cos[2 c]-i \sin[2 c]}}-\frac{i \sin[c]}{\sqrt{a^2-b^2} \sqrt{\cos[2 c]-i \sin[2 c]}}\right) \left(-i b \sin\left[\frac{d x}{2}\right]+i a \sin\left[c+\frac{d x}{2}\right]\right)\right] \cos[c]\Bigg) \Big/ \left(\sqrt{a^2-b^2} d \sqrt{\cos[2 c]-i \sin[2 c]}\right)\Bigg)-\Bigg(2 \text{ArcTan}\left[\sec\left[\frac{d x}{2}\right] \left(\frac{\cos[c]}{\sqrt{a^2-b^2} \sqrt{\cos[2 c]-i \sin[2 c]}}-\frac{i \sin[c]}{\sqrt{a^2-b^2} \sqrt{\cos[2 c]-i \sin[2 c]}}\right) \left(-i b \sin\left[\frac{d x}{2}\right]+i a \sin\left[c+\frac{d x}{2}\right]\right)\right] \sin[c]\Bigg) \Big/ \left(\sqrt{a^2-b^2} d \sqrt{\cos[2 c]-i \sin[2 c]}\right)\Bigg)\Big) \Big/ \left(\left(-a^2+b^2\right)^2 (A+2 C+2 B \cos[c+d x]+A \cos[2 c+2 d x]) (a+b \sec[c+d x])^3\right)+$$

$$\Big((b+a \cos[c+d x]) \sec[c] \sec[c+d x] \left(A+B \sec[c+d x]+C \sec[c+d x]^2\right) \big(4 a^4 A b \sin[c]+7 a^2 A b^3 \sin[c]-2 A b^5 \sin[c]-2 a^5 B \sin[c]-5 a^3 b^2 B \sin[c]-2 a b^4 B \sin[c]+3 a^4 b C \sin[c]+6 a^2 b^3 C \sin[c]-11 a^3 A b^2 \sin[d x]+2 a A b^4 \sin[d x]+5 a^4 b B \sin[d x]+4 a^2 b^3 B \sin[d x]+a^5 C \sin[d x]-10 a^3 b^2 C \sin[d x]+5 a^3 A b^2 \sin[2 c+d x]-2 a A b^4 \sin[2 c+d x]-3 a^4 b B \sin[2 c+d x]+a^5 C \sin[2 c+d x]+2 a^3 b^2 C \sin[2 c+d x]-4 a^4 A b \sin[c+2 d x]+a^2 A b^3 \sin[c+2 d x]+2 a^5 B \sin[c+2 d x]+a^3 b^2 B \sin[c+2 d x]-3 a^4 b C \sin[c+2 d x]\big)\Big) \Big/ \left(2 a^2 \left(a^2-b^2\right)^2 d (A+2 C+2 B \cos[c+d x]+A \cos[2 c+2 d x]) (a+b \sec[c+d x])^3\right)$$

Problem 920: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{A+B \sec[c+d x]+C \sec[c+d x]^2}{(a+b \sec[c+d x])^3} \, dx$$

Optimal (type 3, 229 leaves, 6 steps):

$$\frac{A\,x}{a^3}+\left(\left(5\,a^2\,A\,b^3-2\,A\,b^5+2\,a^5\,B+a^3\,b^2\,B-3\,a^4\,b\,(2\,A+C)\right)\text{ArcTanh}\left[\frac{\sqrt{a-b}\;\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/\left(a^3\,(a-b)^{5/2}\,(a+b)^{5/2}\,d\right)+\frac{\left(A\,b^2-a\,(b\,B-a\,C)\right)\text{Tan}[c+d\,x]}{2\,a\,\left(a^2-b^2\right)d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2}-\frac{\left(2\,A\,b^4+3\,a^3\,b\,B-a^4\,C-a^2\,b^2\,(5\,A+2\,C)\right)\text{Tan}[c+d\,x]}{2\,a^2\,\left(a^2-b^2\right)^2d\,\left(a+b\,\text{Sec}[c+d\,x]\right)}$$

Result (type 3, 1093 leaves):

$$\Bigg(\left(6\,a^4\,A\,b-5\,a^2\,A\,b^3+2\,A\,b^5-2\,a^5\,B-a^3\,b^2\,B+3\,a^4\,b\,C\right)\left(b+a\,\text{Cos}[c+d\,x]\right)^3\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\Bigg(2\,i\,\text{ArcTan}\Big[\text{Sec}\Big[\frac{d\,x}{2}\Big]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}-\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}\right)\left(-i\,b\,\text{Sin}\Big[\frac{d\,x}{2}\Big]+i\,a\,\text{Sin}\Big[c+\frac{d\,x}{2}\Big]\right)\Big]\,\text{Cos}[c]\Bigg)\Big/\left(a^3\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}\right)+\left(2\,\text{ArcTan}\Big[\text{Sec}\Big[\frac{d\,x}{2}\Big]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}-\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}\right)\left(-i\,b\,\text{Sin}\Big[\frac{d\,x}{2}\Big]+i\,a\,\text{Sin}\Big[c+\frac{d\,x}{2}\Big]\right)\Big]\,\text{Sin}[c]\right)\Big/\left(a^3\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}\right)\Bigg)\Bigg)\Big/\left(\left(-a^2+b^2\right)^2\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+b\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\Big(\left(b+a\,\text{Cos}[c+d\,x]\right)\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big(2\,a^6\,A\,d\,x\,\text{Cos}[c]-6\,a^2\,A\,b^4\,d\,x\,\text{Cos}[c]+4\,A\,b^6\,d\,x\,\text{Cos}[c]+4\,a^5\,A\,b\,d\,x\,\text{Cos}[d\,x]-8\,a^3\,A\,b^3\,d\,x\,\text{Cos}[d\,x]+4\,a\,A\,b^5\,d\,x\,\text{Cos}[d\,x]+4\,a^5\,A\,b\,d\,x\,\text{Cos}[2\,c+d\,x]-8\,a^3\,A\,b^3\,d\,x\,\text{Cos}[2\,c+d\,x]+4\,a\,A\,b^5\,d\,x\,\text{Cos}[2\,c+d\,x]+a^6\,A\,d\,x\,\text{Cos}[c+2\,d\,x]-2\,a^4\,A\,b^2\,d\,x\,\text{Cos}[c+2\,d\,x]+a^2\,A\,b^4\,d\,x\,\text{Cos}[c+2\,d\,x]+a^6\,A\,d\,x\,\text{Cos}[3\,c+2\,d\,x]-2\,a^4\,A\,b^2\,d\,x\,\text{Cos}[3\,c+2\,d\,x]+a^2\,A\,b^4\,d\,x\,\text{Cos}[3\,c+2\,d\,x]-6\,a^4\,A\,b^2\,\text{Sin}[c]-9\,a^2\,A\,b^4\,\text{Sin}[c]+6\,A\,b^6\,\text{Sin}[c]+4\,a^5\,b\,B\,\text{Sin}[c]+7\,a^3\,b^3\,B\,\text{Sin}[c]-2\,a\,b^5\,B\,\text{Sin}[c]-2\,a^6\,C\,\text{Sin}[c]-5\,a^4\,b^2\,C\,\text{Sin}[c]-2\,a^2\,b^4\,C\,\text{Sin}[c]+17\,a^3\,A\,b^3\,\text{Sin}[d\,x]-8\,a\,A\,b^5\,\text{Sin}[d\,x]-11\,a^4\,b^2\,B\,\text{Sin}[d\,x]+2\,a^2\,b^4\,B\,\text{Sin}[d\,x]+5\,a^5\,b\,C\,\text{Sin}[d\,x]+4\,a^3\,b^3\,C\,\text{Sin}[d\,x]-7\,a^3\,A\,b^3\,\text{Sin}[2\,c+d\,x]+4\,a\,A\,b^5\,\text{Sin}[2\,c+d\,x]+5\,a^4\,b^2\,B\,\text{Sin}[2\,c+d\,x]-2\,a^2\,b^4\,B\,\text{Sin}[2\,c+d\,x]-3\,a^5\,b\,C\,\text{Sin}[2\,c+d\,x]+6\,a^4\,A\,b^2\,\text{Sin}[c+2\,d\,x]-3\,a^2\,A\,b^4\,\text{Sin}[c+2\,d\,x]-4\,a^5\,b\,B\,\text{Sin}[c+2\,d\,x]+a^3\,b^3\,B\,\text{Sin}[c+2\,d\,x]+2\,a^6\,C\,\text{Sin}[c+2\,d\,x]+a^4\,b^2\,C\,\text{Sin}[c+2\,d\,x]\Big)\Big)\Big/\left(2\,a^3\,\left(a^2-b^2\right)^2d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+b\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 921: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+b \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 330 leaves, 7 steps):

$$-\frac{(3 A b-a B) x}{a^4}-\left(\left(15 a^2 A b^4-6 A b^6+6 a^5 b B-5 a^3 b^3 B+2 a b^5 B-2 a^6 C-a^4 b^2 (12 A+C)\right) \text{ArcTanh}\left[\frac{\sqrt{a-b} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]\right) \Big/ \left(a^4 (a-b)^{5/2} (a+b)^{5/2} d\right)-\frac{\left(11 a^2 A b^2-6 A b^4-5 a^3 b B+2 a b^3 B-a^4 (2 A-3 C)\right) \text{Sin}[c+d x]}{2 a^3 \left(a^2-b^2\right)^2 d}+\frac{\left(A b^2-a (b B-a C)\right) \text{Sin}[c+d x]}{2 a \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^2}-\frac{\left(3 A b^4+4 a^3 b B-a b^3 B-2 a^4 C-a^2 b^2 (6 A+C)\right) \text{Sin}[c+d x]}{2 a^2 \left(a^2-b^2\right)^2 d (a+b \text{Sec}[c+d x])}$$

Result (type 3, 1015 leaves):

$$-\left(\left(2\,(3\,A\,b-a\,B)\,x\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\right.$$
$$\left.\left(a^4\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^3\right)\right)+$$
$$\left(\left(12\,a^4\,A\,b^2-15\,a^2\,A\,b^4+6\,A\,b^6-6\,a^5\,b\,B+5\,a^3\,b^3\,B-2\,a\,b^5\,B+2\,a^6\,C+a^4\,b^2\,C\right)\right.$$
$$(b+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(-\left(\left(2\,i\,\mathrm{ArcTan}\left[\mathrm{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\mathrm{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}}-\right.\right.\right.\right.\right.$$
$$\left.\frac{i\,\mathrm{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}}\right)\left(-i\,b\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+i\,a\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]\right)\Big]$$
$$\left.\left.\mathrm{Cos}[c]\right)\Big/\left(a^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}\right)\right)-$$
$$\left(2\,\mathrm{ArcTan}\left[\mathrm{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\mathrm{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}}-\frac{i\,\mathrm{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}}\right)\right.\right.$$
$$\left.\left(-i\,b\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+i\,a\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]\right)\Big]\,\mathrm{Sin}[c]\right)\Big/$$
$$\left.\left.\left(a^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}\right)\right)\right)\Big/$$
$$\left(\left(-a^2+b^2\right)^2\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.(a+b\,\mathrm{Sec}[c+d\,x])^3\right)+$$
$$\left((b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-A\,b^5\,\mathrm{Sin}[c]+a\,b^4\,B\,\mathrm{Sin}[c]-a^2\,b^3\,C\,\mathrm{Sin}[c]+\right.$$
$$\left.\left.a\,A\,b^4\,\mathrm{Sin}[d\,x]-a^2\,b^3\,B\,\mathrm{Sin}[d\,x]+a^3\,b^2\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(a^4\,\left(a^2-b^2\right)\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^3\right)+$$
$$\left((b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(9\,a^2\,A\,b^4\,\mathrm{Sin}[c]-6\,A\,b^6\,\mathrm{Sin}[c]-7\,a^3\,b^3\,B\,\mathrm{Sin}[c]+4\,a\,b^5\,B\,\mathrm{Sin}[c]+\right.$$
$$5\,a^4\,b^2\,C\,\mathrm{Sin}[c]-2\,a^2\,b^4\,C\,\mathrm{Sin}[c]-8\,a^3\,A\,b^3\,\mathrm{Sin}[d\,x]+5\,a\,A\,b^5\,\mathrm{Sin}[d\,x]+$$
$$\left.\left.6\,a^4\,b^2\,B\,\mathrm{Sin}[d\,x]-3\,a^2\,b^4\,B\,\mathrm{Sin}[d\,x]-4\,a^5\,b\,C\,\mathrm{Sin}[d\,x]+a^3\,b^3\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$
$$\left(a^4\,\left(a^2-b^2\right)^2\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^3\right)+$$
$$\left(2\,A\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Tan}[c+d\,x]\right)\Big/$$
$$\left(a^3\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^3\right)$$

Problem 922: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[c+d\,x]^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{(a+b\,\mathrm{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 453 leaves, 8 steps):

$$\frac{\left(12\,A\,b^2-6\,a\,b\,B+a^2\,(A+2\,C)\right)\,x}{2\,a^5}-\left(b\,\left(12\,A\,b^6-12\,a^5\,b\,B+15\,a^3\,b^3\,B-6\,a\,b^5\,B-a^2\,b^4\,(29\,A-2\,C)+5\,a^4\,b^2\,(4\,A-C)+6\,a^6\,C\right)\right.$$

$$\left.\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/\left(a^5\,(a-b)^{5/2}\,(a+b)^{5/2}\,d\right)-\frac{1}{2\,a^4\,\left(a^2-b^2\right)^2\,d}$$

$$\left(12\,A\,b^5-2\,a^5\,B+11\,a^3\,b^2\,B-6\,a\,b^4\,B+a^4\,b\,(6\,A-5\,C)-a^2\,b^3\,(21\,A-2\,C)\right)\,\text{Sin}[c+d\,x]+$$

$$\frac{1}{2\,a^3\,\left(a^2-b^2\right)^2\,d}\left(6\,A\,b^4+6\,a^3\,b\,B-3\,a\,b^3\,B+a^4\,(A-4\,C)-a^2\,b^2\,(10\,A-C)\right)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]+$$

$$\frac{\left(A\,b^2-a\,(b\,B-a\,C)\right)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a\,\left(a^2-b^2\right)\,d\,(a+b\,\text{Sec}[c+d\,x])^2}+$$

$$\frac{\left(7\,a^2\,A\,b^2-4\,A\,b^4-5\,a^3\,b\,B+2\,a\,b^3\,B+3\,a^4\,C\right)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a^2\,\left(a^2-b^2\right)^2\,d\,(a+b\,\text{Sec}[c+d\,x])}$$

Result (type 3, 1150 leaves) :

$$\left(b\,\left(20\,a^4\,A\,b^2-29\,a^2\,A\,b^4+12\,A\,b^6-12\,a^5\,b\,B+15\,a^3\,b^3\,B-6\,a\,b^5\,B+6\,a^6\,C-5\,a^4\,b^2\,C+2\,a^2\,b^4\,C\right)\right.$$

$$\left.\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]\right)\Big/$$

$$\left(a^5\,\sqrt{a^2-b^2}\,\left(-a^2+b^2\right)^2\,d\right)+\frac{1}{16\,a^5\,\left(a^2-b^2\right)^2\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2}$$

$$\left(4\,a^8\,A\,(c+d\,x)+48\,a^6\,A\,b^2\,(c+d\,x)-12\,a^4\,A\,b^4\,(c+d\,x)-136\,a^2\,A\,b^6\,(c+d\,x)+96\,A\,b^8\,(c+d\,x)-\right.$$
$$24\,a^7\,b\,B\,(c+d\,x)+72\,a^3\,b^5\,B\,(c+d\,x)-48\,a\,b^7\,B\,(c+d\,x)+8\,a^8\,C\,(c+d\,x)-24\,a^4\,b^4\,C\,(c+d\,x)+$$
$$16\,a^2\,b^6\,C\,(c+d\,x)+16\,a^7\,A\,b\,(c+d\,x)\,\text{Cos}[c+d\,x]+160\,a^5\,A\,b^3\,(c+d\,x)\,\text{Cos}[c+d\,x]-$$
$$368\,a^3\,A\,b^5\,(c+d\,x)\,\text{Cos}[c+d\,x]+192\,a\,A\,b^7\,(c+d\,x)\,\text{Cos}[c+d\,x]-$$
$$96\,a^6\,b^2\,B\,(c+d\,x)\,\text{Cos}[c+d\,x]+192\,a^4\,b^4\,B\,(c+d\,x)\,\text{Cos}[c+d\,x]-$$
$$96\,a^2\,b^6\,B\,(c+d\,x)\,\text{Cos}[c+d\,x]+32\,a^7\,b\,C\,(c+d\,x)\,\text{Cos}[c+d\,x]-64\,a^5\,b^3\,C\,(c+d\,x)\,\text{Cos}[c+d\,x]+$$
$$32\,a^3\,b^5\,C\,(c+d\,x)\,\text{Cos}[c+d\,x]+4\,a^8\,A\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+$$
$$40\,a^6\,A\,b^2\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]-92\,a^4\,A\,b^4\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+$$
$$48\,a^2\,A\,b^6\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]-24\,a^7\,b\,B\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+$$
$$48\,a^5\,b^3\,B\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]-24\,a^3\,b^5\,B\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+$$
$$8\,a^8\,C\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]-16\,a^6\,b^2\,C\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+$$
$$8\,a^4\,b^4\,C\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]-8\,a^7\,A\,b\,\text{Sin}[c+d\,x]-32\,a^5\,A\,b^3\,\text{Sin}[c+d\,x]+$$
$$160\,a^3\,A\,b^5\,\text{Sin}[c+d\,x]-96\,a\,A\,b^7\,\text{Sin}[c+d\,x]+4\,a^8\,B\,\text{Sin}[c+d\,x]+8\,a^6\,b^2\,B\,\text{Sin}[c+d\,x]-$$
$$84\,a^4\,b^4\,B\,\text{Sin}[c+d\,x]+48\,a^2\,b^6\,B\,\text{Sin}[c+d\,x]+40\,a^5\,b^3\,C\,\text{Sin}[c+d\,x]-16\,a^3\,b^5\,C\,\text{Sin}[c+d\,x]+$$
$$2\,a^8\,A\,\text{Sin}[2\,(c+d\,x)]-48\,a^6\,A\,b^2\,\text{Sin}[2\,(c+d\,x)]+130\,a^4\,A\,b^4\,\text{Sin}[2\,(c+d\,x)]-$$
$$72\,a^2\,A\,b^6\,\text{Sin}[2\,(c+d\,x)]+16\,a^7\,b\,B\,\text{Sin}[2\,(c+d\,x)]-64\,a^5\,b^3\,B\,\text{Sin}[2\,(c+d\,x)]+$$
$$36\,a^3\,b^5\,B\,\text{Sin}[2\,(c+d\,x)]+24\,a^6\,b^2\,C\,\text{Sin}[2\,(c+d\,x)]-12\,a^4\,b^4\,C\,\text{Sin}[2\,(c+d\,x)]-$$
$$8\,a^7\,A\,b\,\text{Sin}[3\,(c+d\,x)]+16\,a^5\,A\,b^3\,\text{Sin}[3\,(c+d\,x)]-8\,a^3\,A\,b^5\,\text{Sin}[3\,(c+d\,x)]+$$
$$4\,a^8\,B\,\text{Sin}[3\,(c+d\,x)]-8\,a^6\,b^2\,B\,\text{Sin}[3\,(c+d\,x)]+4\,a^4\,b^4\,B\,\text{Sin}[3\,(c+d\,x)]+$$
$$\left.a^8\,A\,\text{Sin}[4\,(c+d\,x)]-2\,a^6\,A\,b^2\,\text{Sin}[4\,(c+d\,x)]+a^4\,A\,b^4\,\text{Sin}[4\,(c+d\,x)]\right)$$

Problem 923: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 3, 470 leaves, 9 steps):

$$\frac{(b B-4 a C) \text{ArcTanh}[\text{Sin}[c+d x]]}{b^5 d}-$$
$$\left(\left(2 A b^8+2 a^7 b B-7 a^5 b^3 B+8 a^3 b^5 B-8 a b^7 B-8 a^8 C+28 a^6 b^2 C-35 a^4 b^4 C+a^2 b^6 (3 A+20 C)\right)\right.$$
$$\left.\text{ArcTanh}\left[\frac{\sqrt{a-b} \text{ Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]\right) \Big/ \left((a-b)^{7/2} b^5 (a+b)^{7/2} d\right)-$$
$$\frac{\left(5 A b^4+3 a^3 b B-8 a b^3 B-12 a^4 C+23 a^2 b^2 C-6 b^4 C\right) \text{Tan}[c+d x]}{6 b^4 \left(a^2-b^2\right)^2 d}-$$
$$\frac{\left(A b^2-a (b B-a C)\right) \text{Sec}[c+d x]^3 \text{Tan}[c+d x]}{3 b \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^3}+$$
$$\left(\left(3 A b^4+a^3 b B-6 a b^3 B-4 a^4 C+a^2 b^2 (2 A+9 C)\right) \text{Sec}[c+d x]^2 \text{Tan}[c+d x]\right) \Big/$$
$$\left(6 b^2 \left(a^2-b^2\right)^2 d (a+b \text{Sec}[c+d x])^2\right)+$$
$$\left(a \left(2 A b^6-a^5 b B+2 a^3 b^3 B-6 a b^5 B+4 a^6 C-11 a^4 b^2 C+3 a^2 b^4 (A+4 C)\right) \text{Tan}[c+d x]\right) \Big/$$
$$\left(2 b^4 \left(a^2-b^2\right)^3 d (a+b \text{Sec}[c+d x])\right)$$

Result (type 3, 1197 leaves) :

$$-\left(\left(2\left(3a^2Ab^6+2Ab^8+2a^7bB-7a^5b^3B+8a^3b^5B-8ab^7B-8a^8C+28a^6b^2C-35a^4b^4C+20a^2b^6C\right)\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a^2-b^2}}\right](b+a\,\text{Cos}[c+dx])^4\,\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(b^5\sqrt{a^2-b^2}\left(-a^2+b^2\right)^3d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)(a+b\,\text{Sec}[c+dx])^4\right)\right)-$$

$$\left(2(bB-4aC)(b+a\,\text{Cos}[c+dx])^4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(b^5d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)(a+b\,\text{Sec}[c+dx])^4\right)+$$

$$\left(2(bB-4aC)(b+a\,\text{Cos}[c+dx])^4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right)\Big/\left(b^5d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)(a+b\,\text{Sec}[c+dx])^4\right)+$$

$$\Big(\big((b+a\,\text{Cos}[c+dx])\,\text{Sec}[c+dx]^3\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\big)\big(-6a^4Ab^5\,\text{Sin}[c+dx]-54a^2Ab^7\,\text{Sin}[c+dx]+30a^7b^2B\,\text{Sin}[c+dx]-90a^5b^4B\,\text{Sin}[c+dx]+120a^3b^6B\,\text{Sin}[c+dx]-120a^8bC\,\text{Sin}[c+dx]+294a^6b^3C\,\text{Sin}[c+dx]-174a^4b^5C\,\text{Sin}[c+dx]-108a^2b^7C\,\text{Sin}[c+dx]+48b^9C\,\text{Sin}[c+dx]-16a^5Ab^4\,\text{Sin}[2(c+dx)]-2a^3Ab^6\,\text{Sin}[2(c+dx)]-72aAb^8\,\text{Sin}[2(c+dx)]+12a^8bB\,\text{Sin}[2(c+dx)]+10a^6b^3B\,\text{Sin}[2(c+dx)]-76a^4b^5B\,\text{Sin}[2(c+dx)]+144a^2b^7B\,\text{Sin}[2(c+dx)]-48a^9C\,\text{Sin}[2(c+dx)]-40a^7b^2C\,\text{Sin}[2(c+dx)]+370a^5b^4C\,\text{Sin}[2(c+dx)]-444a^3b^6C\,\text{Sin}[2(c+dx)]+72ab^8C\,\text{Sin}[2(c+dx)]-6a^4Ab^5\,\text{Sin}[3(c+dx)]-54a^2Ab^7\,\text{Sin}[3(c+dx)]+30a^7b^2B\,\text{Sin}[3(c+dx)]-90a^5b^4B\,\text{Sin}[3(c+dx)]+120a^3b^6B\,\text{Sin}[3(c+dx)]-120a^8bC\,\text{Sin}[3(c+dx)]+342a^6b^3C\,\text{Sin}[3(c+dx)]-318a^4b^5C\,\text{Sin}[3(c+dx)]+36a^2b^7C\,\text{Sin}[3(c+dx)]-4a^5Ab^4\,\text{Sin}[4(c+dx)]-11a^3Ab^6\,\text{Sin}[4(c+dx)]+6a^8bB\,\text{Sin}[4(c+dx)]-17a^6b^3B\,\text{Sin}[4(c+dx)]+26a^4b^5B\,\text{Sin}[4(c+dx)]-24a^9C\,\text{Sin}[4(c+dx)]+68a^7b^2C\,\text{Sin}[4(c+dx)]-65a^5b^4C\,\text{Sin}[4(c+dx)]+6a^3b^6C\,\text{Sin}[4(c+dx)]\big)\Big)\Big/\left(24b^4\left(-a^2+b^2\right)^3d\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)(a+b\,\text{Sec}[c+dx])^4\right)$$

Problem 924: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]^3\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)}{(a+b\,\text{Sec}[c+dx])^4}\,dx$$

Optimal (type 3, 358 leaves, 8 steps):

$$\frac{C\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{b^4\,d}-\left(\left(3\,a^2\,b^5\,B+2\,b^7\,B-a^3\,b^4\,(A-8\,C)+2\,a^7\,C-7\,a^5\,b^2\,C-4\,a\,b^6\,(A+2\,C)\right)\right.$$
$$\left.\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/\left((a-b)^{7/2}\,b^4\,(a+b)^{7/2}\,d\right)-$$
$$\frac{\left(A\,b^2-a\,(b\,B-a\,C)\right)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,b\,(a^2-b^2)\,d\,(a+b\,\text{Sec}[c+d\,x])^3}-$$
$$\frac{a\,\left(2\,A\,b^4-5\,a\,b^3\,B-3\,a^4\,C+a^2\,b^2\,(3\,A+8\,C)\right)\,\text{Tan}[c+d\,x]}{6\,b^3\,(a^2-b^2)^2\,d\,(a+b\,\text{Sec}[c+d\,x])^2}-$$
$$\left(\left(4\,A\,b^6+a^3\,b^3\,B-16\,a\,b^5\,B+9\,a^6\,C+2\,a^2\,b^4\,(7\,A+17\,C)-a^4\,b^2\,(3\,A+28\,C)\right)\,\text{Tan}[c+d\,x]\right)\Big/$$
$$\left(6\,b^3\,(a^2-b^2)^3\,d\,(a+b\,\text{Sec}[c+d\,x])\right)$$

Result (type 3, 1302 leaves) :

$$-\left(\left(2\,C\,(b+a\,\text{Cos}[c+d\,x])^4\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.\right.$$

$$\left.\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left.\left(b^4\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)\right)+$$

$$\left(2\,C\,(b+a\,\text{Cos}[c+d\,x])^4\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\text{Sec}[c+d\,x]^2\right.$$

$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(b^4\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)+$$

$$\left(\left(-a^3\,A\,b^4-4\,a\,A\,b^6+3\,a^2\,b^5\,B+2\,b^7\,B+2\,a^7\,C-7\,a^5\,b^2\,C+8\,a^3\,b^4\,C-8\,a\,b^6\,C\right)\right.$$

$$(b+a\,\text{Cos}[c+d\,x])^4\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(-\left(\left(2\,i\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}-\right.\right.\right.\right.\right.$$

$$\left.\left.\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}\right)\left(-i\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+i\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]$$

$$\left.\left.\text{Cos}[c]\right)\Big/\left(b^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}\right)\right)-$$

$$\left(2\,\text{ArcTan}\left[\text{Sec}\left[\frac{d\,x}{2}\right]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}-\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}}\right)\right.\right.$$

$$\left.\left.\left(-i\,b\,\text{Sin}\left[\frac{d\,x}{2}\right]+i\,a\,\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)\right]\,\text{Sin}[c]\right)\Big/$$

$$\left.\left.\left(b^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-i\,\text{Sin}[2\,c]}\right)\right)\right)\Big/$$

$$\left(\left(-a^2+b^2\right)^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)-$$

$$\left(2\,(b+a\,\text{Cos}[c+d\,x])\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left.\left(A\,b^3\,\text{Sin}[c]-a\,b^2\,B\,\text{Sin}[c]+a^2\,b\,C\,\text{Sin}[c]-a\,A\,b^2\,\text{Sin}[d\,x]+a^2\,b\,B\,\text{Sin}[d\,x]-a^3\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$

$$\left(3\,a\,b\,\left(-a^2+b^2\right)\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)+$$

$$\left((b+a\,\text{Cos}[c+d\,x])^2\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(-5\,a\,A\,b^3\,\text{Sin}[c]+2\,a^2\,b^2\,B\,\text{Sin}[c]+3\,b^4\,B\,\text{Sin}[c]+a^3\,b\,C\,\text{Sin}[c]-6\,a\,b^3\,C\,\text{Sin}[c]+\right.$$

$$\left.\left.3\,a^2\,A\,b^2\,\text{Sin}[d\,x]+2\,A\,b^4\,\text{Sin}[d\,x]-5\,a\,b^3\,B\,\text{Sin}[d\,x]-3\,a^4\,C\,\text{Sin}[d\,x]+8\,a^2\,b^2\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$

$$\left(3\,b^2\,\left(-a^2+b^2\right)^2\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)+$$

$$\left((b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(-3\,a^3\,A\,b^3\,\text{Sin}[c]-12\,a\,A\,b^5\,\text{Sin}[c]+9\,a^2\,b^4\,B\,\text{Sin}[c]+6\,b^6\,B\,\text{Sin}[c]-3\,a^5\,b\,C\,\text{Sin}[c]+\right.$$

$$6\,a^3\,b^3\,C\,\text{Sin}[c]-18\,a\,b^5\,C\,\text{Sin}[c]+13\,a^2\,A\,b^4\,\text{Sin}[d\,x]+2\,A\,b^6\,\text{Sin}[d\,x]-4\,a^3\,b^3\,B\,\text{Sin}[d\,x]-$$

$$\left.\left.11\,a\,b^5\,B\,\text{Sin}[d\,x]+6\,a^6\,C\,\text{Sin}[d\,x]-17\,a^4\,b^2\,C\,\text{Sin}[d\,x]+26\,a^2\,b^4\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$

$$\left(3\,b^3\,\left(-a^2+b^2\right)^3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)$$

Problem 926: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 3, 299 leaves, 7 steps):

$$-\left(\left(\left(4\,a^2\,b\,B+b^3\,B-a^3\,(2\,A+C)-a\,b^2\,(3\,A+4\,C)\right)\,\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/\left((a-b)^{7/2}\,(a+b)^{7/2}\,d\right)\right)-\frac{\left(A\,b^2-a\,(b\,B-a\,C)\right)\,\text{Tan}[c+d\,x]}{3\,b\,\left(a^2-b^2\right)\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3}+\frac{\left(2\,a^2\,b\,B+3\,b^3\,B+a^3\,C-a\,b^2\,(5\,A+6\,C)\right)\,\text{Tan}[c+d\,x]}{6\,b\,\left(a^2-b^2\right)^2\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2}+\left(\left(2\,a^3\,b\,B+13\,a\,b^3\,B+a^4\,C-2\,b^4\,(2\,A+3\,C)-a^2\,b^2\,(11\,A+10\,C)\right)\,\text{Tan}[c+d\,x]\right)\Big/\left(6\,b\,\left(a^2-b^2\right)^3\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)\right)$$

Result (type 3, 1069 leaves):

$$\Bigg(\Big(-2a^3A-3aAb^2+4a^2bB+b^3B-a^3C-4ab^2C\Big)(b+a\,\text{Cos}[c+dx])^4\,\text{Sec}[c+dx]^2\,\big(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\big)$$
$$\Bigg(-\Bigg(\Bigg(2\,i\,\text{ArcTan}\Big[\text{Sec}\Big[\frac{dx}{2}\Big]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}}-\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}}\right)\Big(-i\,b\,\text{Sin}\Big[\frac{dx}{2}\Big]+i\,a\,\text{Sin}\Big[c+\frac{dx}{2}\Big]\Big)\Big]$$
$$\text{Cos}[c]\Bigg)\Big/\Big(\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}\Big)\Bigg)-$$
$$\Bigg(2\,\text{ArcTan}\Big[\text{Sec}\Big[\frac{dx}{2}\Big]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}}-\frac{i\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}}\right)\Big(-i\,b\,\text{Sin}\Big[\frac{dx}{2}\Big]+i\,a\,\text{Sin}\Big[c+\frac{dx}{2}\Big]\Big)\Big]$$
$$\text{Sin}[c]\Bigg)\Big/\Big(\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2c]-i\,\text{Sin}[2c]}\Big)\Bigg)\Bigg)\Big/$$
$$\Big(\big(-a^2+b^2\big)^3\,\big(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\big)(a+b\,\text{Sec}[c+dx])^4\Big)+$$
$$\Big(2\,(b+a\,\text{Cos}[c+dx])\,\text{Sec}[c]\,\text{Sec}[c+dx]^2\big(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\big)$$
$$\big(A\,b^4\,\text{Sin}[c]-a\,b^3B\,\text{Sin}[c]+a^2b^2C\,\text{Sin}[c]-a\,A\,b^3\,\text{Sin}[dx]+a^2b^2B\,\text{Sin}[dx]-a^3bC\,\text{Sin}[dx]\big)\Big)\Big/$$
$$\Big(3a^3\,\big(a^2-b^2\big)\,d\,\big(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\big)(a+b\,\text{Sec}[c+dx])^4\Big)+$$
$$\Big((b+a\,\text{Cos}[c+dx])^2\,\text{Sec}[c]\,\text{Sec}[c+dx]^2\,\big(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\big)$$
$$\big(-11a^2Ab^3\,\text{Sin}[c]+6Ab^5\,\text{Sin}[c]+8a^3b^2B\,\text{Sin}[c]-3ab^4B\,\text{Sin}[c]-5a^4bC\,\text{Sin}[c]+9a^3Ab^2\,\text{Sin}[dx]-4aAb^4\,\text{Sin}[dx]-6a^4bB\,\text{Sin}[dx]+$$
$$a^2b^3B\,\text{Sin}[dx]+3a^5C\,\text{Sin}[dx]+2a^3b^2C\,\text{Sin}[dx]\big)\Big)\Big/$$
$$\Big(3a^3\,\big(a^2-b^2\big)^2\,d\,\big(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\big)\,(a+b\,\text{Sec}[c+dx])^4\Big)+$$
$$\Big((b+a\,\text{Cos}[c+dx])^3\,\text{Sec}[c]\,\text{Sec}[c+dx]^2\,\big(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\big)$$
$$\big(27a^4Ab^2\,\text{Sin}[c]-18a^2Ab^4\,\text{Sin}[c]+6Ab^6\,\text{Sin}[c]-12a^5bB\,\text{Sin}[c]-3a^3b^3B\,\text{Sin}[c]+3a^6C\,\text{Sin}[c]+12a^4b^2C\,\text{Sin}[c]-18a^5Ab\,\text{Sin}[dx]+$$
$$5a^3Ab^3\,\text{Sin}[dx]-2aAb^5\,\text{Sin}[dx]+6a^6B\,\text{Sin}[dx]+10a^4b^2B\,\text{Sin}[dx]-a^2b^4B\,\text{Sin}[dx]-13a^5bC\,\text{Sin}[dx]-2a^3b^3C\,\text{Sin}[dx]\big)\Big)\Big/$$
$$\Big(3a^3\,\big(a^2-b^2\big)^3\,d\,\big(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\big)\,(a+b\,\text{Sec}[c+dx])^4\Big)$$

Problem 927: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2}{(a+b\,\text{Sec}[c+dx])^4}\,dx$$

Optimal (type 3, 336 leaves, 7 steps):

$$\frac{A\,x}{a^4}-\left(\left(7\,a^2\,A\,b^5-2\,A\,b^7-2\,a^7\,B-3\,a^5\,b^2\,B-a^4\,b^3\,(8\,A-C)+4\,a^6\,b\,(2\,A+C)\right)\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/\left(a^4\,(a-b)^{7/2}\,(a+b)^{7/2}\,d\right)+\frac{\left(A\,b^2-a\,(b\,B-a\,C)\right)\text{Tan}[c+d\,x]}{3\,a\,\left(a^2-b^2\right)d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3}-\frac{\left(3\,A\,b^4+5\,a^3\,b\,B-2\,a^4\,C-a^2\,b^2\,(8\,A+3\,C)\right)\text{Tan}[c+d\,x]}{6\,a^2\,\left(a^2-b^2\right)^2 d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2}-\left(\left(17\,a^2\,A\,b^4-6\,A\,b^6+11\,a^5\,b\,B+4\,a^3\,b^3\,B-2\,a^6\,C-13\,a^4\,b^2\,(2\,A+C)\right)\text{Tan}[c+d\,x]\right)\Big/\left(6\,a^3\,\left(a^2-b^2\right)^3 d\,\left(a+b\,\text{Sec}[c+d\,x]\right)\right)$$

Result (type 3, 1230 leaves):

$$\left(2\,A\,x\,(b+a\,\mathrm{Cos}[c+d\,x])^4\,\mathrm{Sec}[c+d\,x]^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/ \left(a^4\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4\right)+$$
$$\Bigg(\Bigg(\left(-8\,a^6\,A\,b+8\,a^4\,A\,b^3-7\,a^2\,A\,b^5+2\,A\,b^7+2\,a^7\,B+3\,a^5\,b^2\,B-4\,a^6\,b\,C-a^4\,b^3\,C\right)$$
$$(b+a\,\mathrm{Cos}[c+d\,x])^4\,\mathrm{Sec}[c+d\,x]^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,i\,\mathrm{ArcTan}\Big[\mathrm{Sec}\Big[\frac{d\,x}{2}\Big]\left(\frac{\mathrm{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}}-\frac{i\,\mathrm{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}}\right)$$
$$\left(-i\,b\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]+i\,a\,\mathrm{Sin}\Big[c+\frac{d\,x}{2}\Big]\right)\Big]\,\mathrm{Cos}[c]\Bigg)\Big/\left(a^4\,\sqrt{a^2-b^2}\,d\right.$$
$$\left.\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}\right)+\Bigg(2\,\mathrm{ArcTan}\Big[\mathrm{Sec}\Big[\frac{d\,x}{2}\Big]\left(\frac{\mathrm{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}}-\right.$$
$$\left.\frac{i\,\mathrm{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}}\right)\left(-i\,b\,\mathrm{Sin}\Big[\frac{d\,x}{2}\Big]+i\,a\,\mathrm{Sin}\Big[c+\frac{d\,x}{2}\Big]\right)\Big]$$
$$\mathrm{Sin}[c]\Bigg)\Big/\left(a^4\,\sqrt{a^2-b^2}\,d\,\sqrt{\mathrm{Cos}[2\,c]-i\,\mathrm{Sin}[2\,c]}\right)\Bigg)\Bigg)\Big/$$
$$\left(\left(-a^2+b^2\right)^3\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4\right)-$$
$$\Big(2\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(A\,b^5\,\mathrm{Sin}[c]-a\,b^4\,B\,\mathrm{Sin}[c]+a^2\,b^3\,C\,\mathrm{Sin}[c]-\right.$$
$$\left.a\,A\,b^4\,\mathrm{Sin}[d\,x]+a^2\,b^3\,B\,\mathrm{Sin}[d\,x]-a^3\,b^2\,C\,\mathrm{Sin}[d\,x]\right)\Big)\Big/$$
$$\left(3\,a^4\,\left(a^2-b^2\right)\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4\right)+$$
$$\Big(\Big((b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(14\,a^2\,A\,b^4\,\mathrm{Sin}[c]-9\,A\,b^6\,\mathrm{Sin}[c]-11\,a^3\,b^3\,B\,\mathrm{Sin}[c]+6\,a\,b^5\,B\,\mathrm{Sin}[c]+\right.$$
$$8\,a^4\,b^2\,C\,\mathrm{Sin}[c]-3\,a^2\,b^4\,C\,\mathrm{Sin}[c]-12\,a^3\,A\,b^3\,\mathrm{Sin}[d\,x]+7\,a\,A\,b^5\,\mathrm{Sin}[d\,x]+$$
$$\left.9\,a^4\,b^2\,B\,\mathrm{Sin}[d\,x]-4\,a^2\,b^4\,B\,\mathrm{Sin}[d\,x]-6\,a^5\,b\,C\,\mathrm{Sin}[d\,x]+a^3\,b^3\,C\,\mathrm{Sin}[d\,x]\right)\Big)\Big/$$
$$\left(3\,a^4\,\left(a^2-b^2\right)^2\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4\right)+$$
$$\Big(\Big((b+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(-48\,a^4\,A\,b^3\,\mathrm{Sin}[c]+51\,a^2\,A\,b^5\,\mathrm{Sin}[c]-18\,A\,b^7\,\mathrm{Sin}[c]+27\,a^5\,b^2\,B\,\mathrm{Sin}[c]-18\,a^3\,b^4\,B\,\mathrm{Sin}[c]+\right.$$
$$6\,a\,b^6\,B\,\mathrm{Sin}[c]-12\,a^6\,b\,C\,\mathrm{Sin}[c]-3\,a^4\,b^3\,C\,\mathrm{Sin}[c]+36\,a^5\,A\,b^2\,\mathrm{Sin}[d\,x]-$$
$$32\,a^3\,A\,b^4\,\mathrm{Sin}[d\,x]+11\,a\,A\,b^6\,\mathrm{Sin}[d\,x]-18\,a^6\,b\,B\,\mathrm{Sin}[d\,x]+5\,a^4\,b^3\,B\,\mathrm{Sin}[d\,x]-$$
$$\left.2\,a^2\,b^5\,B\,\mathrm{Sin}[d\,x]+6\,a^7\,C\,\mathrm{Sin}[d\,x]+10\,a^5\,b^2\,C\,\mathrm{Sin}[d\,x]-a^3\,b^4\,C\,\mathrm{Sin}[d\,x]\right)\Big)\Big/$$
$$\left(3\,a^4\,\left(a^2-b^2\right)^3\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^4\right)$$

Problem 928: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Cos}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{(a+b\,\mathrm{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 3, 471 leaves, 8 steps):

$$-\frac{(4\,A\,b-a\,B)\,x}{a^5}-\left(\left(35\,a^4\,A\,b^4-28\,a^2\,A\,b^6+8\,A\,b^8+8\,a^7\,b\,B-8\,a^5\,b^3\,B+7\,a^3\,b^5\,B-2\,a\,b^7\,B-2\,a^8\,C-a^6\,b^2\,(20\,A+3\,C)\right)\right.$$

$$\left.\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/\left(a^5\,(a-b)^{7/2}\,(a+b)^{7/2}\,d\right)+\frac{1}{6\,a^4\,\left(a^2-b^2\right)^3\,d}$$

$$\left(68\,a^2\,A\,b^4-24\,A\,b^6+26\,a^5\,b\,B-17\,a^3\,b^3\,B+6\,a\,b^5\,B+a^6\,(6\,A-11\,C)-a^4\,b^2\,(65\,A+4\,C)\right)\,\text{Sin}[c+d\,x]+$$

$$\frac{\left(A\,b^2-a\,(b\,B-a\,C)\right)\,\text{Sin}[c+d\,x]}{3\,a\,\left(a^2-b^2\right)\,d\,(a+b\,\text{Sec}[c+d\,x])^3}-$$

$$\frac{\left(4\,A\,b^4+6\,a^3\,b\,B-a\,b^3\,B-3\,a^4\,C-a^2\,b^2\,(9\,A+2\,C)\right)\,\text{Sin}[c+d\,x]}{6\,a^2\,\left(a^2-b^2\right)^2\,d\,(a+b\,\text{Sec}[c+d\,x])^2}-$$

$$\left(\left(11\,a^2\,A\,b^4-4\,A\,b^6+6\,a^5\,b\,B-2\,a^3\,b^3\,B+a\,b^5\,B-2\,a^6\,C-3\,a^4\,b^2\,(4\,A+C)\right)\,\text{Sin}[c+d\,x]\right)\Big/$$

$$\left(2\,a^3\,\left(a^2-b^2\right)^3\,d\,(a+b\,\text{Sec}[c+d\,x])\right)$$

Result (type 3, 1367 leaves) :

$$-\left(\left(2\,(4\,A\,b-a\,B)\,x\,(b+a\,\text{Cos}[c+d\,x])^4\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(a^5\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)\right)+$$

$$\Bigg(\left(-20\,a^6\,A\,b^2+35\,a^4\,A\,b^4-28\,a^2\,A\,b^6+8\,A\,b^8+8\,a^7\,b\,B-8\,a^5\,b^3\,B+7\,a^3\,b^5\,B-2\,a\,b^7\,B-2\,a^8\,C-3\,a^6\,b^2\,C\right)$$

$$(b+a\,\text{Cos}[c+d\,x])^4\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\Bigg(\Bigg(2\,\mathrm{i}\,\text{ArcTan}\Big[\text{Sec}\Big[\frac{d\,x}{2}\Big]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}-\frac{\mathrm{i}\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}\right)\left(-\mathrm{i}\,b\,\text{Sin}\Big[\frac{d\,x}{2}\Big]+\mathrm{i}\,a\,\text{Sin}\Big[c+\frac{d\,x}{2}\Big]\right)\Big]$$

$$\text{Cos}[c]\Bigg)\Big/\left(a^5\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}\right)\Bigg)-$$

$$\Bigg(2\,\text{ArcTan}\Big[\text{Sec}\Big[\frac{d\,x}{2}\Big]\left(\frac{\text{Cos}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}-\frac{\mathrm{i}\,\text{Sin}[c]}{\sqrt{a^2-b^2}\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}}\right)$$

$$\left(-\mathrm{i}\,b\,\text{Sin}\Big[\frac{d\,x}{2}\Big]+\mathrm{i}\,a\,\text{Sin}\Big[c+\frac{d\,x}{2}\Big]\right)\Big]\,\text{Sin}[c]\Bigg)\Big/$$

$$\left(a^5\,\sqrt{a^2-b^2}\,d\,\sqrt{\text{Cos}[2\,c]-\mathrm{i}\,\text{Sin}[2\,c]}\right)\Bigg)\Bigg)\Bigg/$$

$$\left(\left(-a^2+b^2\right)^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)+$$

$$\Big(2\,(b+a\,\text{Cos}[c+d\,x])\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(A\,b^6\,\text{Sin}[c]-a\,b^5\,B\,\text{Sin}[c]+a^2\,b^4\,C\,\text{Sin}[c]-a\,A\,b^5\,\text{Sin}[d\,x]+a^2\,b^4\,B\,\text{Sin}[d\,x]-a^3\,b^3\,C\,\text{Sin}[d\,x]\right)\Big)\Big/$$

$$\left(3\,a^5\,\left(a^2-b^2\right)\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)+$$

$$\Big((b+a\,\text{Cos}[c+d\,x])^2\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Big(-17\,a^2\,A\,b^5\,\text{Sin}[c]+12\,A\,b^7\,\text{Sin}[c]+14\,a^3\,b^4\,B\,\text{Sin}[c]-9\,a\,b^6\,B\,\text{Sin}[c]-11\,a^4\,b^3\,C\,\text{Sin}[c]+6\,a^2\,b^5\,C\,\text{Sin}[c]+15\,a^3\,A\,b^4\,\text{Sin}[d\,x]-10\,a\,A\,b^6\,\text{Sin}[d\,x]-12\,a^4\,b^3\,B\,\text{Sin}[d\,x]+7\,a^2\,b^5\,B\,\text{Sin}[d\,x]+9\,a^5\,b^2\,C\,\text{Sin}[d\,x]-4\,a^3\,b^4\,C\,\text{Sin}[d\,x]\Big)\Big)\Big/$$

$$\left(3\,a^5\,\left(a^2-b^2\right)^2\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)+$$

$$\Big((b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Big(75\,a^4\,A\,b^4\,\text{Sin}[c]-96\,a^2\,A\,b^6\,\text{Sin}[c]+36\,A\,b^8\,\text{Sin}[c]-48\,a^5\,b^3\,B\,\text{Sin}[c]+51\,a^3\,b^5\,B\,\text{Sin}[c]-18\,a\,b^7\,B\,\text{Sin}[c]+27\,a^6\,b^2\,C\,\text{Sin}[c]-18\,a^4\,b^4\,C\,\text{Sin}[c]+6\,a^2\,b^6\,C\,\text{Sin}[c]-60\,a^5\,A\,b^3\,\text{Sin}[d\,x]+71\,a^3\,A\,b^5\,\text{Sin}[d\,x]-26\,a\,A\,b^7\,\text{Sin}[d\,x]+36\,a^6\,b^2\,B\,\text{Sin}[d\,x]-32\,a^4\,b^4\,B\,\text{Sin}[d\,x]+11\,a^2\,b^6\,B\,\text{Sin}[d\,x]-18\,a^7\,b\,C\,\text{Sin}[d\,x]+5\,a^5\,b^3\,C\,\text{Sin}[d\,x]-2\,a^3\,b^5\,C\,\text{Sin}[d\,x]\Big)\Big)\Big/$$

$$\left(3\,a^5\,\left(a^2-b^2\right)^3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)+$$

$$\left(2\,A\,(b+a\,\text{Cos}[c+d\,x])^4\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Tan}[c+d\,x]\right)\Big/$$

$$\left(a^4\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^4\right)$$

Problem 929: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cos}[c+d x]^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+b \text{Sec}[c+d x])^4} \, dx$$

Optimal (type 3, 648 leaves, 9 steps):

$$\frac{\left(20 A b^2-8 a b B+a^2 (A+2 C)\right) x}{2 a^6}+$$
$$\left(b \left(20 A b^8+20 a^7 b B-35 a^5 b^3 B+28 a^3 b^5 B-8 a b^7 B-a^2 b^6 (69 A-2 C)-\right.\right.$$
$$\left.\left.8 a^6 b^2 (5 A-C)+7 a^4 b^4 (12 A-C)-8 a^8 C\right) \text{ArcTanh}\left[\frac{\sqrt{a-b} \, \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]\right)\Big/$$
$$\left(a^6 \sqrt{a-b} \, \sqrt{a+b} \, \left(a^2-b^2\right)^3 d\right)+\frac{1}{6 a^5 \left(a^2-b^2\right)^3 d}\left(60 A b^7+6 a^7 B-65 a^5 b^2 B+68 a^3 b^4 B-24 a b^6 B+\right.$$
$$\left.a^4 b^3 (146 A-17 C)-a^2 b^5 (167 A-6 C)-a^6 (24 A b-26 b C)\right) \text{Sin}[c+d x]-\frac{1}{2 a^4 \left(a^2-b^2\right)^3 d}$$
$$\left(10 A b^6-12 a^5 b B+11 a^3 b^3 B-4 a b^5 B-a^6 (A-6 C)+a^4 b^2 (23 A-2 C)-a^2 b^4 (27 A-C)\right)$$
$$\text{Cos}[c+d x] \, \text{Sin}[c+d x]+\frac{\left(A b^2-a (b B-a C)\right) \text{Cos}[c+d x] \, \text{Sin}[c+d x]}{3 a \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^3}-$$
$$\left(\left(5 A b^4+7 a^3 b B-2 a b^3 B-4 a^4 C-a^2 b^2 (10 A+C)\right) \text{Cos}[c+d x] \, \text{Sin}[c+d x]\right)\Big/$$
$$\left(6 a^2 \left(a^2-b^2\right)^2 d (a+b \text{Sec}[c+d x])^2\right)+$$
$$\left(\left(20 A b^6-27 a^5 b B+20 a^3 b^3 B-8 a b^5 B-a^2 b^4 (53 A-2 C)+12 a^6 C+a^4 b^2 (48 A+C)\right)\right.$$
$$\left.\text{Cos}[c+d x] \, \text{Sin}[c+d x]\right)\Big/\left(6 a^3 \left(a^2-b^2\right)^3 d (a+b \text{Sec}[c+d x])\right)$$

Result (type 3, 658 leaves):

$$\frac{\left(a^2 A+20 A b^2-8 a b B+2 a^2 C\right) (c+d x)}{2 a^6 d}+$$
$$\left(b \left(-40 a^6 A b^2+84 a^4 A b^4-69 a^2 A b^6+20 A b^8+20 a^7 b B-35 a^5 b^3 B+28 a^3 b^5 B-8 a b^7 B-\right.\right.$$
$$\left.\left.8 a^8 C+8 a^6 b^2 C-7 a^4 b^4 C+2 a^2 b^6 C\right) \text{ArcTanh}\left[\frac{(-a+b) \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]\right) \Big/$$
$$\left(a^6 \sqrt{a^2-b^2} \left(-a^2+b^2\right)^3 d\right)+\frac{(4 A b-a B) \left(-\frac{i \text{Cos}[c+d x]}{2 a^5}-\frac{\text{Sin}[c+d x]}{2 a^5}\right)}{d}+$$
$$\frac{(4 A b-a B) \left(\frac{i \text{Cos}[c+d x]}{2 a^5}-\frac{\text{Sin}[c+d x]}{2 a^5}\right)}{d}+$$
$$\frac{A b^6 \text{Sin}[c+d x]-a b^5 B \text{Sin}[c+d x]+a^2 b^4 C \text{Sin}[c+d x]}{3 a^5 \left(a^2-b^2\right) d (b+a \text{Cos}[c+d x])^3}+$$
$$\left(-18 a^2 A b^5 \text{Sin}[c+d x]+13 A b^7 \text{Sin}[c+d x]+15 a^3 b^4 B \text{Sin}[c+d x]-10 a b^6 B \text{Sin}[c+d x]-\right.$$
$$\left.12 a^4 b^3 C \text{Sin}[c+d x]+7 a^2 b^5 C \text{Sin}[c+d x]\right) \Big/ \left(6 a^5 \left(a^2-b^2\right)^2 d (b+a \text{Cos}[c+d x])^2\right)+$$
$$\left(90 a^4 A b^4 \text{Sin}[c+d x]-122 a^2 A b^6 \text{Sin}[c+d x]+47 A b^8 \text{Sin}[c+d x]-60 a^5 b^3 B \text{Sin}[c+d x]+\right.$$
$$71 a^3 b^5 B \text{Sin}[c+d x]-26 a b^7 B \text{Sin}[c+d x]+36 a^6 b^2 C \text{Sin}[c+d x]-32 a^4 b^4 C \text{Sin}[c+d x]+$$
$$\left.11 a^2 b^6 C \text{Sin}[c+d x]\right) \Big/ \left(6 a^5 \left(a^2-b^2\right)^3 d (b+a \text{Cos}[c+d x])\right)+\frac{A \text{Sin}[2 (c+d x)]}{4 a^4 d}$$

Problem 930: Result more than twice size of optimal antiderivative.

$$\int \frac{a b B-a^2 C+b^2 B \text{Sec}[c+d x]+b^2 C \text{Sec}[c+d x]^2}{a+b \text{Sec}[c+d x]} \, dx$$

Optimal (type 3, 24 leaves, 3 steps):

$$(b B-a C) x+\frac{b C \text{ArcTanh}[\text{Sin}[c+d x]]}{d}$$

Result (type 3, 81 leaves):

$$b B x-a C x-\frac{b C \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{b C \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}$$

Problem 934: Result more than twice size of optimal antiderivative.

$$\int \frac{a b B-a^2 C+b^2 B \text{Sec}[c+d x]+b^2 C \text{Sec}[c+d x]^2}{(a+b \text{Sec}[c+d x])^5} \, dx$$

Optimal (type 3, 336 leaves, 8 steps):

$$\frac{(b B-a C) x}{a^4}-\left(b \left(8 a^6 b B-8 a^4 b^3 B+7 a^2 b^5 B-2 b^7 B-10 a^7 C+5 a^5 b^2 C-7 a^3 b^4 C+2 a b^6 C\right) \text{ArcTanh}\left[\frac{\sqrt{a-b} \text{ Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]\right) \Big/ \left(a^4 (a-b)^{7/2} (a+b)^{7/2} d\right)+\frac{b^2 (b B-2 a C) \text{Tan}[c+d x]}{3 a \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^3}+\frac{b^2 \left(8 a^2 b B-3 b^3 B-13 a^3 C+3 a b^2 C\right) \text{Tan}[c+d x]}{6 a^2 \left(a^2-b^2\right)^2 d (a+b \text{Sec}[c+d x])^2}+\left(b^2 \left(26 a^4 b B-17 a^2 b^3 B+6 b^5 B-37 a^5 C+13 a^3 b^2 C-6 a b^4 C\right) \text{Tan}[c+d x]\right) \Big/ \left(6 a^3 \left(a^2-b^2\right)^3 d (a+b \text{Sec}[c+d x])\right)$$

Result (type 3, 1287 leaves):

$$\left(b \left(-8 a^6 b B+8 a^4 b^3 B-7 a^2 b^5 B+2 b^7 B+10 a^7 C-5 a^5 b^2 C+7 a^3 b^4 C-2 a b^6 C\right) \text{ArcTanh}\left[\frac{(-a+b) \text{ Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right] (b+a \text{Cos}[c+d x])^4 \text{Sec}[c+d x]^3 (b B-a C+b C \text{Sec}[c+d x])\right) \Big/ \left(a^4 \sqrt{a^2-b^2} \left(-a^2+b^2\right)^3 d (b C+b B \text{Cos}[c+d x]-a C \text{Cos}[c+d x]) (a+b \text{Sec}[c+d x])^4\right)+$$
$$\Big((b+a \text{Cos}[c+d x]) \text{Sec}[c+d x]^3 (b B-a C+b C \text{Sec}[c+d x]) \big(36 a^8 b^2 B (c+d x)-84 a^6 b^4 B (c+d x)+36 a^4 b^6 B (c+d x)+36 a^2 b^8 B (c+d x)-24 b^{10} B (c+d x)-36 a^9 b C (c+d x)+84 a^7 b^3 C (c+d x)-36 a^5 b^5 C (c+d x)-36 a^3 b^7 C (c+d x)+24 a b^9 C (c+d x)+18 a^9 b B (c+d x) \text{Cos}[c+d x]+18 a^7 b^3 B (c+d x) \text{Cos}[c+d x]-162 a^5 b^5 B (c+d x) \text{Cos}[c+d x]+198 a^3 b^7 B (c+d x) \text{Cos}[c+d x]-72 a b^9 B (c+d x) \text{Cos}[c+d x]-18 a^{10} C (c+d x) \text{Cos}[c+d x]-18 a^8 b^2 C (c+d x) \text{Cos}[c+d x]+162 a^6 b^4 C (c+d x) \text{Cos}[c+d x]-198 a^4 b^6 C (c+d x) \text{Cos}[c+d x]+72 a^2 b^8 C (c+d x) \text{Cos}[c+d x]+36 a^8 b^2 B (c+d x) \text{Cos}[2 (c+d x)]-108 a^6 b^4 B (c+d x) \text{Cos}[2 (c+d x)]+108 a^4 b^6 B (c+d x) \text{Cos}[2 (c+d x)]-36 a^2 b^8 B (c+d x) \text{Cos}[2 (c+d x)]-36 a^9 b C (c+d x) \text{Cos}[2 (c+d x)]+108 a^7 b^3 C (c+d x) \text{Cos}[2 (c+d x)]-108 a^5 b^5 C (c+d x) \text{Cos}[2 (c+d x)]+36 a^3 b^7 C (c+d x) \text{Cos}[2 (c+d x)]+6 a^9 b B (c+d x) \text{Cos}[3 (c+d x)]-18 a^7 b^3 B (c+d x) \text{Cos}[3 (c+d x)]+18 a^5 b^5 B (c+d x) \text{Cos}[3 (c+d x)]-6 a^3 b^7 B (c+d x) \text{Cos}[3 (c+d x)]-6 a^{10} C (c+d x) \text{Cos}[3 (c+d x)]+18 a^8 b^2 C (c+d x) \text{Cos}[3 (c+d x)]-18 a^6 b^4 C (c+d x) \text{Cos}[3 (c+d x)]+6 a^4 b^6 C (c+d x) \text{Cos}[3 (c+d x)]+36 a^7 b^3 B \text{Sin}[c+d x]+72 a^5 b^5 B \text{Sin}[c+d x]-57 a^3 b^7 B \text{Sin}[c+d x]+24 a b^9 B \text{Sin}[c+d x]-54 a^8 b^2 C \text{Sin}[c+d x]-111 a^6 b^4 C \text{Sin}[c+d x]+39 a^4 b^6 C \text{Sin}[c+d x]-24 a^2 b^8 C \text{Sin}[c+d x]+120 a^6 b^4 B \text{Sin}[2 (c+d x)]-90 a^4 b^6 B \text{Sin}[2 (c+d x)]+30 a^2 b^8 B \text{Sin}[2 (c+d x)]-174 a^7 b^3 C \text{Sin}[2 (c+d x)]+84 a^5 b^5 C \text{Sin}[2 (c+d x)]-30 a^3 b^7 C \text{Sin}[2 (c+d x)]+36 a^7 b^3 B \text{Sin}[3 (c+d x)]-32 a^5 b^5 B \text{Sin}[3 (c+d x)]+11 a^3 b^7 B \text{Sin}[3 (c+d x)]-54 a^8 b^2 C \text{Sin}[3 (c+d x)]+37 a^6 b^4 C \text{Sin}[3 (c+d x)]-13 a^4 b^6 C \text{Sin}[3 (c+d x)]\big)\Big) \Big/ \left(24 a^4 \left(a^2-b^2\right)^3 d (b C+b B \text{Cos}[c+d x]-a C \text{Cos}[c+d x]) (a+b \text{Sec}[c+d x])^4\right)$$

Problem 935: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^3 \sqrt{a+b \text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 517 leaves, 7 steps):

$$-\frac{1}{315 b^5 d} 2 (a-b) \sqrt{a+b} \left(24 a^3 b B+57 a b^3 B-16 a^4 C-6 a^2 b^2 (7 A+4 C)+21 b^4 (9 A+7 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} - \frac{1}{315 b^4 d} 2 (a-b) \sqrt{a+b} \left(12 a^2 b (2 B-C)-16 a^3 C-6 a b^2 (7 A-3 B+6 C)-3 b^3 (63 A-25 B+49 C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} - \frac{1}{315 b^3 d} 2 \left(12 a^2 b B-75 b^3 B-8 a^3 C-a b^2 (21 A+13 C)\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x] + \frac{1}{315 b^2 d} 2 \left(63 A b^2+9 a b B-6 a^2 C+49 b^2 C\right) \text{Sec}[c+d x] \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x] + \frac{2 (9 b B+a C) \text{Sec}[c+d x]^2 \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{63 b d} + \frac{2 C \text{Sec}[c+d x]^3 \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{9 d}$$

Result (type 1, 1 leaves):

???

Problem 936: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^2 \sqrt{a+b \text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 413 leaves, 6 steps):

$$\frac{1}{105 b^4 d} 2 (a-b) \sqrt{a+b} \left(14 a^2 b B-63 b^3 B-8 a^3 C-a b^2 (35 A+19 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{105 b^3 d} 2 (a-b) \sqrt{a+b} \left(35 A b^2-b^2 (63 B-25 C)+8 a^2 C-a (14 b B-6 b C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 \left(35 A b^2-14 a b B+8 a^2 C+25 b^2 C\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{105 b^2 d}+\frac{2 (7 b B-4 a C) (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{35 b^2 d}+\frac{2 C \text{Sec}[c+d x] (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{7 b d}$$

Result (type 1, 1 leaves):

???

Problem 937: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x] \sqrt{a+b \text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 324 leaves, 5 steps):

$$-\frac{1}{15 b^3 d} 2 (a-b) \sqrt{a+b} \left(3 b^2 (5 A+3 C)+a (5 b B-2 a C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{15 b^2 d} 2 (a-b) \sqrt{a+b} (15 A b-5 b B+2 a C+9 b C) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 (5 b B-2 a C) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{15 b d}+\frac{2 C (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{5 b d}$$

Result (type 1, 1 leaves):

???

Problem 938: Result more than twice size of optimal antiderivative.

$$\int \sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 366 leaves, 6 steps):

$$-\frac{1}{3\,b^2\,d}2\,(a-b)\,\sqrt{a+b}\,(3\,b\,B+a\,C)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{3\,b\,d}$$
$$2\,\sqrt{a+b}\,(3\,A\,b+(a-b)\,(3\,B-C))\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{1}{d}$$
$$2\,A\,\sqrt{a+b}\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{2\,C\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Tan}[c+d\,x]}{3\,d}$$

Result (type 4, 892 leaves):

$$-\left(\left(4\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.\right.$$
$$\left(3\,a\,b\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,b^2\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+a^2\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$
$$a\,b\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-6\,a\,b\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-2\,a^2\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$
$$3\,a\,b\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-3\,b^2\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+a^2\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$
$$a\,b\,C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+6\,a\,A\,b\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$
$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$
$$6\,a\,A\,b\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ +$$

$$(a+b)\ (3\,b\,B+a\,C)\ \mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\ \frac{a-b}{a+b}\right]\ \sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ -$$

$$b\ (a\ (-3\,A+3\,B+C)\ +b\ (3\,A+3\,B+C))\ \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\ \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\left.\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(3\,b\,d\,\sqrt{b+a\,\mathrm{Cos}[c+d x]}\ (A+2\,C+2\,B\,\mathrm{Cos}[c+d x]\ +A\,\mathrm{Cos}[2\,c+2\,d x])\right.$$

$$\mathrm{Sec}[c+d x]^{5/2}\ \left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}$$

$$\left.\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)\right)\ +$$

$$\left(\mathrm{Cos}[c+d x]^2\ \sqrt{a+b\,\mathrm{Sec}[c+d x]}\ \left(A+B\,\mathrm{Sec}[c+d x]\ +C\,\mathrm{Sec}[c+d x]^2\right)\right.$$

$$\left.\left.\left(\frac{4\ (3\,b\,B+a\,C)\ \mathrm{Sin}[c+d x]}{3\,b}+\frac{4}{3}\,C\,\mathrm{Tan}[c+d x]\right)\right)\right)\Big/$$

$$(d\ (A+2\,C+2\,B\,\mathrm{Cos}[c+d x]\ +A\,\mathrm{Cos}[2\,c+2\,d x]))$$

Problem 939: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d x]\ \sqrt{a+b\,\mathrm{Sec}[c+d x]}\ \left(A+B\,\mathrm{Sec}[c+d x]\ +C\,\mathrm{Sec}[c+d x]^2\right)\,dx$$

Optimal (type 4, 362 leaves, 6 steps):

$$\frac{1}{b\,d}(a-b)\sqrt{a+b}\,(A-2C)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{b\,d}\sqrt{a+b}\,(A\,b+2\,b\,B+2\,a\,C-2\,b\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{a\,d}\sqrt{a+b}\,(A\,b+2\,a\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{A\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d}$$

Result (type 4, 930 leaves):

$$\frac{2\,C\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d}+\Bigg(\sqrt{a+b\,\text{Sec}[c+d\,x]}\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\Bigg(a\,A\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+A\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-2\,a\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-2\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-2\,a\,A\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+4\,a\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+a\,A\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-A\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-2\,a\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+2\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-4\,a\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-4\,a\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ +$$

$$(a+b)\ (A-2 C)\ \text{EllipticE}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ -$$

$$2\ (A b+a\ (B-C)-b\ (B+C))\ \text{EllipticF}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\left.\left.\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right) \Bigg/$$

$$\left(d \sqrt{b+a \operatorname{Cos}[c+d x]}\ \sqrt{\operatorname{Sec}[c+d x]}\ \left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)$$

Problem 940: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c+d x]^2 \sqrt{a+b \operatorname{Sec}[c+d x]}\ \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 435 leaves, 7 steps):

$$\frac{1}{4\,a\,b\,d}(a-b)\sqrt{a+b}\,(A\,b+4\,a\,B)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{4\,a\,d}$$
$$\sqrt{a+b}\,(A\,b+2\,a\,(A+2\,B+4\,C))\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{4\,a^2\,d}\sqrt{a+b}\,\left(A\,b^2-4\,a\,b\,B-4\,a^2\,(A+2\,C)\right)$$
$$\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\Big[\frac{a+b}{a},\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{(A\,b+4\,a\,B)\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{4\,a\,d}+\frac{A\,\mathrm{Cos}[c+d\,x]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 1842 leaves):

$$\frac{A\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[2\,(c+d\,x)]}{4\,d}+$$
$$\Bigg(\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\Bigg(-a\,A\,b\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-A\,b^2\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-$$
$$4\,a^2\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-4\,a\,b\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+$$
$$2\,a\,A\,b\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3+8\,a^2\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3-$$
$$a\,A\,b\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5+A\,b^2\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-$$
$$4\,a^2\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5+4\,a\,b\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5+$$
$$8\,i\,a^2\,A\,\mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},i\,\mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$2\,\mathrm{i}\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$8\,\mathrm{i}\,a\,b\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$16\,\mathrm{i}\,a^2\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$8\,\mathrm{i}\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$2\,\mathrm{i}\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+8\,\mathrm{i}\,a\,b\,B$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+16\,\mathrm{i}\,a^2\,C$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},\ i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\ \frac{a+b}{a-b}\right]\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ +$$

$$i\,(a-b)\,(A\,b+4\,a\,B)\ \text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\ \frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -2\,i\,(a-b)\,(A\,b+2\,a\,(A+2\,C))$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\ \frac{a+b}{a-b}\right]\ \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\left(4\,a\,\sqrt{\frac{-a+b}{a+b}}\ d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\ \sqrt{\text{Sec}[c+d\,x]}\ \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right.$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{3/2}$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)$$

Problem 941: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^3\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 538 leaves, 8 steps):

$$-\frac{1}{24 a^2 b d}(a-b)\sqrt{a+b}\left(3 A b^2-6 a b B-8 a^2 (2 A+3 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-$$

$$\frac{1}{24 a^2 d}\sqrt{a+b}\left(3 A b^2-2 a b (A+3 B)-4 a^2 (4 A+3 B+6 C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-$$

$$\frac{1}{8 a^3 d}\sqrt{a+b}\left(A b^3+8 a^3 B-2 a b^2 B+4 a^2 b (A+2 C)\right) \text{Cot}[c+d x] \text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-$$

$$\frac{\left(3 A b^2-6 a b B-8 a^2 (2 A+3 C)\right)\sqrt{a+b \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{24 a^2 d}+\frac{(A b+6 a B) \text{Cos}[c+d x]\sqrt{a+b \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{12 a d}+\frac{A \text{Cos}[c+d x]^2\sqrt{a+b \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{3 d}$$

Result (type 4, 4114 leaves):

$$\frac{1}{d}\sqrt{a+b \text{Sec}[c+d x]}\left(\frac{1}{12} A \text{Sin}[c+d x]+\frac{(A b+6 a B) \text{Sin}[2 (c+d x)]}{24 a}+\frac{1}{12} A \text{Sin}[3 (c+d x)]\right)+$$

$$\left(\left(\frac{7 A b}{12\sqrt{b+a \text{Cos}[c+d x]}\sqrt{\text{Sec}[c+d x]}}+\frac{a B}{2\sqrt{b+a \text{Cos}[c+d x]}\sqrt{\text{Sec}[c+d x]}}+\right.\right.$$

$$\frac{b C}{\sqrt{b+a \text{Cos}[c+d x]}\sqrt{\text{Sec}[c+d x]}}+\frac{a A\sqrt{\text{Sec}[c+d x]}}{3\sqrt{b+a \text{Cos}[c+d x]}}-\frac{A b^2\sqrt{\text{Sec}[c+d x]}}{48 a\sqrt{b+a \text{Cos}[c+d x]}}+\frac{3 b B\sqrt{\text{Sec}[c+d x]}}{8\sqrt{b+a \text{Cos}[c+d x]}}+\frac{a C\sqrt{\text{Sec}[c+d x]}}{2\sqrt{b+a \text{Cos}[c+d x]}}+$$

$$\frac{a A \text{Cos}[2 (c+d x)]\sqrt{\text{Sec}[c+d x]}}{3\sqrt{b+a \text{Cos}[c+d x]}}-\frac{A b^2 \text{Cos}[2 (c+d x)]\sqrt{\text{Sec}[c+d x]}}{16 a\sqrt{b+a \text{Cos}[c+d x]}}+\left.\frac{b B \text{Cos}[2 (c+d x)]\sqrt{\text{Sec}[c+d x]}}{8\sqrt{b+a \text{Cos}[c+d x]}}+\frac{a C \text{Cos}[2 (c+d x)]\sqrt{\text{Sec}[c+d x]}}{2\sqrt{b+a \text{Cos}[c+d x]}}\right)$$

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\Bigg(\Bigg(\left(-3\,A\,b^2+6\,a\,b\,B+8\,a^2\,(2\,A+3\,C)\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\Bigg)\Bigg/\left(24\,a^2\,\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)+$$

$$\Bigg(\Bigg((a+b)\,\left(-3\,A\,b^2+6\,a\,b\,B+8\,a^2\,(2\,A+3\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]-$$

$$2\,\Bigg(a\,\left(-A\,b^2+12\,a^2\,B+2\,a\,b\,(7\,A-3\,B+12\,C)\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]+3\,\left(A\,b^3+8\,a^3\,B-2\,a\,b^2\,B+4\,a^2\,b\,(A+2\,C)\right)\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\Bigg)\Bigg)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}\Bigg)\Bigg/$$

$$\left(24\,a^2\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,\Bigg(\Bigg(\left(-3\,A\,b^2+6\,a\,b\,B+8\,a^2\,(2\,A+3\,C)\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\Bigg)\Bigg/\left(48\,a^2\,\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)-$$

$$\Bigg(\Bigg((a+b)\,\left(-3\,A\,b^2+6\,a\,b\,B+8\,a^2\,(2\,A+3\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]-$$

$$2\,\Bigg(a\,\left(-A\,b^2+12\,a^2\,B+2\,a\,b\,(7\,A-3\,B+12\,C)\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]+3\,\left(A\,b^3+8\,a^3\,B-2\,a\,b^2\,B+4\,a^2\,b\,(A+2\,C)\right)\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\right.\right.\right.$$

$$\frac{1}{2}\left(c+d\,x\right)\Big]\Big],\ \frac{a-b}{a+b}\Big]\Big)\Big)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\ \sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4}$$

$$\Big(-2\,b\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^3+$$

$$2\,a\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\Big)\Big)\Big/$$

$$\left(24\,a^2\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\left(b-b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4+a\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)^2\right)-$$

$$\Big(\Big(\left(a+b\right)\left(-3\,A\,b^2+6\,a\,b\,B+8\,a^2\left(2\,A+3\,C\right)\right)\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big],\ \frac{a-b}{a+b}\Big]-$$

$$2\,\Big(a\left(-A\,b^2+12\,a^2\,B+2\,a\,b\left(7\,A-3\,B+12\,C\right)\right)\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big],$$

$$\frac{a-b}{a+b}\Big]+3\left(A\,b^3+8\,a^3\,B-2\,a\,b^2\,B+4\,a^2\,b\left(A+2\,C\right)\right)\mathrm{EllipticPi}\Big[$$

$$-1,\ -\mathrm{ArcSin}\Big[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big],\ \frac{a-b}{a+b}\Big]\Big)\Big)\ \mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^3\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\Bigg)\Big/$$

$$\Bigg(24\,a^2\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\ \sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4}$$

$$\left(b-b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4+a\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Bigg)+$$

$$\Big(\Big(\left(a+b\right)\left(-3\,A\,b^2+6\,a\,b\,B+8\,a^2\left(2\,A+3\,C\right)\right)\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big],\ \frac{a-b}{a+b}\Big]-$$

$$2\left(a\left(-A b^2+12 a^2 B+2 a b\left(7 A-3 B+12 C\right)\right) \text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right],\frac{a-b}{a+b}\right]+3\left(A b^3+8 a^3 B-2 a b^2 B+4 a^2 b\left(A+2 C\right)\right) \text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right],\frac{a-b}{a+b}\right]\right)\right)$$

$$\left(-a \,\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+b \,\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right)$$

$$\sqrt{\frac{a+b-a \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2+b \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}}\sqrt{1-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^4}\Bigg)\Bigg/$$

$$\left(48 a^2\left(a+b\right)\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}}\sqrt{\frac{a+b-a \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2+b \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}}\left(b-b \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)^2\right)\right)-$$

$$\frac{1}{48 a^2\left(b-b \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)^2\right)}$$

$$\Bigg(\left(a+b\right)\left(-3 A b^2+6 a b B+8 a^2\left(2 A+3 C\right)\right) \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right],\frac{a-b}{a+b}\right]-$$

$$2\left(a\left(-A b^2+12 a^2 B+2 a b\left(7 A-3 B+12 C\right)\right) \text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right],\frac{a-b}{a+b}\right]+3\left(A b^3+8 a^3 B-2 a b^2 B+4 a^2 b\left(A+2 C\right)\right) \text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right],\frac{a-b}{a+b}\right]\right)\right) \text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]$$

$$\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}}\sqrt{\frac{a+b-a \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2+b \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2+b \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}}\sqrt{1-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^4}-$$

$$\Bigg(\left(-3 A b^2+6 a b B+8 a^2\left(2 A+3 C\right)\right) \text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}$$

$$\left(\frac{\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}+\left(\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right.\right.$$

$$\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/\left(1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/$$

$$\left(48\,a^2\left(\frac{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^{3/2}\right)+\left(\left(-3\,A\,b^2+6\,a\,b\,B+8\,a^2\left(2\,A+3\,C\right)\right)\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right.$$

$$\left(\left(-a\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+b\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\Big/\right.$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right.$$

$$\left.\left.\left.\left(a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\right)\Big/$$

$$\left(48\,a^2\sqrt{\frac{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}\right)+$$

$$\left(\left(\left(a+b\right)\left(-3\,A\,b^2+6\,a\,b\,B+8\,a^2\left(2\,A+3\,C\right)\right)\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]-\right.\right.$$

$$2\left(a\left(-A\,b^2+12\,a^2\,B+2\,a\,b\left(7\,A-3\,B+12\,C\right)\right)\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\right.\right.$$

$$\left.\frac{a-b}{a+b}\right]+3\left(A\,b^3+8\,a^3\,B-2\,a\,b^2\,B+4\,a^2\,b\left(A+2\,C\right)\right)\mathrm{EllipticPi}\left[\right.$$

$$\left.\left.\left.-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\frac{a-b}{a+b}\right]\right)\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4}$$

$$\left(\left(-a\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+b\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\Big/\right.$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-\left(\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right.$$

$$\left.\left.\left(a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/$$

$$\left(48\,a^2\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$

$$\left.\left(b-b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\right)+$$

$$\left(\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right.$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}$$

$$\left(\left(\left((a+b)\,\left(-3\,A\,b^2+6\,a\,b\,B+8\,a^2\,(2\,A+3\,C)\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right.\right.\right.$$

$$\left.\sqrt{1-\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\Big/\left(2\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)-$$

$$2\,\left(\left(a\,\left(-A\,b^2+12\,a^2\,B+2\,a\,b\,(7\,A-3\,B+12\,C)\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/\right.$$

$$\left(2\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{1-\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)-\left(3\,\left(A\,b^3+8\,a^3\,B-\right.\right.$$

$$\left.\left.2\,a\,b^2\,B+4\,a^2\,b\,(A+2\,C)\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/\left(2\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right.$$

$$\left.\left.\left.\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{1-\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)\right)\right)\right)\Big/$$

$$\left(24\,a^2\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(b-b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\right)\right)\right)$$

Problem 942: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^3 \left(a+b \,\text{Sec}[c+d x]\right)^{3/2} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 628 leaves, 8 steps):

$$-\frac{1}{3465 b^5 d} 2 (a-b) \sqrt{a+b} \left(88 a^4 b B+363 a^2 b^3 B+1617 b^5 B-48 a^5 C-18 a^3 b^2 (11 A+6 C)+6 a b^4 (451 A+348 C)\right) \text{Cot}[c+d x] \,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} - \frac{1}{3465 b^4 d} 2 (a-b) \sqrt{a+b} \left(4 a^3 b (22 B-9 C)-48 a^4 C-6 a^2 b^2 (33 A-11 B+24 C)+3 b^4 (275 A-539 B+225 C)-3 a b^3 (627 A-143 B+471 C)\right) \text{Cot}[c+d x] \,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} - \frac{1}{3465 b^3 d} 2 \left(44 a^3 b B-968 a b^3 B-24 a^4 C-75 b^4 (11 A+9 C)-3 a^2 b^2 (33 A+19 C)\right) \sqrt{a+b \,\text{Sec}[c+d x]} \,\text{Tan}[c+d x] + \frac{1}{3465 b^2 d} 2 \left(33 a^2 b B+539 b^3 B-18 a^3 C+6 a b^2 (132 A+101 C)\right) \text{Sec}[c+d x] \sqrt{a+b \,\text{Sec}[c+d x]} \,\text{Tan}[c+d x] + \frac{1}{693 b d} 2 \left(99 A b^2+110 a b B+3 a^2 C+81 b^2 C\right) \text{Sec}[c+d x]^2 \sqrt{a+b \,\text{Sec}[c+d x]} \,\text{Tan}[c+d x] + \frac{2 (11 b B+3 a C) \,\text{Sec}[c+d x]^3 \sqrt{a+b \,\text{Sec}[c+d x]} \,\text{Tan}[c+d x]}{99 d} + \frac{2 C \,\text{Sec}[c+d x]^3 \left(a+b \,\text{Sec}[c+d x]\right)^{3/2} \text{Tan}[c+d x]}{11 d}$$

Result (type 1, 1 leaves):

???

Problem 943: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^2 \left(a+b \,\text{Sec}[c+d x]\right)^{3/2} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 505 leaves, 7 steps):

$$\frac{1}{315\, b^4\, d} 2\,(a-b)\,\sqrt{a+b}\,\left(18\, a^3\, b\, B - 246\, a\, b^3\, B - 8\, a^4\, C - 21\, b^4\,(9\, A + 7\, C) - 3\, a^2\, b^2\,(21\, A + 11\, C)\right)\, \text{Cot}[c+d\,x]$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}} +$$

$$\frac{1}{315\, b^3\, d} 2\,(a-b)\,\sqrt{a+b}\,\left(6\, a^2\, b\,(3\, B - C) - 8\, a^3\, C - 3\, a\, b^2\,(21\, A - 57\, B + 13\, C) + 3\, b^3\,(63\, A - 25\, B + 49\, C)\right)$$

$$\text{Cot}[c+d\,x]\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}} - \frac{1}{315\, b^2\, d}$$

$$2\,\left(18\, a^2\, b\, B - 75\, b^3\, B - 8\, a^3\, C - 3\, a\, b^2\,(21\, A + 13\, C)\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\, \text{Tan}[c+d\,x] +$$

$$\frac{1}{315\, b^2\, d} 2\,\left(63\, A\, b^2 - 18\, a\, b\, B + 8\, a^2\, C + 49\, b^2\, C\right)\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\, \text{Tan}[c+d\,x] +$$

$$\frac{2\,(9\, b\, B - 4\, a\, C)\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\, \text{Tan}[c+d\,x]}{63\, b^2\, d} +$$

$$\frac{2\, C\, \text{Sec}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\, \text{Tan}[c+d\,x]}{9\, b\, d}$$

Result (type 1, 1 leaves) :

???

Problem 944: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2\right)\, dx$$

Optimal (type 4, 406 leaves, 6 steps) :

$$-\frac{1}{105 b^3 d} 2 (a-b) \sqrt{a+b} \left(21 a^2 b B+63 b^3 B-6 a^3 C+2 a b^2 (70 A+41 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{105 b^2 d} 2 (a-b) \sqrt{a+b} \left(6 a^2 C+3 a b (35 A-7 B+19 C)-b^2 (35 A-63 B+25 C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 \left(35 A b^2+21 a b B-6 a^2 C+25 b^2 C\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{105 b d}+\frac{2 (7 b B-2 a C) (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{35 b d}+\frac{2 C (a+b \text{Sec}[c+d x])^{5/2} \text{Tan}[c+d x]}{7 b d}$$

Result (type 1, 1 leaves):

???

Problem 945: Result more than twice size of optimal antiderivative.

$$\int (a+b \text{Sec}[c+d x])^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 443 leaves, 7 steps):

$$-\frac{1}{15 b^2 d} 2 (a-b) \sqrt{a+b} \left(15 A b^2+20 a b B+3 a^2 C+9 b^2 C\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{15 b d} 2 \sqrt{a+b} \left(3 a^2 (5 B-C)+2 a b (15 A-10 B+6 C)-b^2 (15 A-5 B+9 C)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{d} 2 a A \sqrt{a+b} \text{Cot}[c+d x] \text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{2 (5 b B+3 a C) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{15 d}+\frac{2 C (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{5 d}$$

Result (type 4, 1192 leaves):

$$-\Bigg(\Bigg(4\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\,\Bigg(15\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+15\,A\,b^3\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$20\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+20\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\,a^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$3\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+9\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+9\,b^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$

$$30\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-40\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-6\,a^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-$$

$$18\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+15\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-15\,A\,b^3\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+$$

$$20\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-20\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+3\,a^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-$$

$$3\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+9\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-9\,b^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+$$

$$30\,a^2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}+$$

$$30\,a^2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}+$$

$$(a+b)\,\left(15\,A\,b^2+20\,a\,b\,B+3\,a^2\,C+9\,b^2\,C\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-$$

$$b\,\left(3\,a^2\,(-5\,A+5\,B+C)+2\,a\,b\,(15\,A+10\,B+6\,C)+b^2\,(15\,A+5\,B+9\,C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}}\Bigg)\Bigg)\Bigg/$$

$$\Bigg(15\,b\,d\,\left(b+a\,\text{Cos}[c+d x]\right)^{3/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d x]+A\,\text{Cos}[2\,c+2\,d x]\right)$$

$$\text{Sec}[c+d x]^{7/2}\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)^{3/2}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}}\Bigg)\Bigg)+$$

$$\Bigg(\text{Cos}[c+d x]^3\left(a+b\,\text{Sec}[c+d x]\right)^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$

$$\left(\frac{4\left(15\,A\,b^2+20\,a\,b\,B+3\,a^2\,C+9\,b^2\,C\right)\text{Sin}[c+d x]}{15\,b}+\right.$$

$$\left.\frac{4}{15}\text{Sec}[c+d x]\left(5\,b\,B\,\text{Sin}[c+d x]+6\,a\,C\,\text{Sin}[c+d x]\right)+\frac{4}{5}\,b\,C\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]\right)\Bigg)\Bigg/$$

$$\left(d\left(b+a\,\text{Cos}[c+d x]\right)\left(A+2\,C+2\,B\,\text{Cos}[c+d x]+A\,\text{Cos}[2\,c+2\,d x]\right)\right)$$

Problem 946: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]\left(a+b\,\text{Sec}[c+d x]\right)^{3/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 4, 426 leaves, 7 steps):

$$\frac{1}{3\,b\,d}(a-b)\sqrt{a+b}\,(3\,a\,A-6\,b\,B-8\,a\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$

$$\frac{1}{3\,b\,d}\sqrt{a+b}\,\left(a\,b\,(3\,A+12\,B-8\,C)+6\,a^2\,C+2\,b^2\,(3\,A-3\,B+C)\right)\text{Cot}[c+d\,x]\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$

$$\frac{1}{d}\sqrt{a+b}\,(3\,A\,b+2\,a\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\Big[\frac{a+b}{a},\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$

$$\frac{A\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{d}-\frac{b\,(3\,A-2\,C)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{3\,d}$$

Result (type 4, 1208 leaves):

$$\Bigg(2\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\,\Bigg(3\,a^2\,A\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+3\,a\,A\,b\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-$$

$$6\,a\,b\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-6\,b^2\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-8\,a^2\,C\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-$$

$$8\,a\,b\,C\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-6\,a^2\,A\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3+12\,a\,b\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3+$$

$$16\,a^2\,C\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3+3\,a^2\,A\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-3\,a\,A\,b\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-$$

$$6\,a\,b\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5+6\,b^2\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-8\,a^2\,C\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5+$$

$$8\,a\,b\,C\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-18\,a\,A\,b\,\text{EllipticPi}\Big[-1,-\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]$$

$$\sqrt{1-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-$$

$$12\,a^2\,B\,\text{EllipticPi}\Big[-1,-\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ -$$

$$18\,a\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ -$$

$$12\,a^2\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ +(a+b)$$

$$(3\,a\,A-6\,b\,B-8\,a\,C)\ \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ -$$

$$2\left(2\,a\,b\,(3\,A-3\,B-2\,C)+3\,a^2\,(B-C)-b^2\,(3\,A+3\,B+C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(3\,d\,(b+a\,\text{Cos}[c+d x])^{3/2}\,(A+2\,C+2\,B\,\text{Cos}[c+d x]+A\,\text{Cos}[2\,c+2\,d x])\right.$$

$$\text{Sec}[c+d x]^{7/2}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)+$$

$$\left(\text{Cos}[c+d x]^3\,(a+b\,\text{Sec}[c+d x])^{3/2}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right.$$

$$\left.\left(\frac{4}{3}(3\,b\,B+4\,a\,C)\ \text{Sin}[c+d x]+\frac{4}{3}\,b\,C\,\text{Tan}[c+d x]\right)\right)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d x])\,(A+2\,C+2\,B\,\text{Cos}[c+d x]+A\,\text{Cos}[2\,c+2\,d x])\right)$$

Problem 949: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^4\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 4, 650 leaves, 9 steps):

$$-\frac{1}{192\,a^2\,b\,d}(a-b)\,\sqrt{a+b}\,\left(9\,A\,b^3-128\,a^3\,B-24\,a\,b^2\,B-12\,a^2\,b\,(13\,A+20\,C)\right)\\ \text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\\ \sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{192\,a^2\,d}\\ \sqrt{a+b}\,\left(9\,A\,b^3-6\,a\,b^2\,(A+4\,B)-8\,a^3\,(9\,A+16\,B+12\,C)-4\,a^2\,b\,(39\,A+28\,B+60\,C)\right)\,\text{Cot}[c+d\,x]\\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\\ \frac{1}{64\,a^3\,d}\sqrt{a+b}\,\left(3\,A\,b^4+96\,a^3\,b\,B-8\,a\,b^3\,B+24\,a^2\,b^2\,(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)\\ \text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\\ \sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{192\,a^2\,d}\\ \left(9\,A\,b^3-128\,a^3\,B-24\,a\,b^2\,B-12\,a^2\,b\,(13\,A+20\,C)\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+\\ \frac{1}{96\,a\,d}\left(3\,A\,b^2+56\,a\,b\,B+12\,a^2\,(3\,A+4\,C)\right)\,\text{Cos}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+\\ \frac{(3\,A\,b+8\,a\,B)\,\text{Cos}[c+d\,x]^2\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,d}+\\ \frac{A\,\text{Cos}[c+d\,x]^3\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{4\,d}$$

Result (type 4, 4781 leaves):

$$\left(\text{Cos}[c+d\,x]^3\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right.\\ \left(\frac{1}{48}(9\,A\,b+8\,a\,B)\,\text{Sin}[c+d\,x]+\frac{(48\,a^2\,A+3\,A\,b^2+56\,a\,b\,B+48\,a^2\,C)\,\text{Sin}[2\,(c+d\,x)]}{96\,a}+\right.\\ \left.\left.\frac{1}{48}(9\,A\,b+8\,a\,B)\,\text{Sin}[3\,(c+d\,x)]+\frac{1}{16}a\,A\,\text{Sin}[4\,(c+d\,x)]\right)\right)\Big/\\ \left(d\,(b+a\,\text{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$

$$\Bigg(\Bigg(\frac{3 a^2 A}{4 \sqrt{b+a \operatorname{Cos}[c+d x]} \sqrt{\operatorname{Sec}[c+d x]}}+\frac{19 A b^2}{16 \sqrt{b+a \operatorname{Cos}[c+d x]} \sqrt{\operatorname{Sec}[c+d x]}}+$$

$$\frac{13 a b B}{6 \sqrt{b+a \operatorname{Cos}[c+d x]} \sqrt{\operatorname{Sec}[c+d x]}}+\frac{a^2 C}{\sqrt{b+a \operatorname{Cos}[c+d x]} \sqrt{\operatorname{Sec}[c+d x]}}+$$

$$\frac{2 b^2 C}{\sqrt{b+a \operatorname{Cos}[c+d x]} \sqrt{\operatorname{Sec}[c+d x]}}+\frac{19 a A b \sqrt{\operatorname{Sec}[c+d x]}}{16 \sqrt{b+a \operatorname{Cos}[c+d x]}}-$$

$$\frac{A b^3 \sqrt{\operatorname{Sec}[c+d x]}}{64 a \sqrt{b+a \operatorname{Cos}[c+d x]}}+\frac{2 a^2 B \sqrt{\operatorname{Sec}[c+d x]}}{3 \sqrt{b+a \operatorname{Cos}[c+d x]}}+\frac{17 b^2 B \sqrt{\operatorname{Sec}[c+d x]}}{24 \sqrt{b+a \operatorname{Cos}[c+d x]}}+$$

$$\frac{7 a b C \sqrt{\operatorname{Sec}[c+d x]}}{4 \sqrt{b+a \operatorname{Cos}[c+d x]}}+\frac{13 a A b \operatorname{Cos}[2 (c+d x)] \sqrt{\operatorname{Sec}[c+d x]}}{16 \sqrt{b+a \operatorname{Cos}[c+d x]}}-$$

$$\frac{3 A b^3 \operatorname{Cos}[2 (c+d x)] \sqrt{\operatorname{Sec}[c+d x]}}{64 a \sqrt{b+a \operatorname{Cos}[c+d x]}}+\frac{2 a^2 B \operatorname{Cos}[2 (c+d x)] \sqrt{\operatorname{Sec}[c+d x]}}{3 \sqrt{b+a \operatorname{Cos}[c+d x]}}+$$

$$\frac{b^2 B \operatorname{Cos}[2 (c+d x)] \sqrt{\operatorname{Sec}[c+d x]}}{8 \sqrt{b+a \operatorname{Cos}[c+d x]}}+\frac{5 a b C \operatorname{Cos}[2 (c+d x)] \sqrt{\operatorname{Sec}[c+d x]}}{4 \sqrt{b+a \operatorname{Cos}[c+d x]}}\Bigg)$$

$$(a+b \operatorname{Sec}[c+d x])^{3/2} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$

$$\Bigg(\Bigg(\left(-9 A b^3+128 a^3 B+24 a b^2 B+12 a^2 b (13 A+20 C)\right) \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]$$

$$\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}}\Bigg) \Bigg/ \left(96 a^2 \sqrt{\frac{1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}}\right)+$$

$$\Bigg(\Bigg((a+b) \left(-9 A b^3+128 a^3 B+24 a b^2 B+12 a^2 b (13 A+20 C)\right) \operatorname{EllipticE}\Big[\operatorname{ArcSin}\Big[$$

$$\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\Big], \frac{a-b}{a+b}\Big]-2 a \left(-3 A b^3+24 a^3 (3 A+4 C)-4 a^2 b (9 A-52 B+12 C)+\right.$$

$$\left.2 a b^2 (57 A-28 B+96 C)\right) \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]-6 \left(3 A b^4+\right.$$

$$\left.96 a^3 b B-8 a b^3 B+24 a^2 b^2 (A+2 C)+16 a^4 (3 A+4 C)\right) \operatorname{EllipticPi}\Big[-1,-\operatorname{ArcSin}\Big[$$

$$\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\Big], \frac{a-b}{a+b}\Big]\Bigg) \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}} \sqrt{1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^4}\Bigg) \Bigg/$$

$$\left(96\,a^2\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\text{Sec}[c+d\,x]^{7/2}$$

$$\Bigg(\Bigg(\left(-9\,A\,b^3+128\,a^3\,B+24\,a\,b^2\,B+12\,a^2\,b\,(13\,A+20\,C)\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\Bigg)\Bigg/\left(192\,a^2\,\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)-$$

$$\Bigg(\Bigg((a+b)\,\left(-9\,A\,b^3+128\,a^3\,B+24\,a\,b^2\,B+12\,a^2\,b\,(13\,A+20\,C)\right)$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]-$$
$$2\,a\,\left(-3\,A\,b^3+24\,a^3\,(3\,A+4\,C)-4\,a^2\,b\,(9\,A-52\,B+12\,C)+2\,a\,b^2\,(57\,A-28\,B+96\,C)\right)$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]-6\,\Big(3\,A\,b^4+96\,a^3\,b\,B-8\,a\,b^3\,B+24\,a^2\,b^2$$
$$(A+2\,C)+16\,a^4\,(3\,A+4\,C)\Big)\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\Bigg)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}\,\left(-2\,b\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+\right.$$

$$\left.2\,a\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\Bigg)\Bigg/$$

$$\left(96\,a^2\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)^2\right)-$$

$$\Bigg(\Big((a+b)\left(-9\,A\,b^3+128\,a^3\,B+24\,a\,b^2\,B+12\,a^2\,b\,(13\,A+20\,C)\right)\text{EllipticE}\Big[\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]-2\,a\left(-3\,A\,b^3+24\,a^3\,(3\,A+4\,C)-4\,a^2\,b\,(9\,A-52\,B+12\,C)+2\,a\,b^2\,(57\,A-28\,B+96\,C)\right)\text{EllipticF}\Big[\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]-6\left(3\,A\,b^4+96\,a^3\,b\,B-8\,a\,b^3\,B+24\,a^2\,b^2\,(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)\text{EllipticPi}\Big[-1,-\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\Bigg)\Bigg/\Bigg(96\,a^2\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\sqrt{1-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^4}\left(b-b\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^4+a\left(-1+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\right)^2\right)\Bigg)+$$

$$\Bigg(\Big((a+b)\left(-9\,A\,b^3+128\,a^3\,B+24\,a\,b^2\,B+12\,a^2\,b\,(13\,A+20\,C)\right)\text{EllipticE}\Big[\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]-2\,a\left(-3\,A\,b^3+24\,a^3\,(3\,A+4\,C)-4\,a^2\,b\,(9\,A-52\,B+12\,C)+2\,a\,b^2\,(57\,A-28\,B+96\,C)\right)\text{EllipticF}\Big[\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]-6\left(3\,A\,b^4+96\,a^3\,b\,B-8\,a\,b^3\,B+24\,a^2\,b^2\,(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)\text{EllipticPi}\Big[-1,-\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]\Big)\left(-a\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+b\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\sqrt{1-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^4}\Bigg)\Bigg/$$

$$\Bigg(192\,a^2\,(a+b)\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}$$

$$\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\Bigg)-$$

$$\frac{1}{192\,a^2\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)}$$

$$\Bigg((a+b)\left(-9\,A\,b^3+128\,a^3\,B+24\,a\,b^2\,B+12\,a^2\,b\,(13\,A+20\,C)\right)$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]-$$

$$2\,a\left(-3\,A\,b^3+24\,a^3\,(3\,A+4\,C)-4\,a^2\,b\,(9\,A-52\,B+12\,C)+2\,a\,b^2\,(57\,A-28\,B+96\,C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]-$$

$$6\left(3\,A\,b^4+96\,a^3\,b\,B-8\,a\,b^3\,B+24\,a^2\,b^2\,(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)\text{EllipticPi}\Big[$$

$$-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\Big]\Bigg)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\,\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4}-$$

$$\Bigg(\left(-9\,A\,b^3+128\,a^3\,B+24\,a\,b^2\,B+12\,a^2\,b\,(13\,A+20\,C)\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\,\left(\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}+\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left.\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\Bigg)\Bigg/\left(192\,a^2\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{3/2}\right)+$$

$$\Bigg(\left(-9\,A\,b^3+128\,a^3\,B+24\,a\,b^2\,B+12\,a^2\,b\,(13\,A+20\,C)\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\left(\left(-a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+b\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big/\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-\left(\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right.$$

$$\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg/\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\Bigg)\Bigg)\Bigg/$$

$$\left(192\,a^2\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)+$$

$$\Bigg(\Bigg((a+b)\left(-9\,A\,b^3+128\,a^3\,B+24\,a\,b^2\,B+12\,a^2\,b\,(13\,A+20\,C)\right)$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]-$$

$$2\,a\left(-3\,A\,b^3+24\,a^3\,(3\,A+4\,C)-4\,a^2\,b\,(9\,A-52\,B+12\,C)+2\,a\,b^2\,(57\,A-28\,B+96\,C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]-6\left(3\,A\,b^4+96\,a^3\,b\,B-8\,a\,b^3\,B+24\,a^2\,b^2\right.$$

$$\left.(A+2\,C)+16\,a^4\,(3\,A+4\,C)\right)\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\Bigg)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4}$$

$$\Bigg(\left(-a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+b\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big/$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-\Bigg(\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg/\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\Bigg)\Bigg)\Bigg/$$

$$\Bigg(192\,a^2\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}$$

$$\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\Bigg)+$$

$$\Bigg(\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4}$$

$$\left(-\left(\left(a\left(-3 A b^3+24 a^3(3 A+4 C)-4 a^2 b(9 A-52 B+12 C)+2 a b^2(57 A-28 B+96 C)\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right) \Big/ \left(\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{1-\frac{(a-b) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)+\left(3\left(3 A b^4+96 a^3 b B-8 a b^3 B+24 a^2 b^2(A+2 C)+16 a^4(3 A+4 C)\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right) \Big/ \left(\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \sqrt{1-\frac{(a-b) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)+\left((a+b)\left(-9 A b^3+128 a^3 B+24 a b^2 B+12 a^2 b(13 A+20 C)\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \sqrt{1-\frac{(a-b) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right) \Big/ \left(2 \sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)\right)\right) \Big/ \left(96 a^2 \sqrt{\frac{1}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\left(b-b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^4+a\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\right)\right)\right)$$

Problem 950: Attempted integration timed out after 120 seconds.

$$\int \operatorname{Sec}[c+d x]^2 (a+b \operatorname{Sec}[c+d x])^{5/2} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 610 leaves, 8 steps):

$$\frac{1}{3465\, b^4\, d} 2\, (a-b)\, \sqrt{a+b}\, \left(110\, a^4\, b\, B - 3069\, a^2\, b^3\, B - 1617\, b^5\, B - 40\, a^5\, C - 15\, a^3\, b^2\, (33\, A + 17\, C) - 15\, a\, b^4\, (319\, A + 247\, C)\right)$$
$$\text{Cot}[c+d\,x]\ \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\ \frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\ \sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}} + \frac{1}{3465\, b^3\, d}$$
$$2\, (a-b)\, \sqrt{a+b}\, \left(10\, a^3\, b\, (11\, B - 3\, C) - 40\, a^4\, C - 15\, a^2\, b^2\, (33\, A - 121\, B + 19\, C) - 3\, b^4\, (275\, A - 539\, B + 225\, C) + 6\, a\, b^3\, (660\, A - 209\, B + 505\, C)\right)\ \text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\ \frac{a+b}{a-b}\right]\ \sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\ \sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}} -$$
$$\frac{1}{3465\, b^2\, d} 2\, \left(110\, a^3\, b\, B - 1254\, a\, b^3\, B - 40\, a^4\, C - 75\, b^4\, (11\, A + 9\, C) - 15\, a^2\, b^2\, (33\, A + 19\, C)\right)$$
$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Tan}[c+d\,x] - \frac{1}{3465\, b^2\, d}$$
$$2\, \left(110\, a^2\, b\, B - 539\, b^3\, B - 40\, a^3\, C - 5\, a\, b^2\, (99\, A + 67\, C)\right)\, (a+b\,\text{Sec}[c+d\,x])^{3/2}\ \text{Tan}[c+d\,x] +$$
$$\frac{1}{693\, b^2\, d} 2\, \left(99\, A\, b^2 - 22\, a\, b\, B + 8\, a^2\, C + 81\, b^2\, C\right)\, (a+b\,\text{Sec}[c+d\,x])^{5/2}\ \text{Tan}[c+d\,x] +$$
$$\frac{2\, (11\, b\, B - 4\, a\, C)\, (a+b\,\text{Sec}[c+d\,x])^{7/2}\ \text{Tan}[c+d\,x]}{99\, b^2\, d} +$$
$$\frac{2\, C\, \text{Sec}[c+d\,x]\, (a+b\,\text{Sec}[c+d\,x])^{7/2}\ \text{Tan}[c+d\,x]}{11\, b\, d}$$

Result (type 1, 1 leaves):

???

Problem 951: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d\,x]\, (a+b\,\text{Sec}[c+d\,x])^{5/2}\, \left(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2\right)\, dx$$

Optimal (type 4, 502 leaves, 7 steps):

$$-\frac{1}{315\,b^3\,d}2\,(a-b)\,\sqrt{a+b}\,\left(45\,a^3\,b\,B+435\,a\,b^3\,B-10\,a^4\,C+21\,b^4\,(9\,A+7\,C)+3\,a^2\,b^2\,(161\,A+93\,C)\right)$$
$$\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{315\,b^2\,d}2\,(a-b)\,\sqrt{a+b}$$
$$\left(10\,a^3\,C+15\,a^2\,b\,(21\,A-3\,B+11\,C)-6\,a\,b^2\,(28\,A-60\,B+19\,C)+3\,b^3\,(63\,A-25\,B+49\,C)\right)\,\text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{1}{315\,b\,d}2\,\left(45\,a^2\,b\,B+75\,b^3\,B-10\,a^3\,C+6\,a\,b^2\,(28\,A+19\,C)\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]+$$
$$\frac{1}{315\,b\,d}2\,\left(63\,A\,b^2+45\,a\,b\,B-10\,a^2\,C+49\,b^2\,C\right)\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]+$$
$$\frac{2\,(9\,b\,B-2\,a\,C)\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]}{63\,b\,d}+\frac{2\,C\,(a+b\,\text{Sec}[c+d\,x])^{7/2}\,\text{Tan}[c+d\,x]}{9\,b\,d}$$

Result (type 1, 1 leaves):

???

Problem 952: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 521 leaves, 8 steps):

$$-\frac{1}{105 b^2 d}2 (a-b) \sqrt{a+b} \left(161 a^2 b B+63 b^3 B+15 a^3 C+5 a b^2 (49 A+29 C)\right)$$
$$\text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{105 b d}2 \sqrt{a+b}$$
$$\left(15 a^3 (7 B-C)+b^3 (35 A-63 B+25 C)+a^2 b (315 A-161 B+135 C)-a b^2 (245 A-119 B+145 C)\right)$$
$$\text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{d}$$
$$2 a^2 A \sqrt{a+b} \text{Cot}[c+d x] \text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+$$
$$\frac{2 \left(35 A b^2+56 a b B+15 a^2 C+25 b^2 C\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{105 d}+$$
$$\frac{2 (7 b B+5 a C) (a+b \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]}{35 d}+\frac{2 C (a+b \text{Sec}[c+d x])^{5/2} \text{Tan}[c+d x]}{7 d}$$

Result (type 4, 1405 leaves):

$$-\left(\left(\left(4 (a+b \text{Sec}[c+d x])^{5/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}}\right.\right.\right.$$
$$\left(245 a^2 A b^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]+245 a A b^3 \text{Tan}\left[\frac{1}{2} (c+d x)\right]+161 a^3 b B \text{Tan}\left[\frac{1}{2} (c+d x)\right]+\right.$$
$$161 a^2 b^2 B \text{Tan}\left[\frac{1}{2} (c+d x)\right]+63 a b^3 B \text{Tan}\left[\frac{1}{2} (c+d x)\right]+63 b^4 B \text{Tan}\left[\frac{1}{2} (c+d x)\right]+$$
$$15 a^4 C \text{Tan}\left[\frac{1}{2} (c+d x)\right]+15 a^3 b C \text{Tan}\left[\frac{1}{2} (c+d x)\right]+145 a^2 b^2 C \text{Tan}\left[\frac{1}{2} (c+d x)\right]+$$
$$145 a b^3 C \text{Tan}\left[\frac{1}{2} (c+d x)\right]-490 a^2 A b^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3-322 a^3 b B \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3-$$
$$126 a b^3 B \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3-30 a^4 C \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3-290 a^2 b^2 C \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3+$$
$$245 a^2 A b^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]^5-245 a A b^3 \text{Tan}\left[\frac{1}{2} (c+d x)\right]^5+161 a^3 b B \text{Tan}\left[\frac{1}{2} (c+d x)\right]^5-$$
$$161 a^2 b^2 B \text{Tan}\left[\frac{1}{2} (c+d x)\right]^5+63 a b^3 B \text{Tan}\left[\frac{1}{2} (c+d x)\right]^5-63 b^4 B \text{Tan}\left[\frac{1}{2} (c+d x)\right]^5+$$

$$15 a^4 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-15 a^3 b C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+145 a^2 b^2 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-$$

$$145 a b^3 C \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+210 a^3 A b \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\right.$$

$$\left.\frac{a-b}{a+b}\right] \sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$210 a^3 A b \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$(a+b)\left(161 a^2 b B+63 b^3 B+15 a^3 C+5 a b^2(49 A+29 C)\right) \operatorname{EllipticE}\left[\right.$$

$$\left.\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-b\left(-15 a^3(7 A-7 B-C)+\right.$$

$$\left.b^3(35 A+63 B+25 C)+a^2 b(315 A+161 B+135 C)+a b^2(245 A+119 B+145 C)\right)$$

$$\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right) \Big/$$

$$\left(105 b d(b+a \operatorname{Cos}[c+d x])^{5/2}(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right.$$

$$\operatorname{Sec}[c+d x]^{9/2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}$$

$$\left.\left.\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)\right)+$$

$$\frac{1}{d(b+a \operatorname{Cos}[c+d x])^2(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])}$$

$$\operatorname{Cos}[c+d x]^4$$

$$(a+b \operatorname{Sec}[c+d x])^{5/2}$$

$$\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$

$$\left(\frac{4\left(245 a A b^2+161 a^2 b B+63 b^3 B+15 a^3 C+145 a b^2 C\right) \operatorname{Sin}[c+d x]}{105 b}+\right.$$

$$\frac{4}{35}\,\text{Sec}[c+d\,x]^2\,\left(7\,b^2\,B\,\text{Sin}[c+d\,x]+15\,a\,b\,C\,\text{Sin}[c+d\,x]\right)+\frac{4}{105}\,\text{Sec}[c+d\,x]\,\left(35\,A\,b^2\,\text{Sin}[c+d\,x]+77\,a\,b\,B\,\text{Sin}[c+d\,x]+45\,a^2\,C\,\text{Sin}[c+d\,x]+25\,b^2\,C\,\text{Sin}[c+d\,x]\right)+\frac{4}{7}\,b^2\,C\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Bigg)$$

Problem 953: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 505 leaves, 8 steps):

$$-\frac{1}{15\,b\,d}(a-b)\,\sqrt{a+b}\,\left(70\,a\,b\,B-a^2\,\left(15\,A-46\,C\right)+6\,b^2\,\left(5\,A+3\,C\right)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}+\frac{1}{15\,b\,d}\sqrt{a+b}\,\left(a^2\,b\,\left(15\,A+90\,B-46\,C\right)+30\,a^3\,C-2\,b^3\,\left(15\,A-5\,B+9\,C\right)+2\,a\,b^2\,\left(45\,A-35\,B+17\,C\right)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}-\frac{1}{d}a\,\sqrt{a+b}\,\left(5\,A\,b+2\,a\,B\right)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}+\frac{A\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\text{Sin}[c+d\,x]}{d}-\frac{b\,\left(15\,a\,A-10\,b\,B-16\,a\,C\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{15\,d}-\frac{b\,\left(5\,A-2\,C\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Tan}[c+d\,x]}{5\,d}$$

Result (type 4, 1498 leaves):

$$\Bigg(2\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2}}\,\Bigg(15\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+15\,a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-30\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-$$

$$30\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-70\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-70\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$46\,a^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-46\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-18\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$18\,b^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-30\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+60\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$
$$140\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+92\,a^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+36\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$
$$15\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-15\,a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-30\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$
$$30\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-70\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+70\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$
$$46\,a^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+46\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-18\,a\,b^2\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$
$$18\,b^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-150\,a^2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$
$$60\,a^3\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$
$$150\,a^2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$
$$60\,a^3\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$
$$(a+b)\,\left(-70\,a\,b\,B+a^2\,(15\,A-46\,C)-6\,b^2\,(5\,A+3\,C)\right)$$
$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$
$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$
$$2\,\left(a^2\,b\,(45\,A-45\,B-23\,C)+15\,a^3\,(B-C)-b^3\,(15\,A+5\,B+9\,C)-a\,b^2\,(45\,A+35\,B+17\,C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(15\,d\,(b+a\,\text{Cos}[c+d x])^{5/2}\,(A+2\,C+2\,B\,\text{Cos}[c+d x]+A\,\text{Cos}[2\,c+2\,d x])\right.$$

$$\text{Sec}[c+d x]^{9/2}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)+$$

$$\left(\text{Cos}[c+d x]^4\,(a+b\,\text{Sec}[c+d x])^{5/2}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right.$$

$$\left(\frac{4}{15}\left(15\,A\,b^2+35\,a\,b\,B+23\,a^2\,C+9\,b^2\,C\right)\text{Sin}[c+d x]+\frac{4}{15}\,\text{Sec}[c+d x]\right.$$

$$\left.\left.\left(5\,b^2\,B\,\text{Sin}[c+d x]+11\,a\,b\,C\,\text{Sin}[c+d x]\right)+\frac{4}{5}\,b^2\,C\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]\right)\right)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d x]+A\,\text{Cos}[2\,c+2\,d x])\right)$$

Problem 955: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3\,(a+b\,\text{Sec}[c+d x])^{5/2}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 4, 549 leaves, 8 steps):

$$\frac{1}{24\,b\,d}(a-b)\sqrt{a+b}\,\left(54\,a\,b\,B+3\,b^2\,(11\,A-16\,C)+8\,a^2\,(2\,A+3\,C)\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$

$$\frac{1}{24\,d}\sqrt{a+b}\,\left(3\,b^2\,(11\,A+16\,(B-C))+4\,a^2\,(4\,A+3\,B+6\,C)+2\,a\,b\,(13\,A+27\,B+72\,C)\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$

$$\frac{1}{8\,a\,d}\sqrt{a+b}\,\left(5\,A\,b^3+8\,a^3\,B+30\,a\,b^2\,B+20\,a^2\,b\,(A+2\,C)\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}$$

$$\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{\left(15\,A\,b^2+42\,a\,b\,B+8\,a^2\,(2\,A+3\,C)\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,d}+$$

$$\frac{(5\,A\,b+6\,a\,B)\,\text{Cos}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{12\,d}+$$

$$\frac{A\,\text{Cos}[c+d\,x]^2\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 2922 leaves):

$$\Big(\text{Cos}[c+d\,x]^4\,(a+b\,\text{Sec}[c+d\,x])^{5/2}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Big(\frac{1}{6}\left(a^2\,A+24\,b^2\,C\right)\text{Sin}[c+d\,x]+$$

$$\frac{1}{12}\,a\,(13\,A\,b+6\,a\,B)\,\text{Sin}[2\,(c+d\,x)]+\frac{1}{6}\,a^2\,A\,\text{Sin}[3\,(c+d\,x)]\Big)\Big)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$

$$\Bigg(\text{Cos}[c+d\,x]^5\,\Bigg(\frac{19\,a^2\,A\,b}{6\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{2\,A\,b^3}{\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{a^3\,B}{\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{6\,a\,b^2\,B}{\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{6\,a^2\,b\,C}{\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}-$$

$$\frac{2\,b^3\,C}{\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{2\,a^3\,A\,\sqrt{\text{Sec}[c+d\,x]}}{3\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{59\,a\,A\,b^2\,\sqrt{\text{Sec}[c+d\,x]}}{24\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+$$

$$\frac{11 a^2 b B \sqrt{\text{Sec}[c+d x]}}{4 \sqrt{b+a \text{Cos}[c+d x]}}+\frac{2 b^3 B \sqrt{\text{Sec}[c+d x]}}{\sqrt{b+a \text{Cos}[c+d x]}}+\frac{a^3 C \sqrt{\text{Sec}[c+d x]}}{\sqrt{b+a \text{Cos}[c+d x]}}+$$

$$\frac{4 a b^2 C \sqrt{\text{Sec}[c+d x]}}{\sqrt{b+a \text{Cos}[c+d x]}}+\frac{2 a^3 A \text{Cos}\left[2 (c+d x)\right] \sqrt{\text{Sec}[c+d x]}}{3 \sqrt{b+a \text{Cos}[c+d x]}}+$$

$$\frac{11 a A b^2 \text{Cos}\left[2 (c+d x)\right] \sqrt{\text{Sec}[c+d x]}}{8 \sqrt{b+a \text{Cos}[c+d x]}}+\frac{9 a^2 b B \text{Cos}\left[2 (c+d x)\right] \sqrt{\text{Sec}[c+d x]}}{4 \sqrt{b+a \text{Cos}[c+d x]}}+$$

$$\left.\frac{a^3 C \text{Cos}\left[2 (c+d x)\right] \sqrt{\text{Sec}[c+d x]}}{\sqrt{b+a \text{Cos}[c+d x]}}-\frac{2 a b^2 C \text{Cos}\left[2 (c+d x)\right] \sqrt{\text{Sec}[c+d x]}}{\sqrt{b+a \text{Cos}[c+d x]}}\right)$$

$$(a+b \text{Sec}[c+d x])^{5/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\left(\frac{1}{\sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2}} \left((a+b) \left(54 a b B+3 b^2 (11 A-16 C)+8 a^2 (2 A+3 C)\right)\right.\right.$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]-2 \left(12 a^3 B+a b^2 (-13 A+72 (B-C))+\right.$$

$$\left.24 b^3 (A-B-C)+2 a^2 b (19 A-3 B+36 C)\right) \text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right],\right.$$

$$\left.\frac{a-b}{a+b}\right]-6 \left(5 A b^3+8 a^3 B+30 a b^2 B+20 a^2 b (A+2 C)\right) \text{EllipticPi}\left[-1,\right.$$

$$\left.\left.-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]\right) \sqrt{\frac{(b+a \text{Cos}[c+d x]) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}}+$$

$$\left.\left.\left(54 a b B+3 b^2 (11 A-16 C)+8 a^2 (2 A+3 C)\right) (b+a \text{Cos}[c+d x]) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)\right) \Bigg/$$

$$\left(12 d (b+a \text{Cos}[c+d x])^3 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\right.$$

$$\left(\frac{1}{24 (b+a \text{Cos}[c+d x])^{3/2} \sqrt{\text{Sec}[c+d x]}} a \text{Sin}[c+d x] \left(\frac{1}{\sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2}}\right.\right.$$

$$\left((a+b) \left(54 a b B+3 b^2 (11 A-16 C)+8 a^2 (2 A+3 C)\right) \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]-2 \left(12 a^3 B+a b^2 (-13 A+72 (B-C))+24 b^3 (A-B-C)+\right.$$

$$2 a^2 b \left(19 A - 3 B + 36 C\right)\Big) \text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c + d x)\right]\right], \frac{a-b}{a+b}\right] - 6 \left(5 A b^3 + 8 a^3 B + 30 a b^2 B + 20 a^2 b (A + 2 C)\right) \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c + d x)\right]\right], \frac{a-b}{a+b}\right]\Bigg) \sqrt{\frac{(b + a \text{Cos}[c + d x]) \text{Sec}\left[\frac{1}{2} (c + d x)\right]^2}{a+b}} + \left(54 a b B + 3 b^2 (11 A - 16 C) + 8 a^2 (2 A + 3 C)\right) (b + a \text{Cos}[c + d x]) \text{Tan}\left[\frac{1}{2} (c + d x)\right]\Bigg) -$$

$$\frac{1}{24 \sqrt{b + a \text{Cos}[c + d x]}} \sqrt{\text{Sec}[c + d x]} \text{Sin}[c + d x] \Bigg(\frac{1}{\sqrt{\text{Cos}[c + d x] \text{Sec}\left[\frac{1}{2} (c + d x)\right]^2}} \Bigg((a + b) \left(54 a b B + 3 b^2 (11 A - 16 C) + 8 a^2 (2 A + 3 C)\right) \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c + d x)\right]\right], \frac{a-b}{a+b}\right] - 2 \Big(12 a^3 B + a b^2 \left(-13 A + 72 (B - C)\right) + 24 b^3 (A - B - C) + 2 a^2 b (19 A - 3 B + 36 C)\Big) \text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c + d x)\right]\right], \frac{a-b}{a+b}\right] - 6 \left(5 A b^3 + 8 a^3 B + 30 a b^2 B + 20 a^2 b (A + 2 C)\right) \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c + d x)\right]\right], \frac{a-b}{a+b}\right]\Bigg) \sqrt{\frac{(b + a \text{Cos}[c + d x]) \text{Sec}\left[\frac{1}{2} (c + d x)\right]^2}{a+b}} + \left(54 a b B + 3 b^2 (11 A - 16 C) + 8 a^2 (2 A + 3 C)\right) (b + a \text{Cos}[c + d x]) \text{Tan}\left[\frac{1}{2} (c + d x)\right]\Bigg) +$$

$$\frac{1}{12 \sqrt{b + a \text{Cos}[c + d x]} \sqrt{\text{Sec}[c + d x]}} \Bigg(\frac{1}{2} \left(54 a b B + 3 b^2 (11 A - 16 C) + 8 a^2 (2 A + 3 C)\right) (b + a \text{Cos}[c + d x]) \text{Sec}\left[\frac{1}{2} (c + d x)\right]^2 - a \left(54 a b B + 3 b^2 (11 A - 16 C) + 8 a^2 (2 A + 3 C)\right) \text{Sin}[c + d x] \text{Tan}\left[\frac{1}{2} (c + d x)\right] - \frac{1}{2 \left(\text{Cos}[c + d x] \text{Sec}\left[\frac{1}{2} (c + d x)\right]^2\right)^{3/2}} \Bigg((a + b) \left(54 a b B + 3 b^2 (11 A - 16 C) + 8 a^2 (2 A + 3 C)\right) \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c + d x)\right]\right], \frac{a-b}{a+b}\right] - 2 \Big(12 a^3 B + a b^2 \left(-13 A + 72 (B - C)\right) + 24 b^3 (A - B - C) +$$

$$2\,a^2\,b\,\left(19\,A-3\,B+36\,C\right)\Big)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]-$$

$$6\,\left(5\,A\,b^3+8\,a^3\,B+30\,a\,b^2\,B+20\,a^2\,b\,(A+2\,C)\right)\,\text{EllipticPi}\Big[-1,$$

$$-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\Big]\Big)\,\sqrt{\frac{\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}$$

$$\left(-\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Sin}[c+d\,x]+\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+$$

$$\left(1\Big/\left(2\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)$$

$$\Big(\Big((a+b)\,\left(54\,a\,b\,B+3\,b^2\,(11\,A-16\,C)+8\,a^2\,(2\,A+3\,C)\right)\,\text{EllipticE}\Big[\text{ArcSin}\Big[\text{Tan}\Big[$$

$$\frac{1}{2}\,(c+d\,x)\Big]\Big],\,\frac{a-b}{a+b}\Big]-2\,\Big(12\,a^3\,B+a\,b^2\,\left(-13\,A+72\,(B-C)\right)+24\,b^3\,(A-B-C)+$$

$$2\,a^2\,b\,\left(19\,A-3\,B+36\,C\right)\Big)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]-$$

$$6\,\left(5\,A\,b^3+8\,a^3\,B+30\,a\,b^2\,B+20\,a^2\,b\,(A+2\,C)\right)\,\text{EllipticPi}\Big[-1,$$

$$-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\Big]\Big)\,\Bigg(-\frac{a\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Sin}[c+d\,x]}{a+b}+$$

$$\frac{\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{a+b}\Bigg)+$$

$$\Bigg(\sqrt{\frac{\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,\Bigg(-\Bigg(\Big(\Big(12\,a^3\,B+a\,b^2\,\left(-13\,A+72\,(B-C)\right)+$$

$$24\,b^3\,(A-B-C)+2\,a^2\,b\,\left(19\,A-3\,B+36\,C\right)\Big)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big/$$

$$\left(\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{1-\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\Bigg)+$$

$$\left(3\,\left(5\,A\,b^3+8\,a^3\,B+30\,a\,b^2\,B+20\,a^2\,b\,(A+2\,C)\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/$$

$$\Bigg(\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\sqrt{1-\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\Bigg)+\Big((a+b)\,\left(54\,a\,b\,B+3\,b^2\,(11\,A-16\,C)+\right.$$

$$8\, a^2\, (2\, A + 3\, C))\, \mathrm{Sec}\left[\frac{1}{2}\, (c + d\, x)\right]^2 \sqrt{1 - \frac{(a - b)\, \mathrm{Tan}\left[\frac{1}{2}\, (c + d\, x)\right]^2}{a + b}} \Bigg) \Bigg/$$

$$\left(2 \sqrt{1 - \mathrm{Tan}\left[\frac{1}{2}\, (c + d\, x)\right]^2}\right)\Bigg)\Bigg) \Bigg/ \left(\sqrt{\mathrm{Cos}[c + d\, x]\, \mathrm{Sec}\left[\frac{1}{2}\, (c + d\, x)\right]^2}\right)\Bigg)\Bigg)\Bigg)$$

Problem 957: Result unnecessarily involves imaginary or complex numbers.

$$\int \mathrm{Cos}[c + d\, x]^5\, (a + b\, \mathrm{Sec}[c + d\, x])^{5/2}\, \left(A + B\, \mathrm{Sec}[c + d\, x] + C\, \mathrm{Sec}[c + d\, x]^2\right) dx$$

Optimal (type 4, 774 leaves, 10 steps):

$$-\frac{1}{1920 a^2 b d}(a-b)\sqrt{a+b}\left(45 A b^4-2840 a^3 b B-150 a b^3 B-256 a^4 (4 A+5 C)-12 a^2 b^2 (141 A+220 C)\right)$$
$$\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-$$
$$\frac{1}{1920 a^2 d}\sqrt{a+b}\left(45 A b^4-30 a b^3 (A+5 B)-16 a^4 (64 A+45 B+80 C)-\right.$$
$$\left.8 a^3 b (193 A+355 B+260 C)-4 a^2 b^2 (423 A+295 B+660 C)\right)\text{Cot}[c+d x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-$$
$$\frac{1}{128 a^3 d}\sqrt{a+b}\left(3 A b^5+96 a^5 B+240 a^3 b^2 B-10 a b^4 B+40 a^2 b^3 (A+2 C)+80 a^4 b (3 A+4 C)\right)$$
$$\text{Cot}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{1920 a^2 d}$$
$$\left(45 A b^4-2840 a^3 b B-150 a b^3 B-256 a^4 (4 A+5 C)-12 a^2 b^2 (141 A+220 C)\right)$$
$$\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]+\frac{1}{960 a d}$$
$$\left(15 A b^3+360 a^3 B+590 a b^2 B+4 a^2 b (193 A+260 C)\right)\text{Cos}[c+d x]\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]+$$
$$\frac{1}{240 d}\left(15 A b^2+110 a b B+16 a^2 (4 A+5 C)\right)\text{Cos}[c+d x]^2\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]+$$
$$\frac{(A b+2 a B)\,\text{Cos}[c+d x]^3 (a+b\,\text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{8 d}+$$
$$\frac{A\,\text{Cos}[c+d x]^4 (a+b\,\text{Sec}[c+d x])^{5/2}\,\text{Sin}[c+d x]}{5 d}$$

Result (type 4, 942 leaves):

$$\frac{1}{d (b+a\,\text{Cos}[c+d x])^2 (A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])}$$
$$\text{Cos}[c+d x]^4 (a+b\,\text{Sec}[c+d x])^{5/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\frac{1}{480}\left(88 a^2 A+93 A b^2+170 a b B+80 a^2 C\right)\text{Sin}[c+d x]+\frac{1}{960 a}\right.$$
$$\left(1024 a^2 A b+15 A b^3+480 a^3 B+590 a b^2 B+1040 a^2 b C\right)\text{Sin}[2 (c+d x)]+$$
$$\frac{1}{480}\left(100 a^2 A+93 A b^2+170 a b B+80 a^2 C\right)\text{Sin}[3 (c+d x)]+$$
$$\left.\frac{1}{160} a (21 A b+10 a B)\,\text{Sin}[4 (c+d x)]+\frac{1}{40} a^2 A\,\text{Sin}[5 (c+d x)]\right)-$$

$$\left((a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\left(-\left(-45\,A\,b^4+2840\,a^3\,b\,B+150\,a\,b^3\,B+256\,a^4\,(4\,A+5\,C)+12\,a^2\,b^2\,(141\,A+220\,C)\right)\right.$$

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-\frac{1}{\sqrt{\frac{-a+b}{a+b}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)}$$

$$\mathbb{i}\,\left((a-b)\,\left(-45\,A\,b^4+2840\,a^3\,b\,B+150\,a\,b^3\,B+256\,a^4\,(4\,A+5\,C)+12\,a^2\,b^2\,(141\,A+220\,C)\right)\right.$$

$$\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]-$$

$$2\,(a-b)\,\left(-45\,A\,b^4-30\,a\,b^3\,(A-5\,B)+720\,a^4\,B+4\,a^2\,b^2\,(129\,A+185\,B+180\,C)+8\,a^3\right.$$

$$\left.b\,(161\,A+45\,B+220\,C)\right)\,\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]+$$

$$30\,\left(3\,A\,b^5+96\,a^5\,B+240\,a^3\,b^2\,B-10\,a\,b^4\,B+40\,a^2\,b^3\,(A+2\,C)+80\,a^4\,b\,(3\,A+4\,C)\right)$$

$$\left.\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathbb{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\right)$$

$$\left(-1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left.\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)\right)\Big/$$

$$\left(960\,a^2\,d\,(b+a\,\text{Cos}[c+d\,x])^{5/2}\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$

$$\text{Sec}[c+d x]^{9/2}\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

Problem 958: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+d x]^3\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 429 leaves, 6 steps):

$$-\frac{1}{105 b^5 d}2(a-b)\sqrt{a+b}\left(56 a^2 b B+63 b^3 B-48 a^3 C-2 a b^2(35 A+22 C)\right)$$
$$\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{105 b^4 d}$$
$$2\sqrt{a+b}\left(48 a^3 C-4 a^2 b(14 B+3 C)+2 a b^2(35 A+7 B+22 C)+b^3(35 A-63 B+25 C)\right)\text{Cot}[c+d x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}+$$
$$\frac{2\left(35 A b^2-28 a b B+24 a^2 C+25 b^2 C\right)\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{105 b^3 d}+$$
$$\frac{2(7 b B-6 a C)\,\text{Sec}[c+d x]\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{35 b^2 d}+$$
$$\frac{2 C\,\text{Sec}[c+d x]^2\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{7 b d}$$

Result (type 1, 1 leaves):

???

Problem 959: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+d x]^2\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 342 leaves, 5 steps):

$$-\frac{1}{15\,b^4\,d}2\,(a-b)\,\sqrt{a+b}\,\left(15\,A\,b^2-10\,a\,b\,B+8\,a^2\,C+9\,b^2\,C\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{15\,b^3\,d}2\,\sqrt{a+b}\,\left(15\,A\,b^2-b^2\,(5\,B-9\,C)+8\,a^2\,C-2\,a\,b\,(5\,B+C)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{2\,(5\,b\,B-4\,a\,C)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{15\,b^2\,d}+\frac{2\,C\,\text{Sec}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{5\,b\,d}$$

Result (type 1, 1 leaves):

???

Problem 960: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 267 leaves, 4 steps):

$$-\frac{1}{3\,b^3\,d}2\,(a-b)\,\sqrt{a+b}\,(3\,b\,B-2\,a\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{3\,b^2\,d}2\,\sqrt{a+b}\,\left(3\,A\,b-b\,(3\,B-C)+2\,a\,C\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{2\,C\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{3\,b\,d}$$

Result (type 1, 1 leaves):

???

Problem 961: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 317 leaves, 5 steps):

$$-\frac{1}{b^2 d}2\,(a-b)\,\sqrt{a+b}\,C\,\text{Cot}[c+d\,x]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\,\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{b\,d}$$

$$2\sqrt{a+b}\,(B-C)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\,\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{a\,d}$$

$$2\,A\,\sqrt{a+b}\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\Big[\frac{a+b}{a},\,\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\,\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}$$

Result (type 4, 762 leaves) :

$$\left(4\,C\,\text{Cos}[c+d\,x]\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c+d\,x]\right)\Big/ \left(b\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$

$$\left(4\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$

$$\left(a\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-2\,a\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+a\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-\right.$$

$$b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$(a+b)\,C\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$b\,(A-B-C)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(b\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{3/2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)$$

Problem 962: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{\sqrt{a+b \text{Sec}[c+d x]}} \, dx$$

Optimal (type 4, 358 leaves, 6 steps):

$$\frac{1}{a b d}A (a-b) \sqrt{a+b} \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} + \frac{1}{a b d}\sqrt{a+b} (A b+2 a C) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} + \frac{1}{a^2 d}\sqrt{a+b} (A b-2 a B) \text{Cot}[c+d x] \text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} + \frac{A \sqrt{a+b \text{Sec}[c+d x]} \text{Sin}[c+d x]}{a d}$$

Result (type 4, 861 leaves):

$$\left(2 \sqrt{b+a \text{Cos}[c+d x]} (B+A \text{Cos}[c+d x]+C \text{Sec}[c+d x]) \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}} \left(a A \text{Tan}\left[\frac{1}{2} (c+d x)\right]+A b \text{Tan}\left[\frac{1}{2} (c+d x)\right]-2 a A \text{Tan}\left[\frac{1}{2} (c+d x)\right]^3+a A \text{Tan}\left[\frac{1}{2} (c+d x)\right]^5 - A b \text{Tan}\left[\frac{1}{2} (c+d x)\right]^5+2 A b \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2} \sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}} - 4 a B \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2} \sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}} + 2 A b \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right] \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right.\right.$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ -$$

$$4\,a\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ +$$

$$A\,(a+b)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\ -$$

$$2\,a\,(B-C)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(a\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d x]+A\,\text{Cos}[2\,c+2\,d x])\sqrt{\text{Sec}[c+d x]}\right.$$

$$\sqrt{a+b\,\text{Sec}[c+d x]}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)$$

Problem 963: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d x]^2\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 439 leaves, 7 steps):

$$-\frac{1}{4 a^2 b d}(a-b)\sqrt{a+b}\,(3 A b-4 a B)\,\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{4 a^2 d}\sqrt{a+b}\,(3 A b-2 a(A+2 B))\,\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{4 a^3 d}\sqrt{a+b}\,\left(3 A b^2-4 a b B+4 a^2(A+2 C)\right)\text{Cot}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}-\frac{(3 A b-4 a B)\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{4 a^2 d}+\frac{A\,\text{Cos}[c+d x]\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{2 a d}$$

Result (type 4, 1905 leaves):

$$\frac{A\,(b+a\,\text{Cos}[c+d x])\,\text{Sec}[c+d x]\,\text{Sin}[2(c+d x)]}{4 a d\sqrt{a+b\,\text{Sec}[c+d x]}}+$$

$$\left(\sqrt{b+a\,\text{Cos}[c+d x]}\sqrt{\text{Sec}[c+d x]}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$

$$\left(-3 a A b\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-3 A b^2\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\right.$$

$$4 a^2\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+4 a b\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$6 a A b\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3-8 a^2\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3-$$

$$3 a A b\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+3 A b^2\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+$$

$$4 a^2\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-4 a b\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-$$

$$8\,\mathrm{i}\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$6\,\mathrm{i}\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$

$$8\,\mathrm{i}\,a\,b\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$16\,\mathrm{i}\,a^2\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$8\,\mathrm{i}\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$6\,\mathrm{i}\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+8\,\mathrm{i}\,a\,b\,B$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-16\,\mathrm{i}\,a^2\,C$$

$$\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\ \mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\ \frac{a+b}{a-b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$\mathrm{i}\,(a-b)\,(-3\,A\,b+4\,a\,B)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\ \frac{a+b}{a-b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+2\,\mathrm{i}\,\left(3\,A\,b^2-a\,b\,(A+4\,B)+2\,a^2\,(A+2\,C)\right)$$

$$\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\ \frac{a+b}{a-b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\Bigg)\Bigg)\Bigg/$$

$$\Bigg(4\,a^2\sqrt{\frac{-a+b}{a+b}}\ d\,\sqrt{a+b\,\mathrm{Sec}[c+d x]}\ \left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

$$\left(a\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Bigg)$$

Problem 964: Attempted integration timed out after 120 seconds.

$$\int\frac{\mathrm{Sec}[c+d x]^3\,\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)}{(a+b\,\mathrm{Sec}[c+d x])^{3/2}}\,dx$$

Optimal (type 4, 510 leaves, 6 steps):

$$\frac{1}{15\, b^5 \sqrt{a+b}\, d} 2 \left(40\, a^3\, b\, B - 25\, a\, b^3\, B - 6\, a^2\, b^2 \left(5\, A - 4\, C\right) - 48\, a^4\, C + 3\, b^4 \left(5\, A + 3\, C\right)\right) \mathrm{Cot}[c + d\, x] \, \mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a + b\, \mathrm{Sec}[c + d\, x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\, (1 - \mathrm{Sec}[c + d\, x])}{a+b}} \sqrt{-\frac{b\, (1 + \mathrm{Sec}[c + d\, x])}{a-b}} + \frac{1}{15\, b^4 \sqrt{a+b}\, d} 2 \left(a^2\, b\, (40\, B - 36\, C) - 48\, a^3\, C - 6\, a\, b^2\, (5\, A - 5\, B + 2\, C) - b^3\, (15\, A - 5\, B + 9\, C)\right) \mathrm{Cot}[c + d\, x] \, \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a + b\, \mathrm{Sec}[c + d\, x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\, (1 - \mathrm{Sec}[c + d\, x])}{a+b}} \sqrt{-\frac{b\, (1 + \mathrm{Sec}[c + d\, x])}{a-b}} - \frac{2\, \left(A\, b^2 - a\, (b\, B - a\, C)\right) \mathrm{Sec}[c + d\, x]^2\, \mathrm{Tan}[c + d\, x]}{b\, (a^2 - b^2)\, d \sqrt{a + b\, \mathrm{Sec}[c + d\, x]}} + \frac{1}{15\, b^3\, (a^2 - b^2)\, d} 2 \left(20\, a^2\, b\, B - 5\, b^3\, B - 3\, a\, b^2\, (5\, A - 3\, C) - 24\, a^3\, C\right) \sqrt{a + b\, \mathrm{Sec}[c + d\, x]}\, \mathrm{Tan}[c + d\, x] + \frac{1}{5\, b^2\, (a^2 - b^2)\, d} 2 \left(5\, A\, b^2 - 5\, a\, b\, B + 6\, a^2\, C - b^2\, C\right) \mathrm{Sec}[c + d\, x] \sqrt{a + b\, \mathrm{Sec}[c + d\, x]}\, \mathrm{Tan}[c + d\, x]$$

Result (type 1, 1 leaves):

???

Problem 965: Attempted integration timed out after 120 seconds.

$$\int \frac{\mathrm{Sec}[c + d\, x]^2 \left(A + B\, \mathrm{Sec}[c + d\, x] + C\, \mathrm{Sec}[c + d\, x]^2\right)}{(a + b\, \mathrm{Sec}[c + d\, x])^{3/2}} \, dx$$

Optimal (type 4, 352 leaves, 5 steps):

$$-\frac{1}{3\, b^4 \sqrt{a+b}\, d} 2 \left(6\, a^2\, b\, B - 3\, b^3\, B - a\, b^2\, (3\, A - 5\, C) - 8\, a^3\, C\right) \mathrm{Cot}[c + d\, x] \, \mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a + b\, \mathrm{Sec}[c + d\, x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\, (1 - \mathrm{Sec}[c + d\, x])}{a+b}} \sqrt{-\frac{b\, (1 + \mathrm{Sec}[c + d\, x])}{a-b}} + \frac{1}{3\, b^3 \sqrt{a+b}\, d} 2 \left(3\, A\, b^2 - (2\, a + b)\, (b\, (3\, B - C) - 4\, a\, C)\right) \mathrm{Cot}[c + d\, x] \, \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a + b\, \mathrm{Sec}[c + d\, x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\, (1 - \mathrm{Sec}[c + d\, x])}{a+b}} \sqrt{-\frac{b\, (1 + \mathrm{Sec}[c + d\, x])}{a-b}} + \frac{2\, a\, \left(A\, b^2 - a\, (b\, B - a\, C)\right) \mathrm{Tan}[c + d\, x]}{b^2\, (a^2 - b^2)\, d \sqrt{a + b\, \mathrm{Sec}[c + d\, x]}} + \frac{2\, C \sqrt{a + b\, \mathrm{Sec}[c + d\, x]}\, \mathrm{Tan}[c + d\, x]}{3\, b^2\, d}$$

Result (type 1, 1 leaves):

???

Problem 966: Attempted integration timed out after 120 seconds.

$$\int \frac{\operatorname{Sec}[c+d x]\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{(a+b \operatorname{Sec}[c+d x])^{3/2}}\,dx$$

Optimal (type 4, 293 leaves, 4 steps):

$$-\frac{1}{b^3\sqrt{a+b}\,d}2\left(A b^2-a b B+2 a^2 C-b^2 C\right)\operatorname{Cot}[c+d x]\operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}+\frac{1}{b^2\sqrt{a+b}\,d}2\left(A b+b(B-C)-2 a C\right)\operatorname{Cot}[c+d x]\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}-\frac{2\left(A b^2-a(b B-a C)\right)\operatorname{Tan}[c+d x]}{b\left(a^2-b^2\right)d\sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 967: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2}{(a+b \operatorname{Sec}[c+d x])^{3/2}}\,dx$$

Optimal (type 4, 395 leaves, 6 steps):

$$\frac{1}{a b^2 \sqrt{a+b}\, d} 2 \left(A b^2 - a \left(b B - a C\right)\right) \text{Cot}[c+d x] \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b \left(1-\text{Sec}[c+d x]\right)}{a+b}} \sqrt{-\frac{b \left(1+\text{Sec}[c+d x]\right)}{a-b}} - \frac{1}{a b \sqrt{a+b}\, d}$$
$$2 \left(A b - a \left(B+C\right)\right) \text{Cot}[c+d x] \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b \left(1-\text{Sec}[c+d x]\right)}{a+b}} \sqrt{-\frac{b \left(1+\text{Sec}[c+d x]\right)}{a-b}} - \frac{1}{a^2 d}$$
$$2 A \sqrt{a+b} \, \text{Cot}[c+d x] \, \text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b \left(1-\text{Sec}[c+d x]\right)}{a+b}} \sqrt{-\frac{b \left(1+\text{Sec}[c+d x]\right)}{a-b}} + \frac{2 \left(A b^2 - a \left(b B - a C\right)\right) \text{Tan}[c+d x]}{a \left(a^2-b^2\right) d \sqrt{a+b \,\text{Sec}[c+d x]}}$$

Result (type 4, 1275 leaves):

$$\left(\left(b + a \,\text{Cos}[c+d x]\right)^2 \left(A + B \,\text{Sec}[c+d x] + C \,\text{Sec}[c+d x]^2\right) \left(\frac{4 \left(A b^2 - a b B + a^2 C\right) \text{Sin}[c+d x]}{a b \left(-a^2+b^2\right)} + \right.\right.$$
$$\left.\left.\frac{4 \left(A b^2 \,\text{Sin}[c+d x] - a b B \,\text{Sin}[c+d x] + a^2 C \,\text{Sin}[c+d x]\right)}{a \left(a^2-b^2\right) \left(b + a \,\text{Cos}[c+d x]\right)}\right)\right) \Big/$$
$$\left(d \left(A + 2 C + 2 B \,\text{Cos}[c+d x] + A \,\text{Cos}[2 c + 2 d x]\right) \left(a + b \,\text{Sec}[c+d x]\right)^{3/2}\right) -$$
$$\left(4 \left(b + a \,\text{Cos}[c+d x]\right)^{3/2} \left(A + B \,\text{Sec}[c+d x] + C \,\text{Sec}[c+d x]^2\right) \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}}\right.$$
$$\left(a A b^2 \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right] + A b^3 \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right] - a^2 b B \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right] - \right.$$
$$a b^2 B \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right] + a^3 C \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right] + a^2 b C \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right] -$$
$$2 a A b^2 \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^3 + 2 a^2 b B \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^3 - 2 a^3 C \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^3 +$$
$$a A b^2 \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^5 - A b^3 \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^5 - a^2 b B \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^5 +$$
$$a b^2 B \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^5 + a^3 C \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^5 - a^2 b C \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^5 -$$
$$2 a^2 A b \,\text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right], \frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2} \sqrt{\frac{a+b-a \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2 + b \,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{a+b}} +$$

$$2\,A\,b^3\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$2\,a^2\,A\,b\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$

$$2\,A\,b^3\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+\,(a+b)$$

$$\left(A\,b^2+a\,(-b\,B+a\,C)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$a\,b\,(a+b)\,(A-B+C)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\left(a\,\left(-a^2\,b+b^3\right)\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{\text{Sec}[c+d\,x]}\right.$$

$$(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{3/2}$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)$$

Problem 968: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}}\,dx$$

Optimal (type 4, 451 leaves, 7 steps):

$$-\frac{1}{a^2\,b\,\sqrt{a+b}\,d}\left(3\,A\,b^2-2\,a\,b\,B-a^2\,(A-2\,C)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{a^2\,b\,\sqrt{a+b}\,d}\left(3\,A\,b^2+a\,b\,(A-2\,B)+2\,a^2\,C\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{a^3\,d}\sqrt{a+b}\,(3\,A\,b-2\,a\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{A\,\text{Sin}[c+d\,x]}{a\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}-\frac{b\,\left(3\,A\,b^2-2\,a\,b\,B-a^2\,(A-2\,C)\right)\,\text{Tan}[c+d\,x]}{a^2\,(a^2-b^2)\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 1814 leaves):

$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{4\,\left(A\,b^2-a\,b\,B+a^2\,C\right)\,\text{Sin}[c+d\,x]}{a^2\,(a^2-b^2)}-\frac{4\,\left(A\,b^3\,\text{Sin}[c+d\,x]-a\,b^2\,B\,\text{Sin}[c+d\,x]+a^2\,b\,C\,\text{Sin}[c+d\,x]\right)}{a^2\,(a^2-b^2)\,(b+a\,\text{Cos}[c+d\,x])}\right)\right)\Big/\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\left(2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\left(a^3\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-3\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-\right.$$

$$3\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$2\,a^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-2\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-2\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$
$$6\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-4\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$
$$4\,a^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+a^3\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$
$$3\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+3\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+2\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$
$$2\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-2\,a^3\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+2\,a^2\,b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$
$$6\,a^2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$
$$6\,A\,b^3\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$
$$4\,a^3\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$
$$4\,a\,b^2\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$
$$6\,a^2\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$
$$6\,A\,b^3\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\,-$$

$$4\,a^3\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\,+$$

$$4\,a\,b^2\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\,+$$

$$\left(a+b\right)\left(-3\,A\,b^2+2\,a\,b\,B+a^2\left(A-2\,C\right)\right)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\,-2\,a\left(a+b\right)\left(-A\,b+a\left(B-C\right)\right)$$

$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}$$

$$\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\left(a^2\left(a^2-b^2\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\sqrt{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}$$

$$\left.\left(a\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-b\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\right)$$

Problem 969: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\mathrm{Cos}[c+d\,x]^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}}\,dx$$

Optimal (type 4, 552 leaves, 8 steps):

$$\frac{1}{4 a^3 b \sqrt{a+b}\, d}\left(15 A b^3+4 a^3 B-12 a b^2 B-a^2 (7 A b-8 b C)\right) \text{Cot}[c+d x]\, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{4 a^3 \sqrt{a+b}\, d}\left(15 A b^2+a b (5 A-12 B)-2 a^2 (A+2 B-4 C)\right) \text{Cot}[c+d x]\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{4 a^4 d}\sqrt{a+b}\left(15 A b^2-12 a b B+4 a^2 (A+2 C)\right) \text{Cot}[c+d x]\, \text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{(5 A b-4 a B) \text{Sin}[c+d x]}{4 a^2 d \sqrt{a+b \text{Sec}[c+d x]}}+\frac{A \text{Cos}[c+d x] \text{Sin}[c+d x]}{2 a d \sqrt{a+b \text{Sec}[c+d x]}}+\frac{b \left(15 A b^3+4 a^3 B-12 a b^2 B-a^2 (7 A b-8 b C)\right) \text{Tan}[c+d x]}{4 a^3 \left(a^2-b^2\right) d \sqrt{a+b \text{Sec}[c+d x]}}$$

Result (type 4, 746 leaves):

$$\frac{1}{2}\left(\left((b+a \text{Cos}[c+d x])^2 \text{Sec}[c+d x]^2 \left(\frac{4 b \left(A b^2-a b B+a^2 C\right) \text{Sin}[c+d x]}{a^3 \left(-a^2+b^2\right)}+\left(4 \left(A b^4 \text{Sin}[c+d x]-a b^3 B \text{Sin}[c+d x]+a^2 b^2 C \text{Sin}[c+d x]\right)\right)\Big/\left(a^3 \left(a^2-b^2\right) (b+a \text{Cos}[c+d x])\right)+\frac{A \text{Sin}[2 (c+d x)]}{2 a^2}\right)\right)\Big/\left(d (a+b \text{Sec}[c+d x])^{3/2}\right)+\frac{1}{2 a^3 \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^{3/2} \sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}}(b+a \text{Cos}[c+d x])^{3/2} \text{Sec}[c+d x]^{3/2} \sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

$$\left((15 A b^3 + 4 a^3 B - 12 a b^2 B + a^2 (-7 A b + 8 b C)) \operatorname{Tan}\left[\frac{1}{2}(c + d x)\right] -\right.$$

$$\frac{1}{\sqrt{\frac{-a+b}{a+b}} \left(b - b \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^4 + a\left(-1 + \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\right)}$$

$$\mathrm{i}\,(a-b)\left((-15 A b^3 - 4 a^3 B + 12 a b^2 B + a^2 b (7 A - 8 C))\right.$$

$$\operatorname{EllipticE}\left[\mathrm{i} \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right], \frac{a+b}{a-b}\right] +$$

$$2 \left(15 A b^3 + 2 a b^2 (5 A - 6 B) + 2 a^3 (A + 2 C) + a^2 b (A - 8 B + 8 C)\right)$$

$$\operatorname{EllipticF}\left[\mathrm{i} \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right], \frac{a+b}{a-b}\right] -$$

$$2 (a+b) (15 A b^2 - 12 a b B + 4 a^2 (A + 2 C)) \operatorname{EllipticPi}\left[-\frac{a+b}{a-b},\right.$$

$$\left.\left.\mathrm{i} \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right], \frac{a+b}{a-b}\right]\right) \left(-1 - \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)$$

$$\left.\sqrt{1 - \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2} \sqrt{\frac{a + b - a \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2 + b \operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}}\right)\right)$$

Problem 970: Attempted integration timed out after 120 seconds.

$$\int \frac{\operatorname{Sec}[c+dx]^3 \left(A + B \operatorname{Sec}[c+dx] + C \operatorname{Sec}[c+dx]^2\right)}{(a + b \operatorname{Sec}[c+dx])^{5/2}} \, dx$$

Optimal (type 4, 549 leaves, 6 steps):

$$-\left(\left(2\left(8 a^4 b B-15 a^2 b^3 B+3 b^5 B-2 a^3 b^2 (A-14 C)+2 a b^4 (3 A-4 C)-16 a^5 C\right)\right.\right.$$
$$\text{Cot}[c+d x] \,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\left.\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}\right)\Big/\left(3 b^5 \sqrt{a+b} \left(a^2-b^2\right) d\right)-$$
$$\left(2\left(a^3 b (8 B-12 C)-2 a^2 b^2 (A-3 B-8 C)-3 a b^3 (A+3 B-3 C)-16 a^4 C+b^4 (3 A-3 B+C)\right)\right.$$
$$\text{Cot}[c+d x] \,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\left.\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}\right)\Big/\left(3 b^4 \sqrt{a+b} \left(a^2-b^2\right) d\right)-$$
$$\frac{2\left(A b^2-a (b B-a C)\right) \text{Sec}[c+d x]^2 \,\text{Tan}[c+d x]}{3 b \left(a^2-b^2\right) d (a+b \,\text{Sec}[c+d x])^{3/2}}-$$
$$\frac{2 a\left(4 A b^4+a\left(3 a^2 b B-7 b^3 B-6 a^3 C+10 a b^2 C\right)\right) \text{Tan}[c+d x]}{3 b^3 \left(a^2-b^2\right)^2 d \sqrt{a+b \,\text{Sec}[c+d x]}}+$$
$$\frac{2\left(A b^2-a b B+2 a^2 C-b^2 C\right) \sqrt{a+b \,\text{Sec}[c+d x]} \,\text{Tan}[c+d x]}{3 b^3 \left(a^2-b^2\right) d}$$

Result (type 1, 1 leaves):

???

Problem 971: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Sec}[c+d x]^2 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)}{(a+b \,\text{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 4, 449 leaves, 5 steps):

$$\left(2\left(2a^3bB-6ab^3B+3b^4(A-C)-8a^4C+a^2b^2(A+15C)\right)\right.$$
$$\text{Cot}[c+dx]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\left.\sqrt{\frac{b(1-\text{Sec}[c+dx])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+dx])}{a-b}}\right)\Big/\left(3b^4\sqrt{a+b}\left(a^2-b^2\right)d\right)+$$
$$\left(2\left(2a^2b(B-3C)-3b^3(A+B-C)-8a^3C+ab^2(A+3B+9C)\right)\text{Cot}[c+dx]\,\text{EllipticF}\left[\right.\right.$$
$$\left.\left.\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\text{Sec}[c+dx])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+dx])}{a-b}}\right)\Big/$$
$$\left(3b^3\sqrt{a+b}\left(a^2-b^2\right)d\right)+\frac{2a\left(Ab^2-a(bB-aC)\right)\text{Tan}[c+dx]}{3b^2\left(a^2-b^2\right)d\left(a+b\,\text{Sec}[c+dx]\right)^{3/2}}+$$
$$\frac{2\left(3Ab^4+2a^3bB-6ab^3B-5a^4C+a^2b^2(A+9C)\right)\text{Tan}[c+dx]}{3b^2\left(a^2-b^2\right)^2d\sqrt{a+b\,\text{Sec}[c+dx]}}$$

Result (type 1, 1 leaves):

???

Problem 972: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Sec}[c+dx]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)}{\left(a+b\,\text{Sec}[c+dx]\right)^{5/2}}\,dx$$

Optimal (type 4, 416 leaves, 5 steps):

$$-\left(\left(2\left(4 a A b^2-a^2 b B-3 b^3 B-2 a^3 C+6 a b^2 C\right) \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3(a-b) b^3(a+b)^{3/2} d\right)\right)+$$

$$\left(2\left(2 a^2 C+a b(3 A+B+3 C)-b^2(A+3(B+C))\right) \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}\right) \Big/$$

$$\left(3 b^2 \sqrt{a+b}\left(a^2-b^2\right) d\right)-\frac{2\left(A b^2-a(b B-a C)\right) \operatorname{Tan}[c+d x]}{3 b\left(a^2-b^2\right) d(a+b \operatorname{Sec}[c+d x])^{3/2}}+$$

$$\frac{2\left(a^2 b B+3 b^3 B+2 a^3 C-2 a b^2(2 A+3 C)\right) \operatorname{Tan}[c+d x]}{3 b\left(a^2-b^2\right)^2 d \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 973: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2}{(a+b \operatorname{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 4, 541 leaves, 7 steps):

$$\left(2\left(7a^2Ab^2-3Ab^4-4a^3bB+a^4C+3a^2b^2C\right)\operatorname{Cot}[c+dx]\,\operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b\operatorname{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\left(1-\operatorname{Sec}[c+dx]\right)}{a+b}}\sqrt{-\frac{b\left(1+\operatorname{Sec}[c+dx]\right)}{a-b}}\right)\Big/\left(3a^2\left(a-b\right)b^2\left(a+b\right)^{3/2}d\right)+$$

$$\left(2\left(aAb^2+3Ab^3+a^3\left(3B+C\right)-a^2b\left(6A+B+3C\right)\right)\operatorname{Cot}[c+dx]\,\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b\operatorname{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\left(1-\operatorname{Sec}[c+dx]\right)}{a+b}}\sqrt{-\frac{b\left(1+\operatorname{Sec}[c+dx]\right)}{a-b}}\right)\Big/\left(3a^2b\sqrt{a+b}\left(a^2-b^2\right)d\right)-\frac{1}{a^3d}$$

$$2A\sqrt{a+b}\operatorname{Cot}[c+dx]\,\operatorname{EllipticPi}\left[\frac{a+b}{a},\operatorname{ArcSin}\left[\frac{\sqrt{a+b\operatorname{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\left(1-\operatorname{Sec}[c+dx]\right)}{a+b}}\sqrt{-\frac{b\left(1+\operatorname{Sec}[c+dx]\right)}{a-b}}+$$

$$\frac{2\left(Ab^2-a\left(bB-aC\right)\right)\operatorname{Tan}[c+dx]}{3a\left(a^2-b^2\right)d\left(a+b\operatorname{Sec}[c+dx]\right)^{3/2}}-\frac{2\left(3Ab^4+4a^3bB-a^4C-a^2b^2\left(7A+3C\right)\right)\operatorname{Tan}[c+dx]}{3a^2\left(a^2-b^2\right)^2d\sqrt{a+b\operatorname{Sec}[c+dx]}}$$

Result (type 4, 1919 leaves):

$$\left(\left(b+a\operatorname{Cos}[c+dx]\right)^3\operatorname{Sec}[c+dx]\left(A+B\operatorname{Sec}[c+dx]+C\operatorname{Sec}[c+dx]^2\right)\left(\frac{4\left(-7a^2Ab^2+3Ab^4+4a^3bB-a^4C-3a^2b^2C\right)\operatorname{Sin}[c+dx]}{3a^2b\left(-a^2+b^2\right)^2}-\frac{4\left(Ab^3\operatorname{Sin}[c+dx]-ab^2B\operatorname{Sin}[c+dx]+a^2bC\operatorname{Sin}[c+dx]\right)}{3a^2\left(a^2-b^2\right)\left(b+a\operatorname{Cos}[c+dx]\right)^2}+\left(4\left(8a^2Ab^2\operatorname{Sin}[c+dx]-4Ab^4\operatorname{Sin}[c+dx]-5a^3bB\operatorname{Sin}[c+dx]+ab^3B\operatorname{Sin}[c+dx]+2a^4C\operatorname{Sin}[c+dx]+2a^2b^2C\operatorname{Sin}[c+dx]\right)\right)\Big/\left(3a^2\left(a^2-b^2\right)^2\left(b+a\operatorname{Cos}[c+dx]\right)\right)\right)\right)\Big/$$

$$\left(d\left(A+2C+2B\operatorname{Cos}[c+dx]+A\operatorname{Cos}[2c+2dx]\right)\left(a+b\operatorname{Sec}[c+dx]\right)^{5/2}\right)-$$

$$\left(4\,(b+a\,\text{Cos}[c+d\,x])^{5/2}\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}$$

$$\left(7\,a^3\,A\,b^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+7\,a^2\,A\,b^3\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-3\,a\,A\,b^4\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\right.$$

$$3\,A\,b^5\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-4\,a^4\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-4\,a^3\,b^2\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$a^5\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+a^4\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+3\,a^3\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$3\,a^2\,b^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-14\,a^3\,A\,b^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+6\,a\,A\,b^4\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+$$

$$8\,a^4\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-2\,a^5\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-6\,a^3\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+$$

$$7\,a^3\,A\,b^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-7\,a^2\,A\,b^3\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-3\,a\,A\,b^4\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+$$

$$3\,A\,b^5\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-4\,a^4\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+4\,a^3\,b^2\,B\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+$$

$$a^5\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-a^4\,b\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5+3\,a^3\,b^2\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-$$

$$3\,a^2\,b^3\,C\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-6\,a^4\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}+$$

$$12\,a^2\,A\,b^3\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-$$

$$6\,A\,b^5\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-$$

$$6\,a^4\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$12\,a^2 A\, b^3\, \text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a-b}{a+b}\right]\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$6\,A\, b^5\, \text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a-b}{a+b}\right]\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\ \sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$(a+b)\left(-3\,A\, b^4-4\,a^3\, b\, B+a^4\, C+a^2\, b^2\,(7\,A+3\,C)\right)$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a-b}{a+b}\right]\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$a\, b\,(a+b)\left(-2\,A\, b^2+a^2\,(3\,A-3\,B+C)+a\, b\,(3\,A-B+3\,C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\,\frac{a-b}{a+b}\right]\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\Bigg(3\,a^2\, b\,\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\operatorname{Cos}[c+d x]+A\operatorname{Cos}[2\,c+2\,d x]\right)$$

$$(a+b\operatorname{Sec}[c+d x])^{5/2}\sqrt{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left(a\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)$$

Problem 974: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]\left(A+B\operatorname{Sec}[c+d x]+C\operatorname{Sec}[c+d x]^2\right)}{(a+b\operatorname{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 4, 618 leaves, 8 steps):

$$-\left(\left(\left(26 a^2 A b^2-15 A b^4-14 a^3 b B+6 a b^3 B-a^4 (3 A-8 C)\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}\right)\Big/\left(3 a^3 (a-b) b (a+b)^{3/2} d\right)\right)-\left(\left(15 A b^4+a b^3 (5 A-6 B)-a^2 b^2 (21 A+2 B)-6 a^4 C-a^3 b (3 A-2 (6 B+C))\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}\right)\Big/\left(3 a^3 b \sqrt{a+b} \left(a^2-b^2\right) d\right)+\frac{1}{a^4 d}\sqrt{a+b} (5 A b-2 a B) \text{Cot}[c+d x] \text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}+\frac{A \text{Sin}[c+d x]}{a d (a+b \text{Sec}[c+d x])^{3/2}}-\frac{b \left(5 A b^2-2 a b B-a^2 (3 A-2 C)\right) \text{Tan}[c+d x]}{3 a^2 \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^{3/2}}-\frac{b \left(26 a^2 A b^2-15 A b^4-14 a^3 b B+6 a b^3 B-a^4 (3 A-8 C)\right) \text{Tan}[c+d x]}{3 a^3 \left(a^2-b^2\right)^2 d \sqrt{a+b \text{Sec}[c+d x]}}$$

Result (type 4, 2631 leaves):

$$\left((b+a \text{Cos}[c+d x])^3 \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{4 \left(-10 a^2 A b^2+6 A b^4+7 a^3 b B-3 a b^3 B-4 a^4 C\right) \text{Sin}[c+d x]}{3 a^3 \left(-a^2+b^2\right)^2}+\frac{4 \left(A b^4 \text{Sin}[c+d x]-a b^3 B \text{Sin}[c+d x]+a^2 b^2 C \text{Sin}[c+d x]\right)}{3 a^3 \left(a^2-b^2\right) (b+a \text{Cos}[c+d x])^2}+\left(4 \left(-11 a^2 A b^3 \text{Sin}[c+d x]+7 A b^5 \text{Sin}[c+d x]+8 a^3 b^2 B \text{Sin}[c+d x]-4 a b^4 B \text{Sin}[c+d x]-5 a^4 b C \text{Sin}[c+d x]+a^2 b^3 C \text{Sin}[c+d x]\right)\right)\Big/\left(3 a^3 \left(a^2-b^2\right)^2 (b+a \text{Cos}[c+d x])\right)\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\Bigg(2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\Bigg(3\,a^5\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,a^4\,A\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-26\,a^3\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$

$$26\,a^2\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+15\,a\,A\,b^4\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+15\,A\,b^5\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$

$$14\,a^4\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+14\,a^3\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-6\,a^2\,b^3\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$

$$6\,a\,b^4\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-8\,a^5\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-8\,a^4\,b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$

$$6\,a^5\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+52\,a^3\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-30\,a\,A\,b^4\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-$$

$$28\,a^4\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+12\,a^2\,b^3\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+16\,a^5\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$

$$3\,a^5\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-3\,a^4\,A\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-26\,a^3\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$26\,a^2\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+15\,a\,A\,b^4\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-15\,A\,b^5\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$14\,a^4\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-14\,a^3\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-6\,a^2\,b^3\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$6\,a\,b^4\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-8\,a^5\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+8\,a^4\,b\,C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$30\,a^4\,A\,b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

$$60\,a^2\,A\,b^3\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$30\,A\,b^5\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$12\,a^5\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$24\,a^3\,b^2\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$12\,a\,b^4\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$30\,a^4\,A\,b\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$60\,a^2\,A\,b^3\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$30\,A\,b^5\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$12\,a^5\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$24\,a^3\,b^2\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$12\,a\,b^4\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$(a+b)\left(-26\,a^2\,A\,b^2+15\,A\,b^4+14\,a^3\,b\,B-6\,a\,b^3\,B+a^4\,(3\,A-8\,C)\right)$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$2\,a\,(a+b)\left(5\,A\,b^3-a\,b^2\,(3\,A+2\,B)+3\,a^3\,(B-C)-a^2\,b\,(6\,A-3\,B+C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(3\,a\,\left(a^3-a\,b^2\right)^2 d\,(A+2\,C+2\,B\,\text{Cos}[c+d x]+A\,\text{Cos}[2\,c+2\,d x])\right.$$

$$(a+b\,\text{Sec}[c+d x])^{5/2}\sqrt{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)$$

Problem 977: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{a\,b\,B-a^2\,C+b^2\,B\,\text{Sec}[c+d x]+b^2\,C\,\text{Sec}[c+d x]^2}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 316 leaves, 6 steps):

$$-\frac{1}{d}2\,(a-b)\,\sqrt{a+b}\;C\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{d}$$
$$2\,b\,\sqrt{a+b}\;(B-C)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{1}{d}$$
$$2\,\sqrt{a+b}\;(b\,B-a\,C)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}$$

Result (type 4, 1232 leaves):

$$\left(2\,b\,C\,\mathrm{Cos}[c+d\,x]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;(b\,B-a\,C+b\,C\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sin}[c+d\,x]\right)\Big/$$
$$\left(d\,(b\,C+b\,B\,\mathrm{Cos}[c+d\,x]-a\,C\,\mathrm{Cos}[c+d\,x])\right)+$$
$$\left(2\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;(b\,B-a\,C+b\,C\,\mathrm{Sec}[c+d\,x])\left(a\,b\,\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.\right.$$
$$b^2\,\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-2\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$
$$a\,b\,\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-b^2\,\sqrt{\frac{-a+b}{a+b}}\;C\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$
$$2\,\mathrm{i}\,a\,b\,B\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$
$$2\,\mathrm{i}\,a^2\,C\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+2\,\mathrm{i}\,a\,b\,B$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$2\,i\,a^2\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$i\,(a-b)\,b\,C\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+i\,(a-b)\,(a\,C+b\,(-B+C))$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\left(\sqrt{\frac{-a+b}{a+b}}\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(b\,C+b\,B\,\text{Cos}[c+d\,x]-a\,C\,\text{Cos}[c+d\,x]\right)\right.$$

$$\text{Sec}[c+d\,x]^{3/2}\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{3/2}$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)$$

Problem 979: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{a\,b\,B - a^2\,C + b^2\,B\,\text{Sec}[c+d\,x] + b^2\,C\,\text{Sec}[c+d\,x]^2}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 4, 379 leaves, 7 steps):

$$\frac{1}{a\sqrt{a+b}\;d}2\,(b\,B-2\,a\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{a\sqrt{a+b}\;d}2\,(b\,B-2\,a\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{a^2\,d}2\sqrt{a+b}\,(b\,B-a\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\Big[\frac{a+b}{a},\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{2\,b^2\,(b\,B-2\,a\,C)\,\text{Tan}[c+d\,x]}{a\,(a^2-b^2)\,d\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 2090 leaves):

$$\Bigg((b+a\,\text{Cos}[c+d\,x])^2\,\text{Sec}[c+d\,x]\,(b\,B-a\,C+b\,C\,\text{Sec}[c+d\,x])\left(\frac{2\,b\,(b\,B-2\,a\,C)\,\text{Sin}[c+d\,x]}{a\,(-a^2+b^2)}-\frac{2\,(-b^3\,B\,\text{Sin}[c+d\,x]+2\,a\,b^2\,C\,\text{Sin}[c+d\,x])}{a\,(a^2-b^2)\,(b+a\,\text{Cos}[c+d\,x])}\right)\Bigg)\Big/\left(d\,(b\,C+b\,B\,\text{Cos}[c+d\,x]-a\,C\,\text{Cos}[c+d\,x])\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\right)-$$

$$\Bigg(2\,(b+a\,\text{Cos}[c+d\,x])^{3/2}\sqrt{\text{Sec}[c+d\,x]}\,(b\,B-a\,C+b\,C\,\text{Sec}[c+d\,x])$$

$$\sqrt{\frac{a+b-a\,\text{Tan}[\frac{1}{2}(c+d\,x)]^2+b\,\text{Tan}[\frac{1}{2}(c+d\,x)]^2}{1+\text{Tan}[\frac{1}{2}(c+d\,x)]^2}}$$

$$\Bigg(-a\,b^2\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-b^3\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+$$

$$2\,a^2\,b\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+2\,a\,b^2\sqrt{\frac{-a+b}{a+b}}\,C\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+$$

$$2\,a\,b^2\sqrt{\frac{-a+b}{a+b}}\;B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-4\,a^2\,b\sqrt{\frac{-a+b}{a+b}}\;C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-$$

$$a\,b^2\sqrt{\frac{-a+b}{a+b}}\;B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+b^3\sqrt{\frac{-a+b}{a+b}}\;B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$2\,a^2\,b\sqrt{\frac{-a+b}{a+b}}\;C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-2\,a\,b^2\sqrt{\frac{-a+b}{a+b}}\;C\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$2\,i\,a^2\,b\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$2\,i\,b^3\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$2\,i\,a^3\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$2\,i\,a\,b^2\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+2\,i\,a^2\,b\,B$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$2\,i\,b^3\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$2\,i\,a^3\,C\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+2\,i\,a\,b^2\,C$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$i\,(a-b)\,b\,(-b\,B+2\,a\,C)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+i\,(a-b)\,\left(-2\,b^2\,B-a\,b\,(B-3\,C)+a^2\,C\right)$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\left(a\,\sqrt{\frac{-a+b}{a+b}}\,\left(a^2-b^2\right)\,d\,\left(b\,C+b\,B\,\text{Cos}[c+d\,x]-a\,C\,\text{Cos}[c+d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right.$$

$$\left.\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Bigg)$$

Problem 980: Result more than twice size of optimal antiderivative.

$$\int\frac{a\,b\,B-a^2\,C+b^2\,B\,\text{Sec}[c+d\,x]+b^2\,C\,\text{Sec}[c+d\,x]^2}{(a+b\,\text{Sec}[c+d\,x])^{7/2}}\,dx$$

Optimal (type 4, 519 leaves, 8 steps):

$$\Bigg(2\left(7\,a^2\,b\,B-3\,b^3\,B-11\,a^3\,C+3\,a\,b^2\,C\right)\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}\Bigg)\Big/\left(3\,a^2\,(a-b)\,(a+b)^{3/2}\,d\right)+$$
$$\Bigg(2\left(3\,b^3\,B+a\,b^2\,(B-3\,C)+9\,a^3\,C-2\,a^2\,b\,(3\,B+C)\right)\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}\Bigg)\Big/\left(3\,a^2\sqrt{a+b}\,\left(a^2-b^2\right)d\right)-\frac{1}{a^3\,d}$$
$$2\sqrt{a+b}\,(b\,B-a\,C)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{2\,b^2\,(b\,B-2\,a\,C)\,\text{Tan}[c+d\,x]}{3\,a\,\left(a^2-b^2\right)d\,(a+b\,\text{Sec}[c+d\,x])^{3/2}}+\frac{2\,b^2\left(7\,a^2\,b\,B-3\,b^3\,B-11\,a^3\,C+3\,a\,b^2\,C\right)\text{Tan}[c+d\,x]}{3\,a^2\,\left(a^2-b^2\right)^2 d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 4657 leaves):

$$\Bigg((b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]^2$$
$$(b\,B-a\,C+b\,C\,\text{Sec}[c+d\,x])\left(\frac{2\,b\left(-7\,a^2\,b\,B+3\,b^3\,B+11\,a^3\,C-3\,a\,b^2\,C\right)\text{Sin}[c+d\,x]}{3\,a^2\left(-a^2+b^2\right)^2}-\right.$$
$$\frac{2\left(b^4\,B\,\text{Sin}[c+d\,x]-2\,a\,b^3\,C\,\text{Sin}[c+d\,x]\right)}{3\,a^2\left(a^2-b^2\right)(b+a\,\text{Cos}[c+d\,x])^2}-\Big(2\left(-8\,a^2\,b^3\,B\,\text{Sin}[c+d\,x]+4\,b^5\,B\,\text{Sin}[c+d\,x]+\right.$$

$$13\, a^3\, b^2\, C\, \text{Sin}[c+d\,x] - 5\, a\, b^4\, C\, \text{Sin}[c+d\,x]\big)\big) \Big/ \left(3\, a^2\, \left(a^2-b^2\right)^2\, \left(b+a\, \text{Cos}[c+d\,x]\right)\right)\Big)\Big) \Big/$$

$$\left(d\, \left(b\, C + b\, B\, \text{Cos}[c+d\,x] - a\, C\, \text{Cos}[c+d\,x]\right)\, \left(a+b\, \text{Sec}[c+d\,x]\right)^{5/2}\right) +$$

$$\Bigg(\left(b+a\, \text{Cos}[c+d\,x]\right)^{5/2} \left(\frac{a^2\, b\, B}{\left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}\, \sqrt{\text{Sec}[c+d\,x]}} + \right.$$

$$\frac{b^3\, B}{3\, \left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}\, \sqrt{\text{Sec}[c+d\,x]}} -$$

$$\frac{a^3\, C}{\left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}\, \sqrt{\text{Sec}[c+d\,x]}} -$$

$$\frac{5\, a\, b^2\, C}{3\, \left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}\, \sqrt{\text{Sec}[c+d\,x]}} + \frac{a\, b^2\, B\, \sqrt{\text{Sec}[c+d\,x]}}{3\, \left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}} -$$

$$\frac{b^4\, B\, \sqrt{\text{Sec}[c+d\,x]}}{3\, a\, \left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}} - \frac{2\, a^2\, b\, C\, \sqrt{\text{Sec}[c+d\,x]}}{3\, \left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}} +$$

$$\frac{2\, b^3\, C\, \sqrt{\text{Sec}[c+d\,x]}}{3\, \left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}} + \frac{7\, a\, b^2\, B\, \text{Cos}\left[2\, \left(c+d\,x\right)\right]\, \sqrt{\text{Sec}[c+d\,x]}}{3\, \left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}} -$$

$$\frac{b^4\, B\, \text{Cos}\left[2\, \left(c+d\,x\right)\right]\, \sqrt{\text{Sec}[c+d\,x]}}{a\, \left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}} - \frac{11\, a^2\, b\, C\, \text{Cos}\left[2\, \left(c+d\,x\right)\right]\, \sqrt{\text{Sec}[c+d\,x]}}{3\, \left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}} +$$

$$\left.\frac{b^3\, C\, \text{Cos}\left[2\, \left(c+d\,x\right)\right]\, \sqrt{\text{Sec}[c+d\,x]}}{\left(a^2-b^2\right)^2 \sqrt{b+a\, \text{Cos}[c+d\,x]}}\right) \text{Sec}[c+d\,x]^{3/2}$$

$$\left(b\, B - a\, C + b\, C\, \text{Sec}[c+d\,x]\right) \Bigg(-\Bigg(\Bigg(2\, b\, \left(-7\, a^2\, b\, B + 3\, b^3\, B + 11\, a^3\, C - 3\, a\, b^2\, C\right)$$

$$\text{Tan}\left[\frac{1}{2}\, \left(c+d\,x\right)\right] \sqrt{\frac{a+b-a\, \text{Tan}\left[\frac{1}{2}\, \left(c+d\,x\right)\right]^2 + b\, \text{Tan}\left[\frac{1}{2}\, \left(c+d\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\, \left(c+d\,x\right)\right]^2}}\Bigg) \Big/$$

$$\left(3\, a^2\, \left(a^2-b^2\right)^2 \sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\, \left(c+d\,x\right)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\, \left(c+d\,x\right)\right]^2}}\right)\Bigg) + \Bigg(2\, \left(a+b\right)$$

$$\Bigg(-b\, \left(-7\, a^2\, b\, B + 3\, b^3\, B + 11\, a^3\, C - 3\, a\, b^2\, C\right)\, \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, \left(c+d\,x\right)\right]\right],\, \frac{a-b}{a+b}\right] +$$

$$a\, \left(2\, b^3\, B - 3\, a^2\, b\, \left(B-2\, C\right) + 3\, a^3\, C - a\, b^2\, \left(3\, B + C\right)\right)\, \text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, \left(c+d\,x\right)\right]\right],\right.$$

$$\left.\frac{a-b}{a+b}\right] + 6\, \left(a-b\right)^2\, \left(a+b\right)\, \left(-b\, B + a\, C\right)\, \text{EllipticPi}\left[-1,\, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, \left(c+d\,x\right)\right]\right],\right.$$

$$\left.\left.\frac{a-b}{a+b}\right]\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}$$

$$\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}\right)\Big/$$

$$\left(3\,a^2\,\left(a^2-b^2\right)^2\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$

$$\left.\left.\left.\left(b-b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\right)\right)\right)\Big/$$

$$\Big(d\,\left(b\,C+b\,B\,\mathrm{Cos}[c+d\,x]-a\,C\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}$$

$$\left(-\left(\left(b\,\left(-7\,a^2\,b\,B+3\,b^3\,B+11\,a^3\,C-3\,a\,b^2\,C\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right.\right.\right.$$

$$\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)\Big/$$

$$\left.\left.\left(3\,a^2\,\left(a^2-b^2\right)^2\sqrt{\frac{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)\right)-\Big(2\,(a+b)$$

$$\left(-b\,\left(-7\,a^2\,b\,B+3\,b^3\,B+11\,a^3\,C-3\,a\,b^2\,C\right)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+\right.$$

$$a\,\left(2\,b^3\,B-3\,a^2\,b\,(B-2\,C)+3\,a^3\,C-a\,b^2\,(3\,B+C)\right)\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\right.$$

$$\left.\frac{a-b}{a+b}\right]+6\,(a-b)^2\,(a+b)\,(-b\,B+a\,C)\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\right.$$

$$\left.\left.\frac{a-b}{a+b}\right]\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}$$

$$\left(-2\,b\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+\right.$$

$$2\,a\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Bigg)\Bigg)\Bigg/\Bigg(3\,a^2\,(a^2-b^2)^2$$

$$\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(b-b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)^2\Bigg)-$$

$$\Bigg(2\,(a+b)\,\Big(-b\,(-7\,a^2\,b\,B+3\,b^3\,B+11\,a^3\,C-3\,a\,b^2\,C)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\right.$$

$$\left.\frac{a-b}{a+b}\right]+a\,(2\,b^3\,B-3\,a^2\,b\,(B-2\,C)+3\,a^3\,C-a\,b^2\,(3\,B+C))$$

$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+6\,(a-b)^2\,(a+b)\,(-b\,B+a\,C)$$

$$\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\Big)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\Bigg)\Bigg/$$

$$\Bigg(3\,a^2\,(a^2-b^2)^2\,\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}$$

$$\left(b-b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\Bigg)+$$

$$\Bigg(\Big(-b\,(-7\,a^2\,b\,B+3\,b^3\,B+11\,a^3\,C-3\,a\,b^2\,C)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+$$

$$a\,(2\,b^3\,B-3\,a^2\,b\,(B-2\,C)+3\,a^3\,C-a\,b^2\,(3\,B+C))$$

$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+$$

$$6\,(a-b)^2\,(a+b)\,(-b\,B+a\,C)\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\Big)$$

$$\left(-a\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+b\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\ \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4}\Bigg)\Bigg/$$

$$\left(3\,a^2\left(a^2-b^2\right)^2\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\ \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right.$$

$$\left.\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\right)-$$

$$\left(1\Big/\left(3\,a^2\left(a^2-b^2\right)^2\left(b-b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\right)\right)(a+b)$$

$$\left(-b\left(-7\,a^2\,b\,B+3\,b^3\,B+11\,a^3\,C-3\,a\,b^2\,C\right)\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]+\right.$$

$$a\left(2\,b^3\,B-3\,a^2\,b\,(B-2\,C)+3\,a^3\,C-a\,b^2\,(3\,B+C)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]+$$

$$\left.6\,(a-b)^2\,(a+b)\,(-b\,B+a\,C)\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\ \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4}+$$

$$\left(b\left(-7\,a^2\,b\,B+3\,b^3\,B+11\,a^3\,C-3\,a\,b^2\,C\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right.$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\left(\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}+\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left.\left.\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\right)\Bigg/\left(3\,a^2\left(a^2-b^2\right)^2\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{3/2}\right)-$$

$$\Bigg(b\left(-7a^2bB+3b^3B+11a^3C-3ab^2C\right)\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]$$
$$\Bigg(\left(-a\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]+b\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\Big/$$
$$\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)-\Bigg(\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]$$
$$\left(a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Bigg)\Big/\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\Bigg)\Bigg)\Big/$$
$$\left(3a^2\left(a^2-b^2\right)^2\sqrt{\frac{1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{1-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\right)+$$
$$\Bigg((a+b)\Bigg(-b\left(-7a^2bB+3b^3B+11a^3C-3ab^2C\right)\operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right],\right.$$
$$\left.\frac{a-b}{a+b}\right]+a\left(2b^3B-3a^2b\left(B-2C\right)+3a^3C-ab^2\left(3B+C\right)\right)$$
$$\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right],\frac{a-b}{a+b}\right]+$$
$$6(a-b)^2(a+b)\left(-bB+aC\right)\operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right],\frac{a-b}{a+b}\right]\Bigg)$$
$$\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}}\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^4}$$
$$\Bigg(\left(-a\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]+b\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\Big/$$
$$\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)-\Bigg(\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]$$
$$\left(a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Bigg)\Big/\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\Bigg)\Bigg)\Big/$$
$$\Bigg(3a^2\left(a^2-b^2\right)^2\sqrt{\frac{1}{1-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}$$
$$\left(b-b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^4+a\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\right)\Bigg)+$$
$$\Bigg(2(a+b)\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\ \sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4}$$

$$\Bigg(\left(a\left(2\,b^3\,B-3\,a^2\,b\,(B-2\,C)+3\,a^3\,C-a\,b^2\,(3\,B+C)\right)\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big/$$

$$\left(2\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{1-\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right)-$$

$$\left(3\,(a-b)^2\,(a+b)\,(-b\,B+a\,C)\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big/$$

$$\left(\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\sqrt{1-\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right)-$$

$$\Bigg(b\left(-7\,a^2\,b\,B+3\,b^3\,B+11\,a^3\,C-3\,a\,b^2\,C\right)\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\Bigg)\Big/\left(2\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)\Bigg)\Bigg)\Big/\Bigg(3\,a^2\,(a^2-b^2)^2$$

$$\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\ \left(b-b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\Bigg)\Bigg)\Bigg)$$

Problem 981: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^{5/2}\,(a+b\,\mathrm{Sec}[c+d\,x])\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 266 leaves, 10 steps):

$$-\frac{1}{15\,d}2\,(9\,A\,b+9\,a\,B+7\,b\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{1}{21\,d}2\,(7\,a\,A+5\,b\,B+5\,a\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{2\,(9\,A\,b+9\,a\,B+7\,b\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d}+$$
$$\frac{2\,(7\,a\,A+5\,b\,B+5\,a\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{21\,d}+$$
$$\frac{2\,(9\,A\,b+9\,a\,B+7\,b\,C)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{45\,d}+$$
$$\frac{2\,(b\,B+a\,C)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{7\,d}+\frac{2\,b\,C\,\text{Sec}[c+d\,x]^{9/2}\,\text{Sin}[c+d\,x]}{9\,d}$$

Result (type 5, 1232 leaves):

$$-\left(\left(\left(6\,\sqrt{2}\,A\,b\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\right.\right.\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left.(5\,d\,(b+a\,\text{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))\right)-$$
$$\left(6\,\sqrt{2}\,a\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$(5\,d\,(b+a\,\text{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))-$$
$$\left(14\,\sqrt{2}\,b\,C\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$

$$\left(15\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(4\,a\,A\,\text{Cos}[c+d\,x]^{7/2}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\right.$$
$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(20\,b\,B\,\text{Cos}[c+d\,x]^{7/2}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\right.$$
$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(21\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(20\,a\,C\,\text{Cos}[c+d\,x]^{7/2}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\right.$$
$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(21\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{4\,(9\,A\,b+9\,a\,B+7\,b\,C)\,\text{Cos}[d\,x]\,\text{Csc}[c]}{15\,d}+\frac{4\,b\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^4\,\text{Sin}[d\,x]}{9\,d}+\right.$$
$$\frac{1}{63\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\left(7\,b\,C\,\text{Sin}[c]+9\,b\,B\,\text{Sin}[d\,x]+9\,a\,C\,\text{Sin}[d\,x]\right)+\frac{1}{315\,d}$$
$$4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(63\,A\,b\,\text{Sin}[c]+63\,a\,B\,\text{Sin}[c]+49\,b\,C\,\text{Sin}[c]+105\,a\,A\,\text{Sin}[d\,x]+75\,b\,B\right.$$
$$\left.\text{Sin}[d\,x]+75\,a\,C\,\text{Sin}[d\,x]\right)+\frac{1}{315\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(45\,b\,B\,\text{Sin}[c]+45\,a\,C\,\text{Sin}[c]+\right.$$
$$\left.\left.\left.63\,A\,b\,\text{Sin}[d\,x]+63\,a\,B\,\text{Sin}[d\,x]+49\,b\,C\,\text{Sin}[d\,x]\right)+\frac{4\,(7\,a\,A+5\,b\,B+5\,a\,C)\,\text{Tan}[c]}{21\,d}\right)\right)\Big/$$
$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{5/2}\right)$$

Problem 982: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^{3/2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 230 leaves, 9 steps):

$$-\frac{1}{5 d}2 \left(5 a A+3 b B+3 a C\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+$$
$$\frac{1}{21 d}2 \left(7 A b+7 a B+5 b C\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+$$
$$\frac{2 \left(5 a A+3 b B+3 a C\right) \sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{5 d}+$$
$$\frac{2 \left(7 A b+7 a B+5 b C\right) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{21 d}+$$
$$\frac{2 \left(b B+a C\right) \text{Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{5 d}+\frac{2 b C \text{Sec}[c+d x]^{7/2} \text{Sin}[c+d x]}{7 d}$$

Result (type 5, 1170 leaves) :

$$-\left(\left(\left(2 \sqrt{2}\ a A e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}[c+d x]^3 \text{Csc}[c]\right.\right.\right.$$
$$\left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right)$$
$$\left.\left(a+b \text{Sec}[c+d x]\right) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left.\left(d \left(b+a \text{Cos}[c+d x]\right) \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)\right)-$$
$$\left(6 \sqrt{2}\ b B e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}[c+d x]^3 \text{Csc}[c]\right.$$
$$\left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right)$$
$$\left.\left(a+b \text{Sec}[c+d x]\right) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(5 d \left(b+a \text{Cos}[c+d x]\right) \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)-$$
$$\left(6 \sqrt{2}\ a C e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}}\ \text{Cos}[c+d x]^3 \text{Csc}[c]\right.$$
$$\left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]\right)$$
$$\left.\left(a+b \text{Sec}[c+d x]\right) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right)\Big/$$
$$\left(5 d \left(b+a \text{Cos}[c+d x]\right) \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(4\,A\,b\,\text{Cos}[c+d\,x]^{7/2}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left(4\,a\,B\,\text{Cos}[c+d\,x]^{7/2}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left(20\,b\,C\,\text{Cos}[c+d\,x]^{7/2}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right)\Big/\left(21\,d\,(b+a\,\text{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left((a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{4\,(5\,a\,A+3\,b\,B+3\,a\,C)\,\text{Cos}[d\,x]\,\text{Csc}[c]}{5\,d}+\frac{4\,b\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\text{Sin}[d\,x]}{7\,d}+\frac{1}{35\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,(5\,b\,C\,\text{Sin}[c]+7\,b\,B\,\text{Sin}[d\,x]+7\,a\,C\,\text{Sin}[d\,x])+\frac{1}{105\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(21\,b\,B\,\text{Sin}[c]+21\,a\,C\,\text{Sin}[c]+35\,A\,b\,\text{Sin}[d\,x]+35\,a\,B\,\text{Sin}[d\,x]+25\,b\,C\,\text{Sin}[d\,x])+\frac{4\,(7\,A\,b+7\,a\,B+5\,b\,C)\,\text{Tan}[c]}{21\,d}\right)\right)\Big/\left((b+a\,\text{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{5/2}\right)$$

Problem 983: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Sec}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 192 leaves, 8 steps):

$$-\frac{1}{5\,d}2\,(5\,A\,b+5\,a\,B+3\,b\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{3\,d}2\,(b\,B+a\,(3\,A+C))\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{2\,(5\,A\,b+5\,a\,B+3\,b\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{5\,d}+\frac{2\,(b\,B+a\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,d}+\frac{2\,b\,C\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 5, 1106 leaves):

$$- \left(\left(\left(2\sqrt{2}\, A\, b\, e^{-i\,(2c+dx)} \sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\, \text{Cos}[c+dx]^3\, \text{Csc}[c] \right.\right.\right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\left(a+b\,\text{Sec}[c+dx]\right)\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right) \Big/$$

$$\left.\left(d\left(b+a\,\text{Cos}[c+dx]\right)\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right)\right) -$$

$$\left(2\sqrt{2}\, a\, B\, e^{-i\,(2c+dx)} \sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\, \text{Cos}[c+dx]^3\, \text{Csc}[c] \right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\left(a+b\,\text{Sec}[c+dx]\right)\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right) \Big/$$

$$\left(d\left(b+a\,\text{Cos}[c+dx]\right)\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right) -$$

$$\left(6\sqrt{2}\, b\, C\, e^{-i\,(2c+dx)} \sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\, \text{Cos}[c+dx]^3\, \text{Csc}[c] \right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\left(a+b\,\text{Sec}[c+dx]\right)\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right) \Big/$$

$$\left(5\,d\left(b+a\,\text{Cos}[c+dx]\right)\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right) +$$

$$\left(4\,a\,A\,\text{Cos}[c+dx]^{7/2}\,\text{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\sqrt{\text{Sec}[c+dx]}\right.$$

$$\left.\left(a+b\,\text{Sec}[c+dx]\right)\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right) \Big/$$

$$\left(d\left(b+a\,\text{Cos}[c+dx]\right)\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right) +$$

$$\left(4\,b\,B\,\text{Cos}[c+dx]^{7/2}\,\text{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\sqrt{\text{Sec}[c+dx]}\right.$$

$$\left.\left(a+b\,\text{Sec}[c+dx]\right)\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right) \Big/$$

$$\left(3\,d\left(b+a\,\text{Cos}[c+dx]\right)\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)\right) +$$

$$\left(4\,a\,C\,\text{Cos}[c+dx]^{7/2}\,\text{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\sqrt{\text{Sec}[c+dx]}\right.$$

$$\left.\left(a+b\,\text{Sec}[c+dx]\right)\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)\right) \Big/$$

$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\Bigg(\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\frac{4\,\left(5\,A\,b+5\,a\,B+3\,b\,C\right)\,\text{Cos}[d\,x]\,\text{Csc}[c]}{5\,d}+\frac{4\,b\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{5\,d}+\frac{1}{15\,d}$$
$$4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(3\,b\,C\,\text{Sin}[c]+5\,b\,B\,\text{Sin}[d\,x]+5\,a\,C\,\text{Sin}[d\,x]\right)+\frac{4\,\left(b\,B+a\,C\right)\,\text{Tan}[c]}{3\,d}\Bigg)\Bigg)\Big/$$
$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{5/2}\right)$$

Problem 984: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 152 leaves, 7 steps):

$$-\frac{1}{d}2\,\left(b\,B-a\,\left(A-C\right)\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]\,\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{1}{3\,d}2\,\left(3\,A\,b+3\,a\,B+b\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]\,\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{2\,\left(b\,B+a\,C\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d}+\frac{2\,b\,C\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 1074 leaves):

$$\Bigg(2\,\sqrt{2}\,a\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Big/$$
$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$
$$\Bigg(2\,\sqrt{2}\,b\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg)\Big/$$
$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(2\sqrt{2}\,a\,C\,e^{-i\,(2c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.(a+b\,\mathrm{Sec}[c+d\,x])\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,(b+a\,\mathrm{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left(4\,A\,b\,\mathrm{Cos}[c+d\,x]^{7/2}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$
$$\left.(a+b\,\mathrm{Sec}[c+d\,x])\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,(b+a\,\mathrm{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left(4\,a\,B\,\mathrm{Cos}[c+d\,x]^{7/2}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$
$$\left.(a+b\,\mathrm{Sec}[c+d\,x])\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(d\,(b+a\,\mathrm{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left(4\,b\,C\,\mathrm{Cos}[c+d\,x]^{7/2}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$
$$\left.(a+b\,\mathrm{Sec}[c+d\,x])\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(3\,d\,(b+a\,\mathrm{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right)+$$
$$\left((a+b\,\mathrm{Sec}[c+d\,x])\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{2\,(a\,A-2\,b\,B-2\,a\,C+a\,A\,\mathrm{Cos}[2\,c])\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}[c]}{d}+\right.$$
$$\left.\left.\frac{4\,a\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{d}+\frac{4\,b\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}[d\,x]}{3\,d}+\frac{4\,b\,C\,\mathrm{Tan}[c]}{3\,d}\right)\right)\Big/$$
$$\left((b+a\,\mathrm{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\mathrm{Sec}[c+d\,x]^{5/2}\right)$$

Problem 985: Result unnecessarily involves higher level functions.

$$\int\frac{(a+b\,\mathrm{Sec}[c+d\,x])\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\mathrm{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 146 leaves, 7 steps):

$$\frac{1}{d}2\,(A\,b+a\,B-b\,C)\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\mathrm{Sec}[c+d\,x]}+$$
$$\frac{1}{3\,d}2\,(3\,b\,B+a\,(A+3\,C))\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\mathrm{Sec}[c+d\,x]}+$$
$$\frac{2\,a\,A\,\mathrm{Sin}[c+d\,x]}{3\,d\sqrt{\mathrm{Sec}[c+d\,x]}}+\frac{2\,b\,C\sqrt{\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{d}$$

Result (type 5, 176 leaves):

$$\frac{1}{3\,d}\sqrt{\text{Sec}[c+d\,x]}\,\Big(-6\,i\,A\,b\,\text{Cos}[c+d\,x]-6\,i\,a\,B\,\text{Cos}[c+d\,x]+6\,i\,b\,C\,\text{Cos}[c+d\,x]+2\,\big(3\,b\,B+a\,(A+3\,C)\big)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]+6\,i\,(A\,b+a\,B-b\,C)\,e^{-i\,(c+d\,x)}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\Big]+6\,b\,C\,\text{Sin}[c+d\,x]+a\,A\,\text{Sin}[2\,(c+d\,x)]\Big)$$

Problem 986: Result unnecessarily involves higher level functions.

$$\int\frac{(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 4, 156 leaves, 7 steps):

$$\frac{1}{5\,d}2\,(3\,a\,A+5\,b\,B+5\,a\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{3\,d}2\,(A\,b+a\,B+3\,b\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{2\,a\,A\,\text{Sin}[c+d\,x]}{5\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{2\,(A\,b+a\,B)\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 5, 173 leaves):

$$\frac{1}{30\,d}\sqrt{\text{Sec}[c+d\,x]}\,\Big(20\,(A\,b+a\,B+3\,b\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]+12\,i\,(3\,a\,A+5\,b\,B+5\,a\,C)\,e^{-i\,(c+d\,x)}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\Big]+2\,\text{Cos}[c+d\,x]\,\big(-6\,i\,(3\,a\,A+5\,b\,B+5\,a\,C)+10\,(A\,b+a\,B)\,\text{Sin}[c+d\,x]+3\,a\,A\,\text{Sin}[2\,(c+d\,x)]\big)\Big)$$

Problem 987: Result unnecessarily involves higher level functions.

$$\int\frac{(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{7/2}}\,dx$$

Optimal (type 4, 194 leaves, 8 steps):

$$\frac{1}{5\,d}2\,(3\,A\,b+3\,a\,B+5\,b\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{21\,d}2\,(5\,a\,A+7\,b\,B+7\,a\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,2\Big]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{2\,a\,A\,\text{Sin}[c+d\,x]}{7\,d\,\text{Sec}[c+d\,x]^{5/2}}+\frac{2\,(A\,b+a\,B)\,\text{Sin}[c+d\,x]}{5\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{2\,(5\,a\,A+7\,b\,B+7\,a\,C)\,\text{Sin}[c+d\,x]}{21\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 5, 198 leaves):

$$\frac{1}{420\,d}\sqrt{\text{Sec}[c+d\,x]}\left(40\,(5\,a\,A+7\,b\,B+7\,a\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]+168\,\mathrm{i}\,(3\,A\,b+3\,a\,B+5\,b\,C)\,e^{-\mathrm{i}\,(c+d\,x)}\,\sqrt{1+e^{2\,\mathrm{i}\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+2\,\text{Cos}[c+d\,x]\,\left(-84\,\mathrm{i}\,(3\,A\,b+3\,a\,B+5\,b\,C)+5\,(23\,a\,A+28\,b\,B+28\,a\,C)\,\text{Sin}[c+d\,x]+42\,(A\,b+a\,B)\,\text{Sin}[2\,(c+d\,x)]+15\,a\,A\,\text{Sin}[3\,(c+d\,x)]\right)\right)$$

Problem 988: Result unnecessarily involves higher level functions.

$$\int\frac{(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{9/2}}\,dx$$

Optimal (type 4, 230 leaves, 9 steps):

$$\frac{1}{15\,d}2\,(7\,a\,A+9\,b\,B+9\,a\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{21\,d}2\,(5\,A\,b+5\,a\,B+7\,b\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{2\,a\,A\,\text{Sin}[c+d\,x]}{9\,d\,\text{Sec}[c+d\,x]^{7/2}}+\frac{2\,(A\,b+a\,B)\,\text{Sin}[c+d\,x]}{7\,d\,\text{Sec}[c+d\,x]^{5/2}}+\frac{2\,(7\,a\,A+9\,b\,B+9\,a\,C)\,\text{Sin}[c+d\,x]}{45\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{2\,(5\,A\,b+5\,a\,B+7\,b\,C)\,\text{Sin}[c+d\,x]}{21\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 5, 229 leaves):

$$\frac{1}{2520\,d}\sqrt{\text{Sec}[c+d\,x]}\left(240\,(5\,A\,b+5\,a\,B+7\,b\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]+336\,\mathrm{i}\,(7\,a\,A+9\,b\,B+9\,a\,C)\,e^{-\mathrm{i}\,(c+d\,x)}\,\sqrt{1+e^{2\,\mathrm{i}\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+2\,\text{Cos}[c+d\,x]\,\left(-1176\,\mathrm{i}\,a\,A-1512\,\mathrm{i}\,b\,B-1512\,\mathrm{i}\,a\,C+30\,(23\,A\,b+23\,a\,B+28\,b\,C)\,\text{Sin}[c+d\,x]+14\,(19\,a\,A+18\,b\,B+18\,a\,C)\,\text{Sin}[2\,(c+d\,x)]+90\,A\,b\,\text{Sin}[3\,(c+d\,x)]+90\,a\,B\,\text{Sin}[3\,(c+d\,x)]+35\,a\,A\,\text{Sin}[4\,(c+d\,x)]\right)\right)$$

Problem 989: Result unnecessarily involves higher level functions.

$$\int\frac{(a+b\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{11/2}}\,dx$$

Optimal (type 4, 266 leaves, 10 steps):

$$\frac{1}{15\,d}2\,(7\,A\,b+7\,a\,B+9\,b\,C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+\,\frac{1}{231\,d}$$
$$10\,(9\,a\,A+11\,b\,B+11\,a\,C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{2\,a\,A\,\text{Sin}[c+d\,x]}{11\,d\,\text{Sec}[c+d\,x]^{9/2}}+\frac{2\,(A\,b+a\,B)\,\text{Sin}[c+d\,x]}{9\,d\,\text{Sec}[c+d\,x]^{7/2}}+\frac{2\,(9\,a\,A+11\,b\,B+11\,a\,C)\,\text{Sin}[c+d\,x]}{77\,d\,\text{Sec}[c+d\,x]^{5/2}}+$$
$$\frac{2\,(7\,A\,b+7\,a\,B+9\,b\,C)\,\text{Sin}[c+d\,x]}{45\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{10\,(9\,a\,A+11\,b\,B+11\,a\,C)\,\text{Sin}[c+d\,x]}{231\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 5, 265 leaves) :

$$\frac{1}{55\,440\,d}$$
$$\sqrt{\text{Sec}[c+d\,x]}\,\Bigg(2400\,(9\,a\,A+11\,b\,B+11\,a\,C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]+7392\,\text{i}$$
$$(7\,A\,b+7\,a\,B+9\,b\,C)\,e^{-\text{i}\,(c+d\,x)}\,\sqrt{1+e^{2\,\text{i}\,(c+d\,x)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,\text{i}\,(c+d\,x)}\right]+$$
$$2\,\text{Cos}[c+d\,x]\,\big(-25\,872\,\text{i}\,A\,b-25\,872\,\text{i}\,a\,B-33\,264\,\text{i}\,b\,C+$$
$$30\,(435\,a\,A+506\,b\,B+506\,a\,C)\,\text{Sin}[c+d\,x]+308\,(19\,A\,b+19\,a\,B+18\,b\,C)\,\text{Sin}[2\,(c+d\,x)]+$$
$$2565\,a\,A\,\text{Sin}[3\,(c+d\,x)]+1980\,b\,B\,\text{Sin}[3\,(c+d\,x)]+1980\,a\,C\,\text{Sin}[3\,(c+d\,x)]+$$
$$770\,A\,b\,\text{Sin}[4\,(c+d\,x)]+770\,a\,B\,\text{Sin}[4\,(c+d\,x)]+315\,a\,A\,\text{Sin}[5\,(c+d\,x)]\big)\Bigg)$$

Problem 1012: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+d\,x]^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+b\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 296 leaves, 11 steps) :

$$-\frac{1}{5\,b^3\,d}2\,(5\,A\,b^2-5\,a\,b\,B+5\,a^2\,C+3\,b^2\,C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{2\,(b\,B-a\,C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{3\,b^2\,d}-\frac{1}{b^3\,(a+b)\,d}$$
$$2\,a\,(A\,b^2-a\,(b\,B-a\,C))\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2\,a}{a+b},\,\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{2\,(5\,A\,b^2-5\,a\,b\,B+5\,a^2\,C+3\,b^2\,C)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{5\,b^3\,d}+$$
$$\frac{2\,(b\,B-a\,C)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,b^2\,d}+\frac{2\,C\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{5\,b\,d}$$

Result (type 1, 1 leaves) :

???

Problem 1013: Unable to integrate problem.

$$\int \frac{\text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{a+b \text{Sec}[c+d x]} \, dx$$

Optimal (type 4, 218 leaves, 10 steps):

$$-\frac{2 (b B-a C) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}}{b^2 d}+\frac{2 C \sqrt{\text{Cos}[c+d x]} \, \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}}{3 b d}+\frac{1}{b^2 (a+b) d}2 \left(A b^2-a (b B-a C)\right) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticPi}\left[\frac{2 a}{a+b},\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+\frac{2 (b B-a C) \sqrt{\text{Sec}[c+d x]} \, \text{Sin}[c+d x]}{b^2 d}+\frac{2 C \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{3 b d}$$

Result (type 8, 45 leaves):

$$\int \frac{\text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{a+b \text{Sec}[c+d x]} \, dx$$

Problem 1014: Unable to integrate problem.

$$\int \frac{\sqrt{\text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{a+b \text{Sec}[c+d x]} \, dx$$

Optimal (type 4, 178 leaves, 9 steps):

$$-\frac{2 C \sqrt{\text{Cos}[c+d x]} \, \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}}{b d}+\frac{2 A \sqrt{\text{Cos}[c+d x]} \, \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}}{a d}-\frac{1}{a b (a+b) d}2 \left(A b^2-a (b B-a C)\right) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticPi}\left[\frac{2 a}{a+b},\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+\frac{2 C \sqrt{\text{Sec}[c+d x]} \, \text{Sin}[c+d x]}{b d}$$

Result (type 8, 45 leaves):

$$\int \frac{\sqrt{\text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{a+b \text{Sec}[c+d x]} \, dx$$

Problem 1015: Unable to integrate problem.

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\sqrt{\operatorname{Sec}[c + d x]} \left(a + b \operatorname{Sec}[c + d x]\right)} \, dx$$

Optimal (type 4, 157 leaves, 8 steps):

$$\frac{2 A \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]}}{a d} - \frac{2 (A b - a B) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]}}{a^2 d} + \frac{1}{a^2 (a + b) d} 2 \left(A b^2 - a (b B - a C)\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticPi}\left[\frac{2 a}{a + b}, \frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]}$$

Result (type 8, 45 leaves):

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\sqrt{\operatorname{Sec}[c + d x]} \left(a + b \operatorname{Sec}[c + d x]\right)} \, dx$$

Problem 1016: Unable to integrate problem.

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\operatorname{Sec}[c + d x]^{3/2} \left(a + b \operatorname{Sec}[c + d x]\right)} \, dx$$

Optimal (type 4, 207 leaves, 9 steps):

$$-\frac{1}{a^2 d} 2 (A b - a B) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]} + \frac{1}{3 a^3 d} 2 \left(3 A b^2 - 3 a b B + a^2 (A + 3 C)\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]} - \frac{1}{a^3 (a + b) d} 2 b \left(A b^2 - a (b B - a C)\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticPi}\left[\frac{2 a}{a + b}, \frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]} + \frac{2 A \operatorname{Sin}[c + d x]}{3 a d \sqrt{\operatorname{Sec}[c + d x]}}$$

Result (type 8, 45 leaves):

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\operatorname{Sec}[c + d x]^{3/2} \left(a + b \operatorname{Sec}[c + d x]\right)} \, dx$$

Problem 1017: Unable to integrate problem.

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\operatorname{Sec}[c + d x]^{5/2} \left(a + b \operatorname{Sec}[c + d x]\right)} \, dx$$

Optimal (type 4, 269 leaves, 10 steps):

$$\frac{1}{5a^3 d}2\left(5Ab^2-5abB+a^2(3A+5C)\right)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}-\frac{1}{3a^4 d}2\left(3Ab^3-a^3B-3ab^2B+a^2b(A+3C)\right)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}+\frac{1}{a^4(a+b)d}2b^2\left(Ab^2-a(bB-aC)\right)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticPi}\left[\frac{2a}{a+b},\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}+\frac{2A\,\text{Sin}[c+dx]}{5ad\,\text{Sec}[c+dx]^{3/2}}-\frac{2(Ab-aB)\,\text{Sin}[c+dx]}{3a^2d\sqrt{\text{Sec}[c+dx]}}$$

Result (type 8, 45 leaves):

$$\int\frac{A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2}{\text{Sec}[c+dx]^{5/2}\left(a+b\,\text{Sec}[c+dx]\right)}\,dx$$

Problem 1018: Attempted integration timed out after 120 seconds.

$$\int\frac{A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2}{\text{Sec}[c+dx]^{7/2}\left(a+b\,\text{Sec}[c+dx]\right)}\,dx$$

Optimal (type 4, 342 leaves, 11 steps):

$$-\frac{1}{5a^4 d}2\left(5Ab^3-3a^3B-5ab^2B+a^2b(3A+5C)\right)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}+\frac{1}{21a^5 d}2\left(21Ab^4-7a^3bB-21ab^3B+7a^2b^2(A+3C)+a^4(5A+7C)\right)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}-\frac{1}{a^5(a+b)d}2b^3\left(Ab^2-a(bB-aC)\right)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticPi}\left[\frac{2a}{a+b},\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}+\frac{2A\,\text{Sin}[c+dx]}{7ad\,\text{Sec}[c+dx]^{5/2}}-\frac{2(Ab-aB)\,\text{Sin}[c+dx]}{5a^2d\,\text{Sec}[c+dx]^{3/2}}+\frac{2\left(7Ab^2-7abB+a^2(5A+7C)\right)\text{Sin}[c+dx]}{21a^3d\sqrt{\text{Sec}[c+dx]}}$$

Result (type 1, 1 leaves):

???

Problem 1019: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]^{5/2}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)}{\left(a+b\,\text{Sec}[c+dx]\right)^2}\,dx$$

Optimal (type 4, 447 leaves, 11 steps):

$$-\frac{1}{b^3\left(a^2-b^2\right)d}\left(3a^2bB-2b^3B-ab^2\left(A-4C\right)-5a^3C\right)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticE}\left[\frac{1}{2}\left(c+dx\right),2\right]\sqrt{\text{Sec}[c+dx]}+\frac{1}{3b^2\left(a^2-b^2\right)d}\left(3Ab^2-3abB+5a^2C-2b^2C\right)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\sqrt{\text{Sec}[c+dx]}-\left(\left(3Ab^4+3a^3bB-5ab^3B-a^2b^2\left(A-7C\right)-5a^4C\right)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticPi}\left[\frac{2a}{a+b},\frac{1}{2}\left(c+dx\right),2\right]\sqrt{\text{Sec}[c+dx]}\right)\Big/\left(\left(a-b\right)b^3\left(a+b\right)^2d\right)+\frac{\left(3a^2bB-2b^3B-ab^2\left(A-4C\right)-5a^3C\right)\sqrt{\text{Sec}[c+dx]}\ \text{Sin}[c+dx]}{b^3\left(a^2-b^2\right)d}+\frac{\left(3Ab^2-3abB+5a^2C-2b^2C\right)\text{Sec}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{3b^2\left(a^2-b^2\right)d}-\frac{\left(Ab^2-a\left(bB-aC\right)\right)\text{Sec}[c+dx]^{5/2}\,\text{Sin}[c+dx]}{b\left(a^2-b^2\right)d\left(a+b\,\text{Sec}[c+dx]\right)}$$

Result (type 4, 931 leaves) :

$$\left(\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(-\left(\left(2\left(12\,a\,A\,b^3-24\,a^2\,b^2\,B+12\,b^4\,B+40\,a^3\,b\,C-28\,a\,b^3\,C\right)\mathrm{Cos}[c+d\,x]^2\right.\right.\right.$$

$$\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\left(a+b\,\mathrm{Sec}[c+d\,x]\right)$$

$$\left.\left.\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(a\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\left(1-\mathrm{Cos}[c+d\,x]^2\right)\right)\right)+$$

$$\left(2\left(9\,a^2\,A\,b^2-12\,A\,b^4-27\,a^3\,b\,B+30\,a\,b^3\,B+45\,a^4\,C-44\,a^2\,b^2\,C-4\,b^4\,C\right)\right.$$

$$\mathrm{Cos}[c+d\,x]^2\left(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]+\right.$$

$$\left.\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\right)\left(a+b\,\mathrm{Sec}[c+d\,x]\right)$$

$$\left.\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(b\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\left(1-\mathrm{Cos}[c+d\,x]^2\right)\right)-$$

$$\left(2\left(3\,a^2\,A\,b^2-9\,a^3\,b\,B+6\,a\,b^3\,B+15\,a^4\,C-12\,a^2\,b^2\,C\right)\mathrm{Cos}\left[2\left(c+d\,x\right)\right]\right.$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)\left(2\,a\,b-2\,a\,b\,\mathrm{Sec}[c+d\,x]^2+\right.$$

$$2\,a\,b\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}+$$

$$a\left(a-2\,b\right)\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}+$$

$$a^2\,\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}-$$

$$2\,b^2\,\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]$$

$$\left.\left.\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\right)\mathrm{Sin}[c+d\,x]\right)\Big/$$

$$\left.\left.\left(a^2\,b\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\left(1-\mathrm{Cos}[c+d\,x]^2\right)\sqrt{\mathrm{Sec}[c+d\,x]}\left(2-\mathrm{Sec}[c+d\,x]^2\right)\right)\right)\right)\Big/$$

$$\left(6\left(a-b\right)b^3\left(a+b\right)d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\right)+$$

$$\left(\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(\frac{2\left(a\,A\,b^2-3\,a^2\,b\,B+2\,b^3\,B+5\,a^3\,C-4\,a\,b^2\,C\right)\mathrm{Sin}[c+d\,x]}{b^3\left(-a^2+b^2\right)}-\right.$$

$$\left.\left.\frac{2\left(a\,A\,b^2\,\mathrm{Sin}[c+d\,x]-a^2\,b\,B\,\mathrm{Sin}[c+d\,x]+a^3\,C\,\mathrm{Sin}[c+d\,x]\right)}{b^2\left(-a^2+b^2\right)\left(b+a\,\mathrm{Cos}[c+d\,x]\right)}+\frac{4\,C\,\mathrm{Tan}[c+d\,x]}{3\,b^2}\right)\right)\Big/$$

$$\left(d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\right)$$

Problem 1020: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{3/2} \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\left(a+b\,\text{Sec}[c+d x]\right)^2}\,dx$$

Optimal (type 4, 363 leaves, 10 steps):

$$-\frac{1}{b^2 \left(a^2-b^2\right) d}\left(A b^2-a b B+3 a^2 C-2 b^2 C\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}\ -$$
$$\frac{1}{a b \left(a^2-b^2\right) d}\left(A b^2-a \left(b B-a C\right)\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}\ +$$
$$\left(\left(A b^4+a^3 b B-3 a b^3 B-3 a^4 C+a^2 b^2 (A+5 C)\right) \sqrt{\text{Cos}[c+d x]}\right.$$
$$\left.\text{EllipticPi}\left[\frac{2 a}{a+b},\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}\right)\Big/\left(a (a-b) b^2 (a+b)^2 d\right)+$$
$$\frac{\left(A b^2-a b B+3 a^2 C-2 b^2 C\right) \sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{b^2 \left(a^2-b^2\right) d}-$$
$$\frac{\left(A b^2-a \left(b B-a C\right)\right) \text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{b \left(a^2-b^2\right) d \left(a+b\,\text{Sec}[c+d x]\right)}$$

Result (type 4, 865 leaves):

$$\Bigg(\left(b+a\,\text{Cos}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\Bigg(\Big(2\left(4\,A\,b^3-4\,a\,b^2\,B+8\,a^2\,b\,C-4\,b^3\,C\right)\text{Cos}[c+d\,x]^2$$

$$\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]\left(a+b\,\text{Sec}[c+d\,x]\right)$$

$$\sqrt{1-\text{Sec}[c+d\,x]^2}\;\text{Sin}[c+d\,x]\Big)\Big/\left(a\left(b+a\,\text{Cos}[c+d\,x]\right)\left(1-\text{Cos}[c+d\,x]^2\right)\right)\Bigg)+$$

$$\Big(2\left(-a\,A\,b^2-3\,a^2\,b\,B+4\,b^3\,B+9\,a^3\,C-10\,a\,b^2\,C\right)\text{Cos}[c+d\,x]^2\Big(\text{EllipticF}\Big[$$

$$\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\Big]+\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]\Big)$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)\sqrt{1-\text{Sec}[c+d\,x]^2}\;\text{Sin}[c+d\,x]\Big)\Big/$$

$$\left(b\left(b+a\,\text{Cos}[c+d\,x]\right)\left(1-\text{Cos}[c+d\,x]^2\right)\right)-\Big(2\left(a\,A\,b^2-a^2\,b\,B+3\,a^3\,C-2\,a\,b^2\,C\right)$$

$$\text{Cos}\left[2\left(c+d\,x\right)\right]\left(a+b\,\text{Sec}[c+d\,x]\right)\Big(2\,a\,b-2\,a\,b\,\text{Sec}[c+d\,x]^2+$$

$$2\,a\,b\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]\sqrt{\text{Sec}[c+d\,x]}\sqrt{1-\text{Sec}[c+d\,x]^2}+$$

$$a\left(a-2\,b\right)\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]\sqrt{\text{Sec}[c+d\,x]}\sqrt{1-\text{Sec}[c+d\,x]^2}+$$

$$a^2\,\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]\sqrt{\text{Sec}[c+d\,x]}\sqrt{1-\text{Sec}[c+d\,x]^2}-$$

$$2\,b^2\,\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]$$

$$\sqrt{\text{Sec}[c+d\,x]}\sqrt{1-\text{Sec}[c+d\,x]^2}\Big)\text{Sin}[c+d\,x]\Big)\Big/$$

$$\left(a^2\,b\left(b+a\,\text{Cos}[c+d\,x]\right)\left(1-\text{Cos}[c+d\,x]^2\right)\sqrt{\text{Sec}[c+d\,x]}\left(2-\text{Sec}[c+d\,x]^2\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\Big(2\,b^2\left(-a+b\right)\left(a+b\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^2\Big)+$$

$$\Bigg(\left(b+a\,\text{Cos}[c+d\,x]\right)^2\sqrt{\text{Sec}[c+d\,x]}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\frac{2\left(A\,b^2-a\,b\,B+3\,a^2\,C-2\,b^2\,C\right)\text{Sin}[c+d\,x]}{b^2\left(-a^2+b^2\right)}+$$

$$\frac{2\left(A\,b^2\,\text{Sin}[c+d\,x]-a\,b\,B\,\text{Sin}[c+d\,x]+a^2\,C\,\text{Sin}[c+d\,x]\right)}{b\left(-a^2+b^2\right)\left(b+a\,\text{Cos}[c+d\,x]\right)}\Bigg)\Bigg)\Bigg/$$

$$\Big(d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^2\Big)$$

Problem 1021: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{\text{Sec}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\left(a+b\,\text{Sec}[c+d x]\right)^2}\,dx$$

Optimal (type 4, 299 leaves, 9 steps):

$$\frac{1}{a\,b\,\left(a^2-b^2\right)\,d}\left(A\,b^2-a\,\left(b\,B-a\,C\right)\right)\,\sqrt{\text{Cos}[c+d x]}\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d x\right),2\right]\,\sqrt{\text{Sec}[c+d x]}\,-$$
$$\frac{1}{a^2\,\left(a^2-b^2\right)\,d}\left(A\,b^2+a\,b\,B-a^2\,\left(2\,A+C\right)\right)\,\sqrt{\text{Cos}[c+d x]}\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d x\right),2\right]\,\sqrt{\text{Sec}[c+d x]}\,+$$
$$\left(\left(A\,b^4+a^3\,b\,B+a\,b^3\,B+a^4\,C-3\,a^2\,b^2\,\left(A+C\right)\right)\,\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2\,a}{a+b},\frac{1}{2}\,\left(c+d x\right),2\right]\right.$$
$$\left.\sqrt{\text{Sec}[c+d x]}\right)\Big/\left(a^2\,\left(a-b\right)\,b\,\left(a+b\right)^2\,d\right)-\frac{\left(A\,b^2-a\,\left(b\,B-a\,C\right)\right)\,\sqrt{\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{b\,\left(a^2-b^2\right)\,d\,\left(a+b\,\text{Sec}[c+d x]\right)}$$

Result (type 4, 829 leaves):

$$\Big(\big(b+a\,\mathrm{Cos}[c+d\,x]\big)^2\,\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)$$

$$\Bigg(-\Bigg(\bigg(2\,\big(4\,a\,A\,b-4\,b^2\,B+4\,a\,b\,C\big)\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{EllipticPi}\Big[-\frac{b}{a},\,-\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d\,x]}\Big],\,-1\Big]$$

$$\big(a+b\,\mathrm{Sec}[c+d\,x]\big)\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\;\mathrm{Sin}[c+d\,x]\bigg)\Big/$$

$$\Big(a\,\big(b+a\,\mathrm{Cos}[c+d\,x]\big)\,\big(1-\mathrm{Cos}[c+d\,x]^2\big)\Big)\Bigg)+$$

$$\bigg(2\,\big(-A\,b^2+a\,b\,B+3\,a^2\,C-4\,b^2\,C\big)\,\mathrm{Cos}[c+d\,x]^2\,\Big(\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d\,x]}\Big],\,-1\Big]+$$

$$\mathrm{EllipticPi}\Big[-\frac{b}{a},\,-\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d\,x]}\Big],\,-1\Big]\Big)\,\big(a+b\,\mathrm{Sec}[c+d\,x]\big)$$

$$\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\;\mathrm{Sin}[c+d\,x]\bigg)\Big/\Big(b\,\big(b+a\,\mathrm{Cos}[c+d\,x]\big)\,\big(1-\mathrm{Cos}[c+d\,x]^2\big)\Big)-$$

$$\bigg(2\,\big(A\,b^2-a\,b\,B+a^2\,C\big)\,\mathrm{Cos}\big[2\,(c+d\,x)\big]\,\big(a+b\,\mathrm{Sec}[c+d\,x]\big)\,\Big(2\,a\,b-2\,a\,b\,\mathrm{Sec}[c+d\,x]^2+$$

$$2\,a\,b\,\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}+$$

$$a\,(a-2\,b)\,\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}+$$

$$a^2\,\mathrm{EllipticPi}\Big[-\frac{b}{a},\,-\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}-$$

$$2\,b^2\,\mathrm{EllipticPi}\Big[-\frac{b}{a},\,-\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d\,x]}\Big],\,-1\Big]$$

$$\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\Big)\,\mathrm{Sin}[c+d\,x]\bigg)\Big/$$

$$\Big(a^2\,b\,\big(b+a\,\mathrm{Cos}[c+d\,x]\big)\,\big(1-\mathrm{Cos}[c+d\,x]^2\big)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\big(2-\mathrm{Sec}[c+d\,x]^2\big)\Big)\Bigg)\Bigg)\Big/$$

$$\Big(2\,(a-b)\,b\,(a+b)\,d\,\big(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\big)$$

$$\big(a+b\,\mathrm{Sec}[c+d\,x]\big)^2\Big)+$$

$$\Bigg(\big(b+a\,\mathrm{Cos}[c+d\,x]\big)^2\,\sqrt{\mathrm{Sec}[c+d\,x]}$$

$$\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)$$

$$\bigg(\frac{2\,\big(A\,b^2-a\,b\,B+a^2\,C\big)\,\mathrm{Sin}[c+d\,x]}{a\,b\,\big(-a^2+b^2\big)}+$$

$$\frac{2\,\big(A\,b^2\,\mathrm{Sin}[c+d\,x]-a\,b\,B\,\mathrm{Sin}[c+d\,x]+a^2\,C\,\mathrm{Sin}[c+d\,x]\big)}{a\,\big(a^2-b^2\big)\,\big(b+a\,\mathrm{Cos}[c+d\,x]\big)}\bigg)\Bigg)\Big/$$

$$\Big(d\,\big(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\big)$$

$$\big(a+b\,\mathrm{Sec}[c+d\,x]\big)^2\Big)$$

Problem 1022: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\sqrt{\mathrm{Sec}[c+d\,x]}\,\big(a+b\,\mathrm{Sec}[c+d\,x]\big)^2}\,dx$$

Optimal (type 4, 317 leaves, 9 steps):

$$-\frac{1}{a^2\left(a^2-b^2\right)d}\left(3\,A\,b^2-a\,b\,B-a^2\,(2\,A-C)\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{a^3\left(a^2-b^2\right)d}\left(3\,A\,b^3+2\,a^3\,B-a\,b^2\,B-a^2\,b\,(4\,A+C)\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}-\left(\left(3\,A\,b^4+3\,a^3\,b\,B-a\,b^3\,B-a^4\,C-a^2\,b^2\,(5\,A+C)\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2\,a}{a+b},\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(a^3\,(a-b)\,(a+b)^2\,d\right)+\frac{\left(A\,b^2-a\,(b\,B-a\,C)\right)\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{a\left(a^2-b^2\right)d\,(a+b\,\text{Sec}[c+d\,x])}$$

Result (type 4, 835 leaves) :

$$\Big(\big(b+a\,\text{Cos}[c+d\,x]\big)^2\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Big(-\Big(\Big(2\,\big(4\,a\,A\,b-4\,a^2\,B+4\,a\,b\,C\big)\,\text{Cos}[c+d\,x]^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]$$

$$\big(a+b\,\text{Sec}[c+d\,x]\big)\,\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\Big)\Big/$$

$$\Big(a\,\big(b+a\,\text{Cos}[c+d\,x]\big)\,\big(1-\text{Cos}[c+d\,x]^2\big)\Big)\Big)+$$

$$\Big(2\,\big(-2\,a^2\,A+A\,b^2+a\,b\,B-a^2\,C\big)\,\text{Cos}[c+d\,x]^2\,\Big(\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]+$$

$$\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\Big)\,\big(a+b\,\text{Sec}[c+d\,x]\big)$$

$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\Big)\Big/\Big(b\,\big(b+a\,\text{Cos}[c+d\,x]\big)\,\big(1-\text{Cos}[c+d\,x]^2\big)\Big)-$$

$$\Big(2\,\big(-2\,a^2\,A+3\,A\,b^2-a\,b\,B+a^2\,C\big)\,\text{Cos}\big[2\,(c+d\,x)\big]\,\big(a+b\,\text{Sec}[c+d\,x]\big)$$

$$\Big(2\,a\,b-2\,a\,b\,\text{Sec}[c+d\,x]^2+$$

$$2\,a\,b\,\text{EllipticE}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}+$$

$$a\,(a-2\,b)\,\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}+$$

$$a^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}-$$

$$2\,b^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]$$

$$\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}\Big)\,\text{Sin}[c+d\,x]\Big)\Big/$$

$$\Big(a^2\,b\,\big(b+a\,\text{Cos}[c+d\,x]\big)\,\big(1-\text{Cos}[c+d\,x]^2\big)\,\sqrt{\text{Sec}[c+d\,x]}\,\big(2-\text{Sec}[c+d\,x]^2\big)\Big)\Big)\Big)\Big/$$

$$\Big(2\,a\,(-a+b)\,(a+b)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)$$

$$\big(a+b\,\text{Sec}[c+d\,x]\big)^2\Big)+$$

$$\Big(\big(b+a\,\text{Cos}[c+d\,x]\big)^2\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Big(\frac{2\,\big(A\,b^2-a\,b\,B+a^2\,C\big)\,\text{Sin}[c+d\,x]}{a^2\,\big(a^2-b^2\big)}-$$

$$\frac{2\,\big(A\,b^3\,\text{Sin}[c+d\,x]-a\,b^2\,B\,\text{Sin}[c+d\,x]+a^2\,b\,C\,\text{Sin}[c+d\,x]\big)}{a^2\,\big(a^2-b^2\big)\,\big(b+a\,\text{Cos}[c+d\,x]\big)}\Big)\Big)\Big/$$

$$\Big(d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)$$

$$\big(a+b\,\text{Sec}[c+d\,x]\big)^2\Big)$$

Problem 1023: Result more than twice size of optimal antiderivative.

$$\int \frac{A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2}{\mathrm{Sec}[c + d\,x]^{3/2}\,\left(a + b\,\mathrm{Sec}[c + d\,x]\right)^2}\,dx$$

Optimal (type 4, 406 leaves, 10 steps):

$$\frac{1}{a^3\left(a^2 - b^2\right) d}\left(5\,A\,b^3 + 2\,a^3\,B - 3\,a\,b^2\,B - a^2\,b\,(4\,A - C)\right)\sqrt{\mathrm{Cos}[c + d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\sqrt{\mathrm{Sec}[c + d\,x]} - \frac{1}{3\,a^4\left(a^2 - b^2\right) d}\left(15\,A\,b^4 + 12\,a^3\,b\,B - 9\,a\,b^3\,B - a^2\,b^2\,(16\,A - 3\,C) - 2\,a^4\,(A + 3\,C)\right)\sqrt{\mathrm{Cos}[c + d\,x]}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\sqrt{\mathrm{Sec}[c + d\,x]} + \left(b\left(5\,A\,b^4 + 5\,a^3\,b\,B - 3\,a\,b^3\,B - a^2\,b^2\,(7\,A - C) - 3\,a^4\,C\right)\sqrt{\mathrm{Cos}[c + d\,x]}\;\mathrm{EllipticPi}\left[\frac{2\,a}{a + b},\,\frac{1}{2}\,(c + d\,x),\,2\right]\sqrt{\mathrm{Sec}[c + d\,x]}\right)\Big/\left(a^4\,(a - b)\,(a + b)^2\,d\right) - \frac{\left(5\,A\,b^2 - 3\,a\,b\,B - a^2\,(2\,A - 3\,C)\right)\mathrm{Sin}[c + d\,x]}{3\,a^2\left(a^2 - b^2\right) d\,\sqrt{\mathrm{Sec}[c + d\,x]}} + \frac{\left(A\,b^2 - a\,(b\,B - a\,C)\right)\mathrm{Sin}[c + d\,x]}{a\left(a^2 - b^2\right) d\,\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(a + b\,\mathrm{Sec}[c + d\,x]\right)}$$

Result (type 4, 887 leaves):

$$\Big(\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\Bigg(\Bigg(2\left(4\,a^3\,A+8\,a\,A\,b^2-12\,a^2\,b\,B+12\,a^3\,C\right)\mathrm{Cos}[c+d\,x]^2$$

$$\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\left(a+b\,\mathrm{Sec}[c+d\,x]\right)$$

$$\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\;\mathrm{Sin}[c+d\,x]\Bigg)\Big/\left(a\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\left(1-\mathrm{Cos}[c+d\,x]^2\right)\right)\Bigg)+$$

$$\Bigg(2\left(-8\,a^2\,A\,b+5\,A\,b^3+6\,a^3\,B-3\,a\,b^2\,B-3\,a^2\,b\,C\right)\mathrm{Cos}[c+d\,x]^2$$

$$\Bigg(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]+$$

$$\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\Bigg)\left(a+b\,\mathrm{Sec}[c+d\,x]\right)$$

$$\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\;\mathrm{Sin}[c+d\,x]\Bigg)\Big/\left(b\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\left(1-\mathrm{Cos}[c+d\,x]^2\right)\right)-$$

$$\Bigg(2\left(-12\,a^2\,A\,b+15\,A\,b^3+6\,a^3\,B-9\,a\,b^2\,B+3\,a^2\,b\,C\right)\mathrm{Cos}\left[2\left(c+d\,x\right)\right]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)\Bigg(2\,a\,b-2\,a\,b\,\mathrm{Sec}[c+d\,x]^2+$$

$$2\,a\,b\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\sqrt{\mathrm{Sec}[c+d\,x]}\sqrt{1-\mathrm{Sec}[c+d\,x]^2}+$$

$$a\left(a-2\,b\right)\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\sqrt{\mathrm{Sec}[c+d\,x]}\sqrt{1-\mathrm{Sec}[c+d\,x]^2}+$$

$$a^2\,\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\sqrt{\mathrm{Sec}[c+d\,x]}\sqrt{1-\mathrm{Sec}[c+d\,x]^2}-$$

$$2\,b^2\,\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]$$

$$\sqrt{\mathrm{Sec}[c+d\,x]}\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\Bigg)\mathrm{Sin}[c+d\,x]\Bigg)\Big/$$

$$\left(a^2\,b\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\left(1-\mathrm{Cos}[c+d\,x]^2\right)\sqrt{\mathrm{Sec}[c+d\,x]}\left(2-\mathrm{Sec}[c+d\,x]^2\right)\right)\Bigg)\Bigg)\Big/$$

$$\Big(6\,a^2\left(a-b\right)\left(a+b\right)d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\Big)+$$

$$\Bigg(\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\sqrt{\mathrm{Sec}[c+d\,x]}$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\frac{2\,b\left(A\,b^2-a\,b\,B+a^2\,C\right)\mathrm{Sin}[c+d\,x]}{a^3\left(-a^2+b^2\right)}+$$

$$\frac{2\left(A\,b^4\,\mathrm{Sin}[c+d\,x]-a\,b^3\,B\,\mathrm{Sin}[c+d\,x]+a^2\,b^2\,C\,\mathrm{Sin}[c+d\,x]\right)}{a^3\left(a^2-b^2\right)\left(b+a\,\mathrm{Cos}[c+d\,x]\right)}+\frac{2\,A\,\mathrm{Sin}\left[2\left(c+d\,x\right)\right]}{3\,a^2}\Bigg)\Bigg)\Big/$$

$$\Big(d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\Big)$$

Problem 1027: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{(a+b \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 4, 469 leaves, 10 steps):

$$-\left(\left(\left(A b^4-a^3 b B-5 a b^3 B-3 a^4 C+a^2 b^2 (5 A+9 C)\right) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}\right)\Big/\left(4 a b^2 \left(a^2-b^2\right)^2 d\right)\right)+\frac{1}{4 a^2 b \left(a^2-b^2\right)^2 d}\left(A b^4+3 a^3 b B+3 a b^3 B+a^4 C-7 a^2 b^2 (A+C)\right) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}-\left(\left(A b^6-a^5 b B+10 a^3 b^3 B+3 a b^5 B-3 a^4 b^2 (A-2 C)-3 a^6 C-5 a^2 b^4 (2 A+3 C)\right) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticPi}\left[\frac{2 a}{a+b},\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}\right)\Big/\left(4 a^2 (a-b)^2 b^2 (a+b)^3 d\right)-\frac{\left(A b^2-a (b B-a C)\right) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{2 b \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^2}+\left(\left(A b^4-a^3 b B-5 a b^3 B-3 a^4 C+a^2 b^2 (5 A+9 C)\right) \sqrt{\text{Sec}[c+d x]} \, \text{Sin}[c+d x]\right)\Big/\left(4 b^2 \left(a^2-b^2\right)^2 d (a+b \text{Sec}[c+d x])\right)$$

Result (type 4, 1051 leaves):

$$\Bigg(\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\Bigg(\Bigg(2\,\left(-24\,a\,A\,b^3+8\,a^2\,b^2\,B+16\,b^4\,B+8\,a^3\,b\,C-32\,a\,b^3\,C\right)\,\text{Cos}[c+d\,x]^2$$

$$\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]\,\left(a+b\,\text{Sec}[c+d\,x]\right)$$

$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\Bigg)\Bigg/\left(a\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(1-\text{Cos}[c+d\,x]^2\right)\right)\Bigg)+$$

$$\Bigg(2\,\left(a^2\,A\,b^2+5\,A\,b^4+3\,a^3\,b\,B-9\,a\,b^3\,B+9\,a^4\,C-19\,a^2\,b^2\,C+16\,b^4\,C\right)\,\text{Cos}[c+d\,x]^2$$

$$\Bigg(\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]+$$

$$\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]\Bigg)\,\left(a+b\,\text{Sec}[c+d\,x]\right)$$

$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\Bigg)\Bigg/\left(b\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(1-\text{Cos}[c+d\,x]^2\right)\right)-$$

$$\Bigg(2\,\left(-5\,a^2\,A\,b^2-A\,b^4+a^3\,b\,B+5\,a\,b^3\,B+3\,a^4\,C-9\,a^2\,b^2\,C\right)\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)\,\Bigg(2\,a\,b-2\,a\,b\,\text{Sec}[c+d\,x]^2+$$

$$2\,a\,b\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}+$$

$$a\,\left(a-2\,b\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}+$$

$$a^2\,\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}-$$

$$2\,b^2\,\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],-1\right]$$

$$\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}\Bigg)\,\text{Sin}[c+d\,x]\Bigg)\Bigg/$$

$$\left(a^2\,b\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(1-\text{Cos}[c+d\,x]^2\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(2-\text{Sec}[c+d\,x]^2\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(8\,\left(a-b\right)^2\,b^2\,\left(a+b\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3\Bigg)+$$

$$\Bigg(\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Sec}[c+d\,x]^{3/2}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\frac{\left(5\,a^2\,A\,b^2+A\,b^4-a^3\,b\,B-5\,a\,b^3\,B-3\,a^4\,C+9\,a^2\,b^2\,C\right)\,\text{Sin}[c+d\,x]}{2\,a\,b^2\,\left(-a^2+b^2\right)^2}+$$

$$\frac{A\,b^2\,\text{Sin}[c+d\,x]-a\,b\,B\,\text{Sin}[c+d\,x]+a^2\,C\,\text{Sin}[c+d\,x]}{a\,\left(a^2-b^2\right)\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2}+$$

$$\Big(-7\,a^2\,A\,b^2\,\text{Sin}[c+d\,x]+A\,b^4\,\text{Sin}[c+d\,x]+3\,a^3\,b\,B\,\text{Sin}[c+d\,x]+3\,a\,b^3\,B\,\text{Sin}[c+d\,x]+$$

$$a^4\,C\,\text{Sin}[c+d\,x]-7\,a^2\,b^2\,C\,\text{Sin}[c+d\,x]\Big)\Big/\left(2\,a\,b\,\left(-a^2+b^2\right)^2\,\left(b+a\,\text{Cos}[c+d\,x]\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 1028: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{\text{Sec}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\left(a+b\,\text{Sec}[c+d x]\right)^3}\,dx$$

Optimal (type 4, 478 leaves, 10 steps):

$$-\left(\left(\left(3 A b^4+5 a^3 b B+a b^3 B-a^4 C-a^2 b^2 (9 A+5 C)\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}\right)\Big/\left(4 a^2 b \left(a^2-b^2\right)^2 d\right)\right)+\frac{1}{4 a^3 \left(a^2-b^2\right)^2 d}\left(3 A b^4-7 a^3 b B+a b^3 B-a^2 b^2 (5 A-3 C)+a^4 (8 A+3 C)\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}-\left(\left(3 A b^6-3 a^5 b B-10 a^3 b^3 B+a b^5 B-3 a^2 b^4 (2 A-C)-a^6 C+5 a^4 b^2 (3 A+2 C)\right) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticPi}\left[\frac{2 a}{a+b}, \frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}\right)\Big/\left(4 a^3 (a-b)^2 b (a+b)^3 d\right)-\frac{\left(A b^2-a (b B-a C)\right) \sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{2 b \left(a^2-b^2\right) d \left(a+b\,\text{Sec}[c+d x]\right)^2}+\left(\left(A b^4+3 a^3 b B+3 a b^3 B+a^4 C-7 a^2 b^2 (A+C)\right) \sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]\right)\Big/\left(4 a b \left(a^2-b^2\right)^2 d \left(a+b\,\text{Sec}[c+d x]\right)\right)$$

Result (type 4, 1051 leaves):

$$\Bigg(\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^3\mathrm{Sec}[c+d\,x]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\Bigg(\Bigg(2\left(16\,a^3\,A\,b+8\,a\,A\,b^3-24\,a^2\,b^2\,B+8\,a^3\,b\,C+16\,a\,b^3\,C\right)\mathrm{Cos}[c+d\,x]^2$$

$$\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\left(a+b\,\mathrm{Sec}[c+d\,x]\right)$$

$$\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\,\mathrm{Sin}[c+d\,x]\Bigg)\Big/\left(a\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\left(1-\mathrm{Cos}[c+d\,x]^2\right)\right)\Bigg)+$$

$$\Bigg(2\left(-5\,a^2\,A\,b^2-A\,b^4+a^3\,b\,B+5\,a\,b^3\,B+3\,a^4\,C-9\,a^2\,b^2\,C\right)\mathrm{Cos}[c+d\,x]^2$$

$$\Bigg(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]+$$

$$\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\Bigg)\left(a+b\,\mathrm{Sec}[c+d\,x]\right)$$

$$\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\,\mathrm{Sin}[c+d\,x]\Bigg)\Big/\left(b\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\left(1-\mathrm{Cos}[c+d\,x]^2\right)\right)-$$

$$\Bigg(2\left(9\,a^2\,A\,b^2-3\,A\,b^4-5\,a^3\,b\,B-a\,b^3\,B+a^4\,C+5\,a^2\,b^2\,C\right)\mathrm{Cos}\left[2\left(c+d\,x\right)\right]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)\Bigg(2\,a\,b-2\,a\,b\,\mathrm{Sec}[c+d\,x]^2+$$

$$2\,a\,b\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}+$$

$$a\left(a-2\,b\right)\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}+$$

$$a^2\,\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}-$$

$$2\,b^2\,\mathrm{EllipticPi}\left[-\frac{b}{a},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Sec}[c+d\,x]}\right],-1\right]$$

$$\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{1-\mathrm{Sec}[c+d\,x]^2}\Bigg)\mathrm{Sin}[c+d\,x]\Bigg)\Big/$$

$$\left(a^2\,b\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\left(1-\mathrm{Cos}[c+d\,x]^2\right)\sqrt{\mathrm{Sec}[c+d\,x]}\left(2-\mathrm{Sec}[c+d\,x]^2\right)\right)\Bigg)\Bigg)\Big/$$

$$\Big(8\,a\left(a-b\right)^2 b\left(a+b\right)^2 d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^3\Big)+$$

$$\Bigg(\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^3\mathrm{Sec}[c+d\,x]^{3/2}$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\frac{\left(-9\,a^2\,A\,b^2+3\,A\,b^4+5\,a^3\,b\,B+a\,b^3\,B-a^4\,C-5\,a^2\,b^2\,C\right)\mathrm{Sin}[c+d\,x]}{2\,a^2\,b\left(-a^2+b^2\right)^2}-$$

$$\frac{A\,b^3\,\mathrm{Sin}[c+d\,x]-a\,b^2\,B\,\mathrm{Sin}[c+d\,x]+a^2\,b\,C\,\mathrm{Sin}[c+d\,x]}{a^2\left(a^2-b^2\right)\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2}+$$

$$\Big(11\,a^2\,A\,b^2\,\mathrm{Sin}[c+d\,x]-5\,A\,b^4\,\mathrm{Sin}[c+d\,x]-7\,a^3\,b\,B\,\mathrm{Sin}[c+d\,x]+a\,b^3\,B\,\mathrm{Sin}[c+d\,x]+$$

$$3\,a^4\,C\,\mathrm{Sin}[c+d\,x]+3\,a^2\,b^2\,C\,\mathrm{Sin}[c+d\,x]\Big)\Big/\left(2\,a^2\left(a^2-b^2\right)^2\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\right)\Bigg)\Bigg)\Big/$$

$$\left(d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^3\right)$$

Problem 1029: Result more than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\sqrt{\operatorname{Sec}[c + d x]} \left(a + b \operatorname{Sec}[c + d x]\right)^3} \, dx$$

Optimal (type 4, 486 leaves, 10 steps):

$$\frac{1}{4 a^3 \left(a^2 - b^2\right)^2 d} \left(15 A b^4 + 9 a^3 b B - 3 a b^3 B + a^4 (8 A - 5 C) - a^2 b^2 (29 A + C)\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]} - \frac{1}{4 a^4 \left(a^2 - b^2\right)^2 d} \left(15 A b^5 - 8 a^5 B + 5 a^3 b^2 B - 3 a b^4 B - a^2 b^3 (33 A + C) + a^4 b (24 A + 7 C)\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]} + \left(\left(15 A b^6 - 15 a^5 b B + 6 a^3 b^3 B - 3 a b^5 B + 3 a^6 C - a^2 b^4 (38 A + C) + 5 a^4 b^2 (7 A + 2 C)\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticPi}\left[\frac{2 a}{a + b}, \frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]}\right) \Big/ \left(4 a^4 (a - b)^2 (a + b)^3 d\right) + \frac{\left(A b^2 - a (b B - a C)\right) \sqrt{\operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{2 a \left(a^2 - b^2\right) d \left(a + b \operatorname{Sec}[c + d x]\right)^2} - \left(\left(5 A b^4 + 7 a^3 b B - a b^3 B - 3 a^4 C - a^2 b^2 (11 A + 3 C)\right) \sqrt{\operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]\right) \Big/ \left(4 a^2 \left(a^2 - b^2\right)^2 d \left(a + b \operatorname{Sec}[c + d x]\right)\right)$$

Result (type 4, 1064 leaves):

$$\Bigg(\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\Bigg(\Bigg(2\,\left(-32\,a^3\,A\,b+8\,a\,A\,b^3+16\,a^4\,B+8\,a^2\,b^2\,B-24\,a^3\,b\,C\right)\,\text{Cos}[c+d\,x]^2$$

$$\text{EllipticPi}\left[-\frac{b}{a},\,-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],\,-1\right]\,\left(a+b\,\text{Sec}[c+d\,x]\right)$$

$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\Bigg)\Big/\left(a\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(1-\text{Cos}[c+d\,x]^2\right)\right)\Bigg)+$$

$$\Bigg(2\,\left(8\,a^4\,A-7\,a^2\,A\,b^2+5\,A\,b^4-5\,a^3\,b\,B-a\,b^3\,B+a^4\,C+5\,a^2\,b^2\,C\right)\,\text{Cos}[c+d\,x]^2$$

$$\Bigg(\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],\,-1\right]+$$

$$\text{EllipticPi}\left[-\frac{b}{a},\,-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],\,-1\right]\Bigg)\,\left(a+b\,\text{Sec}[c+d\,x]\right)$$

$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\Bigg)\Big/\left(b\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(1-\text{Cos}[c+d\,x]^2\right)\right)-$$

$$\Bigg(2\,\left(8\,a^4\,A-29\,a^2\,A\,b^2+15\,A\,b^4+9\,a^3\,b\,B-3\,a\,b^3\,B-5\,a^4\,C-a^2\,b^2\,C\right)\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)\,\Bigg(2\,a\,b-2\,a\,b\,\text{Sec}[c+d\,x]^2+$$

$$2\,a\,b\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],\,-1\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}+$$

$$a\,\left(a-2\,b\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],\,-1\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}+$$

$$a^2\,\text{EllipticPi}\left[-\frac{b}{a},\,-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],\,-1\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}-$$

$$2\,b^2\,\text{EllipticPi}\left[-\frac{b}{a},\,-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d\,x]}\right],\,-1\right]$$

$$\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}\Bigg)\,\text{Sin}[c+d\,x]\Bigg)\Big/$$

$$\left(a^2\,b\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(1-\text{Cos}[c+d\,x]^2\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(2-\text{Sec}[c+d\,x]^2\right)\right)\Bigg)\Bigg)\Big/$$

$$\Big(8\,a^2\,\left(a-b\right)^2\,\left(a+b\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3\Big)+$$

$$\Bigg(\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Sec}[c+d\,x]^{3/2}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\left(\left(\left(-13\,a^2\,A\,b^2+7\,A\,b^4+9\,a^3\,b\,B-3\,a\,b^3\,B-5\,a^4\,C-a^2\,b^2\,C\right)\,\text{Sin}[c+d\,x]\right)\Big/\left(2\,a^3\,\left(-a^2+b^2\right)^2\right)\right)-$$

$$\frac{-A\,b^4\,\text{Sin}[c+d\,x]+a\,b^3\,B\,\text{Sin}[c+d\,x]-a^2\,b^2\,C\,\text{Sin}[c+d\,x]}{a^3\,\left(a^2-b^2\right)\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2}+$$

$$\Big(-15\,a^2\,A\,b^3\,\text{Sin}[c+d\,x]+9\,A\,b^5\,\text{Sin}[c+d\,x]+11\,a^3\,b^2\,B\,\text{Sin}[c+d\,x]-5\,a\,b^4\,B\,\text{Sin}[c+d\,x]-$$

$$7\,a^4\,b\,C\,\text{Sin}[c+d\,x]+a^2\,b^3\,C\,\text{Sin}[c+d\,x]\Big)\Big/\left(2\,a^3\,\left(a^2-b^2\right)^2\,\left(b+a\,\text{Cos}[c+d\,x]\right)\right)\Bigg)\Bigg)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 1031: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d x]^{3/2} \sqrt{a+b \text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 447 leaves, 14 steps):

$$\left(\left(24 A b^2+18 a b B-a^2 C+16 b^2 C\right) \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \text{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{\text{Sec}[c+d x]}\right) \Big/ \left(24 b d \sqrt{a+b \text{Sec}[c+d x]}\right) - \left(\left(2 a^2 b B-8 b^3 B-a^3 C-4 a b^2 (2 A+C)\right) \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \text{EllipticPi}\left[2, \frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{\text{Sec}[c+d x]}\right) \Big/ \left(8 b^2 d \sqrt{a+b \text{Sec}[c+d x]}\right) - \left(\left(24 A b^2+6 a b B-3 a^2 C+16 b^2 C\right) \text{EllipticE}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \text{Sec}[c+d x]}\right) \Big/ \left(24 b^2 d \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \sqrt{\text{Sec}[c+d x]}\right) + \frac{1}{24 b^2 d} \left(24 A b^2+6 a b B-3 a^2 C+16 b^2 C\right) \sqrt{\text{Sec}[c+d x]} \sqrt{a+b \text{Sec}[c+d x]} \text{Sin}[c+d x] + \frac{(6 b B+a C) \text{Sec}[c+d x]^{3/2} \sqrt{a+b \text{Sec}[c+d x]} \text{Sin}[c+d x]}{12 b d} + \frac{C \text{Sec}[c+d x]^{5/2} \sqrt{a+b \text{Sec}[c+d x]} \text{Sin}[c+d x]}{3 d}$$

Result (type 4, 782 leaves):

$$\left(\sqrt{a+b \text{Sec}[c+d x]} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(\frac{2 \left(24 a b^2 B+4 a^2 b C\right) \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \text{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right]}{\sqrt{b+a \text{Cos}[c+d x]}} + \left(2 \left(24 a A b^2-18 a^2 b B+48 b^3 B+9 a^3 C+8 a b^2 C\right) \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \right.\right.\right.$$

$$\left.\left.\text{EllipticPi}\left[2,\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\right/\left(\sqrt{b+a \text{Cos}[c+d x]}\right)+$$

$$\left(2 i\left(-24 a A b^2-6 a^2 b B+3 a^3 C-16 a b^2 C\right)\sqrt{\frac{a-a \text{Cos}[c+d x]}{a+b}}\sqrt{\frac{a+a \text{Cos}[c+d x]}{a-b}}\text{Cos}\left[\right.\right.$$

$$\left.2(c+d x)\right]\left(-2 b(a+b)\text{EllipticE}\left[i \text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a \text{Cos}[c+d x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2 b \text{EllipticF}\left[i \text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a \text{Cos}[c+d x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a \text{EllipticPi}\left[1-\frac{a}{b},i \text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a \text{Cos}[c+d x]}\right],\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\text{Sin}[c+d x]\right)\left/\left(\sqrt{\frac{1}{a-b}}b\sqrt{1-\text{Cos}[c+d x]^2}\sqrt{\frac{a^2-a^2 \text{Cos}[c+d x]^2}{a^2}}\right.\right.$$

$$\left.\left.\left.\left(-a^2+2 b^2-4 b(b+a \text{Cos}[c+d x])+2(b+a \text{Cos}[c+d x])^2\right)\right)\right)\right/$$

$$\left(48 b^2 d\sqrt{b+a \text{Cos}[c+d x]}(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\right.$$
$$\left.\text{Sec}[c+d x]^{5/2}\right)+$$

$$\left(\sqrt{a+b \text{Sec}[c+d x]}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right.$$

$$\left(\frac{\text{Sec}[c+d x]^2(6 b B \text{Sin}[c+d x]+a C \text{Sin}[c+d x])}{6 b}+\frac{1}{12 b^2}\text{Sec}[c+d x]\right.$$

$$\left(24 A b^2 \text{Sin}[c+d x]+6 a b B \text{Sin}[c+d x]-3 a^2 C \text{Sin}[c+d x]+16 b^2 C \text{Sin}[c+d x]\right)+$$

$$\left.\left.\frac{2}{3}C \text{Sec}[c+d x]^2 \text{Tan}[c+d x]\right)\right)\Big/$$

$$\left(d(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])\text{Sec}[c+d x]^{5/2}\right)$$

Problem 1032: Result unnecessarily involves imaginary or complex numbers.

$$\int\sqrt{\text{Sec}[c+d x]}\sqrt{a+b \text{Sec}[c+d x]}\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)dx$$

Optimal (type 4, 346 leaves, 13 steps):

$$\left((8\,a\,A+4\,b\,B+3\,a\,C)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/$$

$$\left(4\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\left((8\,A\,b^2+4\,a\,b\,B-a^2\,C+4\,b^2\,C)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right.$$

$$\left.\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/\left(4\,b\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)-$$

$$\frac{(4\,b\,B+a\,C)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{4\,b\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\sqrt{\mathrm{Sec}[c+d\,x]}}+$$

$$\frac{(4\,b\,B+a\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{4\,b\,d}+$$

$$\frac{C\,\mathrm{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 683 leaves):

$$-\left(\left(\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.\right.$$

$$\left(\left(2\,(-16\,a\,A\,b-4\,a\,b\,C)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\right.$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+\left(2\,(-16\,A\,b^2-4\,a\,b\,B+3\,a^2\,C-8\,b^2\,C)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right.$$

$$\left.\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$

$$\left(2\,i\,(4\,a\,b\,B+a^2\,C)\,\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\;\mathrm{Cos}[2\,(c+d\,x)]\right.$$

$$\left(-2\,b\,(a+b)\,\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$a\,\left(2\,b\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.\text{a EllipticPi}\left[1-\frac{a}{b},\ \text{i ArcSinh}\left[\sqrt{\frac{1}{a-b}}\ \sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\ \frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\text{Sin}[c+d\,x]\right)\Bigg/\left(\sqrt{\frac{1}{a-b}}\ b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\ \sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left.\left(-a^2+2\,b^2-4\,b\,\left(b+a\,\text{Cos}[c+d\,x]\right)+2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)\right)\right)\right)\Big/$$

$$\left(8\,b\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\ \left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\text{Sec}[c+d\,x]^{5/2}\right)+$$

$$\left(\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\frac{\text{Sec}[c+d\,x]\ \left(4\,b\,B\,\text{Sin}[c+d\,x]+a\,C\,\text{Sin}[c+d\,x]\right)}{2\,b}+\right.$$

$$\left.\left.\text{C Sec}[c+d\,x]\ \text{Tan}[c+d\,x]\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\ \text{Sec}[c+d\,x]^{5/2}\right)$$

Problem 1033: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 258 leaves, 12 steps):

$$\frac{(2\,a\,B+b\,C)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}}{d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\left((2\,b\,B+a\,C)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}\right)\Big/$$

$$\left(d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+\frac{(2\,A-C)\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}{d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{C\,\sqrt{\text{Sec}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{d}$$

Result (type 4, 624 leaves):

$$\left(2\,C\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c+d\,x]\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\right)+$$

$$\left(\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\frac{2\,(4\,A\,b+4\,a\,B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\right.$$

$$\left(2\,(2\,a\,A+4\,b\,B+a\,C)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+\left(2\,\mathbb{i}\,(2\,a\,A-a\,C)\,\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\,\text{Cos}\left[\right.\right.$$

$$\left.2\,(c+d\,x)\right]\,\left(-2\,b\,(a+b)\,\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$a\,\left(2\,b\,\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\text{EllipticPi}\left[1-\frac{a}{b},\,\mathbb{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left.\left(-a^2+2\,b^2-4\,b\,(b+a\,\text{Cos}[c+d\,x])+2\,(b+a\,\text{Cos}[c+d\,x])^2\right)\right)\right)\right)\Big/$$

$$\left(2\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^{5/2}\right)$$

Problem 1034: Unable to integrate problem.

$$\int \frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 277 leaves, 12 steps):

$$-\left(\left(2\left(A\,b^2-a^2\,(A+3\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(3\,a\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\right)+\frac{2\,b\,C\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}}{d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+\frac{2\,(A\,b+3\,a\,B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}}{3\,a\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{2\,A\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 8, 47 leaves):

$$\int \frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{3/2}}\,dx$$

Problem 1035: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 4, 273 leaves, 9 steps):

$$-\left(\left(2\left(a^2-b^2\right)\left(2\,A\,b-5\,a\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(15\,a^2\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\right)-$$

$$\left(2\left(2\,A\,b^2-5\,a\,b\,B-3\,a^2\left(3\,A+5\,C\right)\right)\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(15\,a^2\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\sqrt{\text{Sec}[c+d\,x]}\right)+$$

$$\frac{2\,A\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{5\,d\,\text{Sec}[c+d\,x]^{3/2}}+\frac{2\left(A\,b+5\,a\,B\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{15\,a\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 6, 3426 leaves):

$$\left(\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{4\left(9\,a^2\,A-2\,A\,b^2+5\,a\,b\,B+15\,a^2\,C\right)\text{Cot}[c]}{15\,a^2\,d}+\frac{4\left(A\,b+5\,a\,B\right)\text{Cos}[d\,x]\;\text{Sin}[c]}{15\,a\,d}+\right.$$
$$\left.\left.\frac{2\,A\,\text{Cos}[2\,d\,x]\;\text{Sin}[2\,c]}{5\,d}+\frac{4\left(A\,b+5\,a\,B\right)\text{Cos}[c]\;\text{Sin}[d\,x]}{15\,a\,d}+\frac{2\,A\,\text{Cos}[2\,c]\;\text{Sin}[2\,d\,x]}{5\,d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(28\,A\,b\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[c]\;\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\text{Csc}[c]\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[c]\;\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\text{Csc}[c]$$
$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$
$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}+a\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b - a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(15\,a\,d\,\sqrt{b + a\,\text{Cos}[c+d\,x]}\ \left(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{5/2}\right) -$$

$$\left(4\,B\,\text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{\text{Csc}[c]\ \left(b - a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\ \left(1 + \frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\text{Csc}[c]\ \left(b - a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\ \left(-1 + \frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\ \text{Csc}[c]$$
$$\sqrt{a + b\,\text{Sec}[c+d\,x]}\ \left(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2\right)\ \text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2} - a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2} - b\,\text{Csc}[c]}}$$
$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2} + a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2} + b\,\text{Csc}[c]}}$$
$$\left.\sqrt{b - a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(3\,d\,\sqrt{b + a\,\text{Cos}[c+d\,x]}\ \left(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{5/2}\right) -$$

$$\left(4\,b\,C\,\text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{\text{Csc}[c]\ \left(b - a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\ \left(1 + \frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\text{Csc}[c]\ \left(b - a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\ \left(-1 + \frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\ \text{Csc}[c]$$
$$\sqrt{a + b\,\text{Sec}[c+d\,x]}\ \left(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2\right)\ \text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(a\,d\sqrt{b+a\,\text{Cos}[c+d\,x]}\ \left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(6\,a\,A\,\text{Csc}[c]\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\ \left(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\ \left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\ \left(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\ \left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Big)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\ \left(b+a\,\text{Cos}[c]\ \text{Cos}[\right.\right.\right.$$

$$d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg) \Big/$$

$$\left(5\,d\,\sqrt{b + a\,\text{Cos}[c+d\,x]}\,\left(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{5/2}\right) +$$

$$\Bigg(4\,A\,b^2\,\text{Csc}[c]\,\sqrt{a + b\,\text{Sec}[c+d\,x]}\,\left(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\Bigg(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/ \left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/$$

$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg) \Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big) \Big/}$$

$$\overline{\left(b\,\text{Sec}[c] + a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2} +}$$

$$\overline{a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big) \Big/ \left(-b\,\text{Sec}[c] + a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg) -$$

$$\Bigg(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \Big(2\,a\,\text{Cos}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg) \Big/$$

$$\Big(15\,a\,d\,\sqrt{b + a\,\text{Cos}[c+d\,x]}\,\left(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\text{Sec}[c+d\,x]^{5/2}\Big) -$$

$$\Bigg(2\,b\,B\,\mathrm{Csc}[c]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\left(\mathrm{Sec}[c]\,\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\right.\right.$$

$$\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\mathrm{Tan}[c]^2}\,\left(1-\frac{b\,\mathrm{Sec}[c]}{a\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\left(\left(\mathrm{Sec}[c]\,\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\right/$$

$$\left.\left(a\,\sqrt{1+\mathrm{Tan}[c]^2}\,\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right)\Big]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\mathrm{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big/\right.}$$

$$\left.\left(b\,\mathrm{Sec}[c]+a\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\,\sqrt{\left(\left(a\,\sqrt{1+\mathrm{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big/\left(-b\,\mathrm{Sec}[c]+a\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)$$

$$\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\Big(2\,a\,\mathrm{Cos}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[$$

$$d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\Bigg)\Bigg)\Big/$$

$$\Big(3\,d\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\mathrm{Sec}[c+d\,x]^{5/2}\Big)-$$

$$\Bigg(2\,a\,C\,\mathrm{Csc}[c]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\mathrm{Sec}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\right/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Bigg),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\right/$$

$$\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\;\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right/}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\;\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\right/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(d\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^{5/2}\right)$$

Problem 1036: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{7/2}}\,dx$$

Optimal (type 4, 360 leaves, 10 steps):

$$\left(2\left(a^2-b^2\right)\left(25 a^2 A+8 A b^2-14 a b B+35 a^2 C\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.$$
$$\left.\operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{\operatorname{Sec}[c+d x]}\right)\Big/\left(105 a^3 d\sqrt{a+b \operatorname{Sec}[c+d x]}\right)+$$
$$\left(2\left(8 A b^3+63 a^3 B-14 a b^2 B+a^2 b(19 A+35 C)\right)\operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right.$$
$$\left.\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(105 a^3 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\sqrt{\operatorname{Sec}[c+d x]}\right)+$$
$$\frac{2 A\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{7 d \operatorname{Sec}[c+d x]^{5/2}}+\frac{2(A b+7 a B)\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{35 a d \operatorname{Sec}[c+d x]^{3/2}}-$$
$$\frac{2\left(4 A b^2-7 a b B-5 a^2(5 A+7 C)\right)\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{105 a^2 d\sqrt{\operatorname{Sec}[c+d x]}}$$

Result (type 6, 4441 leaves):

$$\left(\sqrt{a+b \operatorname{Sec}[c+d x]}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left(-\frac{4\left(19 a^2 A b+8 A b^3+63 a^3 B-14 a b^2 B+35 a^2 b C\right)\operatorname{Cot}[c]}{105 a^3 d}+\right.$$
$$\frac{\left(115 a^2 A-16 A b^2+28 a b B+140 a^2 C\right)\operatorname{Cos}[d x]\operatorname{Sin}[c]}{105 a^2 d}+\frac{2(A b+7 a B)\operatorname{Cos}[2 d x]\operatorname{Sin}[2 c]}{35 a d}+$$
$$\frac{A \operatorname{Cos}[3 d x]\operatorname{Sin}[3 c]}{7 d}+\frac{\left(115 a^2 A-16 A b^2+28 a b B+140 a^2 C\right)\operatorname{Cos}[c]\operatorname{Sin}[d x]}{105 a^2 d}+$$
$$\left.\left.\frac{2(A b+7 a B)\operatorname{Cos}[2 c]\operatorname{Sin}[2 d x]}{35 a d}+\frac{A \operatorname{Cos}[3 c]\operatorname{Sin}[3 d x]}{7 d}\right)\right)\Big/$$
$$\left(\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\operatorname{Sec}[c+d x]^{5/2}\right)-$$
$$\left(20 A \operatorname{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(-1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)}\right]\operatorname{Csc}[c]$$
$$\sqrt{a+b \operatorname{Sec}[c+d x]}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]$$
$$\sqrt{\frac{a\sqrt{1+\operatorname{Cot}[c]^2}-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}{a\sqrt{1+\operatorname{Cot}[c]^2}-b \operatorname{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(21\,d\sqrt{b+a\,\text{Cos}[c+d\,x]}\ \left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(8\,A\,b^2\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\text{Csc}[c]$$

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\ \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(105\,a^2\,d\sqrt{b+a\,\text{Cos}[c+d\,x]}\ \left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(28\,b\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]\,\text{Csc}[c]$$

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(15\,a\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(4\,C\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]\,\text{Csc}[c]$$

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\Bigg(38\,A\,b\,\text{Csc}[c]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}+}$$

$$\overline{a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(105\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\Bigg(16\,A\,b^3\,\text{Csc}[c]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right)\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/$$

$$\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big/$$

$$\left(105\,a^2\,d\sqrt{b+a\,\text{Cos}[c+d\,x]}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(6\,a\,B\,\text{Csc}[c]\sqrt{a+b\,\text{Sec}[c+d\,x]}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(5\,d\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^{5/2}\right)+$$

$$\left(4\,b^2\,B\,\text{Csc}[c]\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right/}\right.$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}\right.\right.+}$$

$$a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Big)\Big)\Big)\Big/$$

$$\left(15\,a\,d\sqrt{b+a\,\text{Cos}[c+d\,x]}\ \left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(2\,b\,C\,\text{Csc}[c]\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Big),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\right/$$

$$\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right/}\right.$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}\right.\right.+}$$

$$a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)$$

$$\left.\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)-\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big/\left(3\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{5/2}\right)$$

Problem 1037: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{9/2}}\,dx$$

Optimal (type 4, 457 leaves, 11 steps):

$$-\left(\left(\left(2\,\left(a^2-b^2\right)\,\left(16\,A\,b^3-75\,a^3\,B-24\,a\,b^2\,B+6\,a^2\,b\,\left(6\,A+7\,C\right)\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(315\,a^4\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\right)-\left(2\,\left(16\,A\,b^4-57\,a^3\,b\,B-24\,a\,b^3\,B+6\,a^2\,b^2\,\left(4\,A+7\,C\right)-21\,a^4\,\left(7\,A+9\,C\right)\right)\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(315\,a^4\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}\right)+\frac{2\,A\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{9\,d\,\text{Sec}[c+d\,x]^{7/2}}+\frac{2\,\left(A\,b+9\,a\,B\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{63\,a\,d\,\text{Sec}[c+d\,x]^{5/2}}-\frac{2\,\left(6\,A\,b^2-9\,a\,b\,B-7\,a^2\,\left(7\,A+9\,C\right)\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{315\,a^2\,d\,\text{Sec}[c+d\,x]^{3/2}}+\left(2\,\left(8\,A\,b^3+75\,a^3\,B-12\,a\,b^2\,B+a^2\,b\,\left(13\,A+21\,C\right)\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]\right)\Big/\left(315\,a^3\,d\,\sqrt{\text{Sec}[c+d\,x]}\right)$$

Result (type 6, 5993 leaves):

$$\frac{1}{\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{5/2}}$$

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(-\frac{1}{315\,a^4\,d}4\,\left(147\,a^4\,A-24\,a^2\,A\,b^2-16\,A\,b^4+57\,a^3\,b\,B+24\,a\,b^3\,B+189\,a^4\,C-42\,a^2\,b^2\,C\right)\,\text{Cot}[c]+\right.$$

$$\frac{1}{315\,a^3\,d}\left(57\,a^2\,A\,b+32\,A\,b^3+345\,a^3\,B-48\,a\,b^2\,B+84\,a^2\,b\,C\right)\,\text{Cos}[d\,x]\,\text{Sin}[c]+$$

$$\frac{\left(133\,a^2\,A-12\,A\,b^2+18\,a\,b\,B+126\,a^2\,C\right)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{315\,a^2\,d}+\frac{\left(A\,b+9\,a\,B\right)\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{63\,a\,d}+$$

$$\frac{A\,\text{Cos}[4\,d\,x]\,\text{Sin}[4\,c]}{18\,d}+\frac{1}{315\,a^3\,d}\left(57\,a^2\,A\,b+32\,A\,b^3+345\,a^3\,B-48\,a\,b^2\,B+84\,a^2\,b\,C\right)$$

$$\text{Cos}[c]\,\text{Sin}[d\,x]+\frac{\left(133\,a^2\,A-12\,A\,b^2+18\,a\,b\,B+126\,a^2\,C\right)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{315\,a^2\,d}+$$

$$\left.\frac{\left(A\,b+9\,a\,B\right)\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{63\,a\,d}+\frac{A\,\text{Cos}[4\,c]\,\text{Sin}[4\,d\,x]}{18\,d}\right)-$$

$$\left(148\,A\,b\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\,\text{Csc}[c]$$

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}+a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(105\,a\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\;\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\;\text{Sec}[c+d\,x]^{5/2}\right)+$$

$$\left(16\,A\,b^3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\text{Csc}[c]$$

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(315\,a^3\,d\sqrt{b+a\,\text{Cos}[c+d\,x]}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(20\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\text{Csc}[c]$$

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(21\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\ \left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(8\,b^2\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\text{Csc}[c]$$
$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$
$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$
$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(105\,a^2\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\ \left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(28\,b\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\text{Csc}[c]$$
$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(15\,a\,d\sqrt{b+a\,\text{Cos}[c+d\,x]}\ (A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(14\,a\,A\,\text{Csc}[c]\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\ \left(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\ \left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\ \left(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\ \left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\ \left(b+a\,\text{Cos}[c]\ \text{Cos}[\right.\right.\right.$$

d x + ArcTan[Tan[c]]] Sqrt[1 + Tan[c]^2])) / (a^2 Cos[c]^2 + a^2 Sin[c]^2)) /

(Sqrt[b + a Cos[c] Cos[d x + ArcTan[Tan[c]]] Sqrt[1 + Tan[c]^2]]))) /

(15 d Sqrt[b + a Cos[c + d x]] (A + 2 C + 2 B Cos[c + d x] + A Cos[2 c + 2 d x]) Sec[c + d x]^(5/2)) +

(16 A b^2 Csc[c] Sqrt[a + b Sec[c + d x]] (A + B Sec[c + d x] + C Sec[c + d x]^2)

((AppellF1[-1/2, -1/2, -1/2, 1/2, -((Sec[c] (b + a Cos[c] Cos[d x + ArcTan[Tan[c]]]

Sqrt[1 + Tan[c]^2])) / (a Sqrt[1 + Tan[c]^2] (1 - (b Sec[c])/(a Sqrt[1 + Tan[c]^2])))),

-((Sec[c] (b + a Cos[c] Cos[d x + ArcTan[Tan[c]]] Sqrt[1 + Tan[c]^2])) /

(a Sqrt[1 + Tan[c]^2] (-1 - (b Sec[c])/(a Sqrt[1 + Tan[c]^2]))))] Sin[d x + ArcTan[Tan[c]]] Tan[c]) /

(Sqrt[1 + Tan[c]^2] Sqrt[((a Sqrt[1 + Tan[c]^2] - a Cos[d x + ArcTan[Tan[c]]] Sqrt[1 + Tan[c]^2]) /

(b Sec[c] + a Sqrt[1 + Tan[c]^2]))] Sqrt[((a Sqrt[1 + Tan[c]^2] +

a Cos[d x + ArcTan[Tan[c]]] Sqrt[1 + Tan[c]^2]) / (-b Sec[c] + a Sqrt[1 + Tan[c]^2]))]

Sqrt[b + a Cos[c] Cos[d x + ArcTan[Tan[c]]] Sqrt[1 + Tan[c]^2]]) -

((Sin[d x + ArcTan[Tan[c]]] Tan[c])/Sqrt[1 + Tan[c]^2] + (2 a Cos[c] (b + a Cos[c] Cos[

d x + ArcTan[Tan[c]]] Sqrt[1 + Tan[c]^2])) / (a^2 Cos[c]^2 + a^2 Sin[c]^2)) /

(Sqrt[b + a Cos[c] Cos[d x + ArcTan[Tan[c]]] Sqrt[1 + Tan[c]^2]]))) /

(105 a d Sqrt[b + a Cos[c + d x]] (A + 2 C + 2 B Cos[c + d x] + A Cos[2 c + 2 d x]) Sec[c + d x]^(5/2)) +

$$\Bigg(32\,A\,b^4\,\mathrm{Csc}[c]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\mathrm{Sec}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/\left(a\,\sqrt{1+\mathrm{Tan}[c]^2}\,\left(1-\frac{b\,\mathrm{Sec}[c]}{a\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\mathrm{Sec}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\,\sqrt{1+\mathrm{Tan}[c]^2}\,\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\mathrm{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\Big(b\,\mathrm{Sec}[c]+a\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\mathrm{Tan}[c]^2}+}$$

$$\overline{a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/\Big(-b\,\mathrm{Sec}[c]+a\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)}$$

$$\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\Big(2\,a\,\mathrm{Cos}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[$$

$$d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg/$$

$$\Big(315\,a^3\,d\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\mathrm{Sec}[c+d\,x]^{5/2}\Big)-$$

$$\Bigg(38\,b\,B\,\mathrm{Csc}[c]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\mathrm{Sec}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Big),$$

$$-\Big(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Big)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big)\Big/$$

$$\Big(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\Big(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\Big)\Big)}\,\sqrt{\Big(\Big(a\sqrt{1+\text{Tan}[c]^2}+}$$

$$\overline{a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\Big(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\Big)\Big)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Big)-$$

$$\Big(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Big)\Big/$$

$$\Big(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Big)\Big)\Big)\Big)\Big/$$

$$\Big(105\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$
$$\text{Sec}[c+d\,x]^{5/2}\Big)-$$

$$\Big(16\,b^3\,B\,\text{Csc}[c]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Big(\Big(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Big(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Big),$$

$$-\Big(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right)\right)\Big]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\mathrm{Tan}[c]^2}\,\sqrt{\left(\left(a\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big/\left(b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\sqrt{1+\mathrm{Tan}[c]^2}+a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big/\left(-b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)}\,\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)-$$

$$\left(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\left(2\,a\,\mathrm{Cos}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\right)\right)\Bigg/$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right)\Bigg/$$

$$\left(105\,a^2\,d\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{5/2}\right)-$$

$$\Bigg(6\,a\,C\,\mathrm{Csc}[c]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right)\Big]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\mathrm{Tan}[c]^2}\,\sqrt{\left(\left(a\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(5\,d\sqrt{b+a\,\text{Cos}[c+d\,x]}\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{5/2}\right)+$$

$$\Bigg(4\,b^2\,C\,\text{Csc}[c]\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$
$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Big/$$
$$\left(15\,a\,d\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{5/2}\right)$$

Problem 1038: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d\,x]^{3/2}\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 551 leaves, 15 steps):

$$\left(\left(136\,a^2\,b\,B+128\,b^3\,B-3\,a^3\,C+12\,a\,b^2\,(28\,A+19\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(192\,b\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$
$$\left(\left(8\,a^3\,b\,B-96\,a\,b^3\,B-3\,a^4\,C-24\,a^2\,b^2\,(2\,A+C)-16\,b^4\,(4\,A+3\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(64\,b^2\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$
$$\left(\left(24\,a^2\,b\,B+128\,b^3\,B-9\,a^3\,C+12\,a\,b^2\,(20\,A+13\,C)\right)\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(192\,b^2\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}\right)+\frac{1}{192\,b^2\,d}$$
$$\left(24\,a^2\,b\,B+128\,b^3\,B-9\,a^3\,C+12\,a\,b^2\,(20\,A+13\,C)\right)\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+$$
$$\frac{1}{96\,b\,d}\left(48\,A\,b^2+56\,a\,b\,B+3\,a^2\,C+36\,b^2\,C\right)\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+$$
$$\frac{(8\,b\,B+3\,a\,C)\,\text{Sec}[c+d\,x]^{5/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,d}+$$
$$\frac{C\,\text{Sec}[c+d\,x]^{5/2}\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{4\,d}$$

Result (type 4, 916 leaves):

$$\left((a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\left(\left(2\,\left(192\,a\,A\,b^3+224\,a^2\,b^2\,B+12\,a^3\,b\,C+144\,a\,b^3\,C\right)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right.\right.\right.$$
$$\left.\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$
$$\left(2\,\left(48\,a^2\,A\,b^2+384\,A\,b^4-72\,a^3\,b\,B+448\,a\,b^3\,B+27\,a^4\,C-12\,a^2\,b^2\,C+288\,b^4\,C\right)\right.$$
$$\left.\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$
$$\left(2\,\mathrm{i}\,\left(-240\,a^2\,A\,b^2-24\,a^3\,b\,B-128\,a\,b^3\,B+9\,a^4\,C-156\,a^2\,b^2\,C\right)\right.$$
$$\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\,\mathrm{Cos}[2\,(c+d\,x)]$$
$$\left(-2\,b\,(a+b)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$
$$a\,\left(2\,b\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$
$$\left.\left.a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]\right)\right)$$
$$\left.\mathrm{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\mathrm{Cos}[c+d\,x]^2}{a^2}}\right.$$
$$\left.\left.\left.\left(-a^2+2\,b^2-4\,b\,(b+a\,\mathrm{Cos}[c+d\,x])+2\,(b+a\,\mathrm{Cos}[c+d\,x])^2\right)\right)\right)\right)\Big/$$
$$\left(384\,b^2\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^{3/2}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\right)+$$

$$\Bigg(\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{1}{12}\text{Sec}[c+d\,x]^3\left(8\,b\,B\,\text{Sin}[c+d\,x]+9\,a\,C\,\text{Sin}[c+d\,x]\right)+\frac{1}{48\,b}\text{Sec}[c+d\,x]^2\left(48\,A\,b^2\,\text{Sin}[c+d\,x]+56\,a\,b\,B\,\text{Sin}[c+d\,x]+3\,a^2\,C\,\text{Sin}[c+d\,x]+36\,b^2\,C\,\text{Sin}[c+d\,x]\right)+\frac{1}{96\,b^2}\text{Sec}[c+d\,x]\left(240\,a\,A\,b^2\,\text{Sin}[c+d\,x]+24\,a^2\,b\,B\,\text{Sin}[c+d\,x]+128\,b^3\,B\,\text{Sin}[c+d\,x]-9\,a^3\,C\,\text{Sin}[c+d\,x]+156\,a\,b^2\,C\,\text{Sin}[c+d\,x]\right)+\frac{1}{2}\,b\,C\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]\right)\Bigg)\Big/\left(d\left(b+a\,\text{Cos}[c+d\,x]\right)\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{7/2}\right)$$

Problem 1039: Result unnecessarily involves imaginary or complex numbers.

$$\int\sqrt{\text{Sec}[c+d\,x]}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 446 leaves, 14 steps):

$$\left(\left(42\,a\,b\,B+8\,b^2\left(3\,A+2\,C\right)+a^2\left(48\,A+17\,C\right)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(24\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+\left(\left(6\,a^2\,b\,B+8\,b^3\,B-a^3\,C+12\,a\,b^2\left(2\,A+C\right)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(8\,b\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-\left(\left(24\,A\,b^2+30\,a\,b\,B+3\,a^2\,C+16\,b^2\,C\right)\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(24\,b\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}\right)+\frac{1}{24\,b\,d}\left(24\,A\,b^2+30\,a\,b\,B+3\,a^2\,C+16\,b^2\,C\right)\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+\frac{\left(2\,b\,B+a\,C\right)\text{Sec}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d}+\frac{C\,\text{Sec}[c+d\,x]^{3/2}\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 800 leaves):

$$-\left(\left(\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.\right.$$

$$\left(\left(2\left(-96\,a^2\,A\,b-24\,a\,b^2\,B-28\,a^2\,b\,C\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\right)\Big/\right.$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+\left(2\left(-120\,a\,A\,b^2-6\,a^2\,b\,B-48\,b^3\,B+9\,a^3\,C-56\,a\,b^2\,C\right)\right.$$

$$\left.\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$

$$\left(2\,i\left(24\,a\,A\,b^2+30\,a^2\,b\,B+3\,a^3\,C+16\,a\,b^2\,C\right)\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\right.$$

$$\mathrm{Cos}\left[2\left(c+d\,x\right)\right]\left(-2\,b\left(a+b\right)\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\right.\right.$$

$$\left.\frac{-a+b}{a+b}\right]+a\left(2\,b\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\mathrm{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\;b\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\;\sqrt{\frac{a^2-a^2\,\mathrm{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left.\left(-a^2+2\,b^2-4\,b\left(b+a\,\mathrm{Cos}[c+d\,x]\right)+2\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\right)\right)\right)\right)\Big/$$

$$\left(48\,b\,d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{3/2}\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left.\mathrm{Sec}[c+d\,x]^{7/2}\right)\right)+$$

$$\left(\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\frac{1}{6}\,\mathrm{Sec}[c+d\,x]^2\left(6\,b\,B\,\mathrm{Sin}[c+d\,x]+7\,a\,C\,\mathrm{Sin}[c+d\,x]\right)+\frac{1}{12\,b}\mathrm{Sec}[c+d\,x]\right.$$

$$\left(24\,A\,b^2\,\mathrm{Sin}[c+d\,x]+30\,a\,b\,B\,\mathrm{Sin}[c+d\,x]+3\,a^2\,C\,\mathrm{Sin}[c+d\,x]+16\,b^2\,C\,\mathrm{Sin}[c+d\,x]\right)+$$

$$\left.\left.\frac{2}{3}\,b\,C\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\right)\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{7/2}\right)$$

Problem 1040: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 353 leaves, 13 steps):

$$\left(\left(8\,a^2\,B+4\,b^2\,B+a\,b\,\left(8\,A+7\,C\right)\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right.$$
$$\left.\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(4\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$
$$\left(\left(8\,A\,b^2+12\,a\,b\,B+3\,a^2\,C+4\,b^2\,C\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\,\frac{1}{2}\,\left(c+d\,x\right),\,\frac{2\,a}{a+b}\right]\right.$$
$$\left.\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(4\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$
$$\frac{\left(8\,a\,A-4\,b\,B-5\,a\,C\right)\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}{4\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}}+$$
$$\frac{\left(4\,b\,B+3\,a\,C\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d}+$$
$$\frac{C\,\sqrt{\text{Sec}[c+d\,x]}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 709 leaves):

$$\Bigg(\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(2\left(32\,a\,A\,b+16\,a^2\,B+4\,a\,b\,C\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\Big[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\Big]\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+\Bigg(2\left(8\,a^2\,A+16\,A\,b^2+20\,a\,b\,B+a^2\,C+8\,b^2\,C\right)$$

$$\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\Big[2,\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\Big]\Bigg)\Big/\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+$$

$$\Bigg(2\,\mathrm{i}\left(8\,a^2\,A-4\,a\,b\,B-5\,a^2\,C\right)\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\;\text{Cos}[2\left(c+d\,x\right)]$$

$$\Bigg(-2\,b\left(a+b\right)\text{EllipticE}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+d\,x]}\Big],\frac{-a+b}{a+b}\Big]+$$

$$a\Bigg(2\,b\,\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+d\,x]}\Big],\frac{-a+b}{a+b}\Big]+$$

$$a\,\text{EllipticPi}\Big[1-\frac{a}{b},\mathrm{i}\,\text{ArcSinh}\Big[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+d\,x]}\Big],\frac{-a+b}{a+b}\Big]\Bigg)\Bigg)$$

$$\text{Sin}[c+d\,x]\Bigg)\Big/\Bigg(\sqrt{\frac{1}{a-b}}\;b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}$$

$$\left(-a^2+2\,b^2-4\,b\left(b+a\,\text{Cos}[c+d\,x]\right)+2\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Big(8\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$
$$\text{Sec}[c+d\,x]^{7/2}\Big)+$$

$$\Bigg(\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\frac{1}{2}\,\text{Sec}[c+d\,x]\left(4\,b\,B\,\text{Sin}[c+d\,x]+5\,a\,C\,\text{Sin}[c+d\,x]\right)+b\,C\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\right)\Bigg)\Big/$$

$$\Big(d\left(b+a\,\text{Cos}[c+d\,x]\right)\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$
$$\text{Sec}[c+d\,x]^{7/2}\Big)$$

Problem 1041: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \frac{(a+b\,\text{Sec}[c+d\,x])^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 340 leaves, 13 steps):

$$\left(\left(6\,a\,b\,B-b^2\,(2\,A-3\,C)+2\,a^2\,(A+3\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(3\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+\left(b\,(2\,b\,B+3\,a\,C)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+\frac{(8\,A\,b+6\,a\,B-3\,b\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}}{3\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}}-\frac{b\,(2\,A-3\,C)\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}+\frac{2\,A\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 4, 685 leaves):

$$\Bigg(\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(\left(2\left(4\,a^2\,A+12\,A\,b^2+24\,a\,b\,B+12\,a^2\,C\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\right)\Big/\right.$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+\left(2\left(8\,a\,A\,b+6\,a^2\,B+12\,b^2\,B+15\,a\,b\,C\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right.$$

$$\left.\mathrm{EllipticPi}\left[2,\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$

$$\left(2\,i\left(8\,a\,A\,b+6\,a^2\,B-3\,a\,b\,C\right)\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\;\mathrm{Cos}\left[2\left(c+d\,x\right)\right]\right.$$

$$\left(-2\,b\left(a+b\right)\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2\,b\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\mathrm{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\;b\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\sqrt{\frac{a^2-a^2\,\mathrm{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left.\left(-a^2+2\,b^2-4\,b\left(b+a\,\mathrm{Cos}[c+d\,x]\right)+2\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\right)\right)\right)\right)\Big/$$

$$\Big(6\,d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{3/2}\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$
$$\mathrm{Sec}[c+d\,x]^{7/2}\Big)+$$

$$\Big(\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\frac{4}{3}\,a\,A\,\mathrm{Sin}[c+d\,x]+2\,b\,C\,\mathrm{Tan}[c+d\,x]\right)\Big)\Big/$$
$$\Big(d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$
$$\mathrm{Sec}[c+d\,x]^{7/2}\Big)$$

Problem 1042: Unable to integrate problem.

$$\int \frac{(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 4, 356 leaves, 13 steps):

$$-\left(\left(2\,\left(3\,A\,b^3-5\,a^3\,B+5\,a\,b^2\,B-3\,a^2\,b\,(A+5\,C)\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(15\,a\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\right)+$$

$$\frac{2\,b^2\,C\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}}{d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\left(2\,\left(3\,A\,b^2+20\,a\,b\,B+3\,a^2\,(3\,A+5\,C)\right)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/$$

$$\left(15\,a\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}\right)+$$

$$\frac{2\,(3\,A\,b+5\,a\,B)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{15\,d\,\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{2\,A\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{5\,d\,\text{Sec}[c+d\,x]^{3/2}}$$

Result (type 8, 47 leaves):

$$\int \frac{(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{5/2}}\,dx$$

Problem 1043: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{7/2}}\,dx$$

Optimal (type 4, 359 leaves, 10 steps):

$$\left(2\left(a^2-b^2\right)\left(25 a^2 A-6 A b^2+21 a b B+35 a^2 C\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{\operatorname{Sec}[c+d x]}\right)\Big/\left(105 a^2 d\sqrt{a+b \operatorname{Sec}[c+d x]}\right)-$$
$$\left(2\left(6 A b^3-63 a^3 B-21 a b^2 B-2 a^2 b(41 A+70 C)\right)\operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(105 a^2 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\sqrt{\operatorname{Sec}[c+d x]}\right)+$$
$$\frac{2(3 A b+7 a B)\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{35 d \operatorname{Sec}[c+d x]^{3/2}}+$$
$$\frac{2\left(3 A b^2+42 a b B+5 a^2(5 A+7 C)\right)\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{105 a d\sqrt{\operatorname{Sec}[c+d x]}}+$$
$$\frac{2 A(a+b \operatorname{Sec}[c+d x])^{3/2}\operatorname{Sin}[c+d x]}{7 d \operatorname{Sec}[c+d x]^{5/2}}$$

Result (type 6, 4862 leaves):

$$\left((a+b \operatorname{Sec}[c+d x])^{3/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left(-\frac{4\left(82 a^2 A b-6 A b^3+63 a^3 B+21 a b^2 B+140 a^2 b C\right)\operatorname{Cot}[c]}{105 a^2 d}+\right.$$
$$\frac{\left(115 a^2 A+12 A b^2+168 a b B+140 a^2 C\right)\operatorname{Cos}[d x]\operatorname{Sin}[c]}{105 a d}+$$
$$\frac{2(8 A b+7 a B)\operatorname{Cos}[2 d x]\operatorname{Sin}[2 c]}{35 d}+\frac{a A \operatorname{Cos}[3 d x]\operatorname{Sin}[3 c]}{7 d}+$$
$$\frac{\left(115 a^2 A+12 A b^2+168 a b B+140 a^2 C\right)\operatorname{Cos}[c]\operatorname{Sin}[d x]}{105 a d}+$$
$$\left.\left.\frac{2(8 A b+7 a B)\operatorname{Cos}[2 c]\operatorname{Sin}[2 d x]}{35 d}+\frac{a A \operatorname{Cos}[3 c]\operatorname{Sin}[3 d x]}{7 d}\right)\right)\Big/$$
$$\left((b+a \operatorname{Cos}[c+d x])\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\operatorname{Sec}[c+d x]^{7/2}\right)-$$
$$\left(20 a A \operatorname{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(-1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)}\right]\operatorname{Csc}[c]$$
$$(a+b \operatorname{Sec}[c+d x])^{3/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(21\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{7/2}\right)-$$

$$\left(68\,A\,b^2\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\text{Csc}[c]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(35\,a\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{7/2}\right)-$$

$$\left(16\, b\, B\, \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{\text{Csc}[c] \left(b - a \sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[c]\, \text{Sin}[d x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a \sqrt{1 + \text{Cot}[c]^2} \left(1 + \frac{b\, \text{Csc}[c]}{a \sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c] \left(b - a \sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[c]\, \text{Sin}[d x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a \sqrt{1 + \text{Cot}[c]^2} \left(-1 + \frac{b\, \text{Csc}[c]}{a \sqrt{1+\text{Cot}[c]^2}}\right)}\right] \text{Csc}[c]$$

$$(a + b\, \text{Sec}[c + d x])^{3/2} \left(A + B\, \text{Sec}[c + d x] + C\, \text{Sec}[c + d x]^2\right) \text{Sec}[d x - \text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a \sqrt{1 + \text{Cot}[c]^2} - a \sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[d x - \text{ArcTan}[\text{Cot}[c]]]}{a \sqrt{1 + \text{Cot}[c]^2} - b\, \text{Csc}[c]}}$$

$$\sqrt{\frac{a \sqrt{1 + \text{Cot}[c]^2} + a \sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[d x - \text{ArcTan}[\text{Cot}[c]]]}{a \sqrt{1 + \text{Cot}[c]^2} + b\, \text{Csc}[c]}}$$

$$\left.\sqrt{b - a \sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[c]\, \text{Sin}[d x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(5\, d\, (b + a\, \text{Cos}[c + d x])^{3/2} \left(A + 2 C + 2 B\, \text{Cos}[c + d x] + A\, \text{Cos}[2 c + 2 d x]\right)\right.$$

$$\left.\sqrt{1 + \text{Cot}[c]^2}\, \text{Sec}[c + d x]^{7/2}\right) -$$

$$\left(4\, a\, C\, \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{\text{Csc}[c] \left(b - a \sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[c]\, \text{Sin}[d x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a \sqrt{1 + \text{Cot}[c]^2} \left(1 + \frac{b\, \text{Csc}[c]}{a \sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c] \left(b - a \sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[c]\, \text{Sin}[d x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a \sqrt{1 + \text{Cot}[c]^2} \left(-1 + \frac{b\, \text{Csc}[c]}{a \sqrt{1+\text{Cot}[c]^2}}\right)}\right] \text{Csc}[c]$$

$$(a + b\, \text{Sec}[c + d x])^{3/2} \left(A + B\, \text{Sec}[c + d x] + C\, \text{Sec}[c + d x]^2\right) \text{Sec}[d x - \text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a \sqrt{1 + \text{Cot}[c]^2} - a \sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[d x - \text{ArcTan}[\text{Cot}[c]]]}{a \sqrt{1 + \text{Cot}[c]^2} - b\, \text{Csc}[c]}}$$

$$\sqrt{\frac{a \sqrt{1 + \text{Cot}[c]^2} + a \sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[d x - \text{ArcTan}[\text{Cot}[c]]]}{a \sqrt{1 + \text{Cot}[c]^2} + b\, \text{Csc}[c]}}$$

$$\left.\sqrt{b - a\sqrt{1 + \text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(3\,d\,\left(b + a\,\text{Cos}[c + d\,x]\right)^{3/2}\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\right.$$

$$\left.\sqrt{1 + \text{Cot}[c]^2}\ \text{Sec}[c + d\,x]^{7/2}\right) -$$

$$\left(4\,b^2\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b - a\sqrt{1 + \text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1 + \text{Cot}[c]^2}\left(1 + \frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b - a\sqrt{1 + \text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1 + \text{Cot}[c]^2}\left(-1 + \frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\text{Csc}[c]$$

$$\left(a + b\,\text{Sec}[c + d\,x]\right)^{3/2}\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1 + \text{Cot}[c]^2} - a\sqrt{1 + \text{Cot}[c]^2}\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1 + \text{Cot}[c]^2} - b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1 + \text{Cot}[c]^2} + a\sqrt{1 + \text{Cot}[c]^2}\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1 + \text{Cot}[c]^2} + b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b - a\sqrt{1 + \text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(a\,d\,\left(b + a\,\text{Cos}[c + d\,x]\right)^{3/2}\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\right.$$

$$\left.\sqrt{1 + \text{Cot}[c]^2}\ \text{Sec}[c + d\,x]^{7/2}\right) -$$

$$\left(164\,a\,A\,b\,\text{Csc}[c]\,\left(a + b\,\text{Sec}[c + d\,x]\right)^{3/2}\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\sqrt{1 + \text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1 + \text{Tan}[c]^2}\left(1 - \frac{b\,\text{Sec}[c]}{a\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(105\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{7/2}\right)+$$

$$\left(4\,A\,b^3\,\text{Csc}[c]\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\ \sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Big/$$

$$\left(35\,a\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{7/2}\right)-$$

$$\left(6\,a^2\,B\,\text{Csc}[c]\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),\right.\right.\right.$$

$$\left.-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\right.$$

$$\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\Bigg) -$$

$$\left(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \left(2\,a\,\text{Cos}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left. d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\right) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\left(5\,d\,\left(b + a\,\text{Cos}[c + d\,x]\right)^{3/2}\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c + d\,x]^{7/2}\right) -$$

$$\Bigg(2\,b^2\,B\,\text{Csc}[c]\,\left(a + b\,\text{Sec}[c + d\,x]\right)^{3/2}\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\left(\left(\text{Sec}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/ \left(a\,\sqrt{1 + \text{Tan}[c]^2}\,\left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/\right.$$

$$\left.\left.\left(a\,\sqrt{1 + \text{Tan}[c]^2}\,\left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right)\right]\,\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg) \Big/$$

$$\left(\sqrt{1 + \text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1 + \text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right) \Big/\right.\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\right)\,\sqrt{\left(\left(a\,\sqrt{1 + \text{Tan}[c]^2} + \right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right) \Big/ \left(-b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\right)$$

$$\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\Bigg) -$$

$$\left(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \left(2\,a\,\text{Cos}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Big) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1 + \text{Tan}[c]^2}}\right)\Big)\Big)\Big) \Big/$$

$$\Big(5\,d\,\left(b + a\,\text{Cos}[c + d\,x]\right)^{3/2}\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)$$

$$\text{Sec}[c + d\,x]^{7/2}\Big) -$$

$$\Big(8\,a\,b\,C\,\text{Csc}[c]\,\left(a + b\,\text{Sec}[c + d\,x]\right)^{3/2}\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$

$$\Big(\Big(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\Big(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/ \left(a\,\sqrt{1 + \text{Tan}[c]^2}\,\left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\Big),$$

$$-\Big(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/$$

$$\left(a\,\sqrt{1 + \text{Tan}[c]^2}\,\left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\Big)\Big]\ \text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Big) \Big/$$

$$\Big(\sqrt{1 + \text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1 + \text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1 + \text{Tan}[c]^2}\Big) \Big/}$$

$$\overline{\left(b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\Big)}\ \sqrt{\Big(\Big(a\,\sqrt{1 + \text{Tan}[c]^2} +}$$

$$\overline{a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1 + \text{Tan}[c]^2}\Big) \Big/ \left(-b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1 + \text{Tan}[c]^2}}\Big) -$$

$$\Big(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \Big(2\,a\,\text{Cos}[c]\,\Big(b + a\,\text{Cos}[c]\ \text{Cos}[$$

$$d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Big) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1 + \text{Tan}[c]^2}}\right)\Big)\Big)\Big) \Big/$$

$$\Big(3\,d\,\left(b + a\,\text{Cos}[c + d\,x]\right)^{3/2}\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)$$

$$\left.\text{Sec}[c+d\,x]^{7/2}\right)$$

Problem 1044: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{9/2}}\,dx$$

Optimal (type 4, 455 leaves, 11 steps):

$$\left(2\,(a^2-b^2)\,\left(8\,A\,b^3+75\,a^3\,B-18\,a\,b^2\,B+a^2\,(39\,A\,b+63\,b\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right.$$
$$\left.\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(315\,a^3\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$
$$\left(2\,\left(8\,A\,b^4+246\,a^3\,b\,B-18\,a\,b^3\,B+21\,a^4\,(7\,A+9\,C)+3\,a^2\,b^2\,(11\,A+21\,C)\right)\right.$$
$$\left.\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/$$
$$\left(315\,a^3\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}\right)+\frac{2\,(A\,b+3\,a\,B)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{21\,d\,\text{Sec}[c+d\,x]^{5/2}}+$$
$$\frac{2\,\left(3\,A\,b^2+72\,a\,b\,B+7\,a^2\,(7\,A+9\,C)\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{315\,a\,d\,\text{Sec}[c+d\,x]^{3/2}}-$$
$$\left(2\,\left(4\,A\,b^3-75\,a^3\,B-9\,a\,b^2\,B-2\,a^2\,b\,(44\,A+63\,C)\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]\right)\Big/$$
$$\left(315\,a^2\,d\,\sqrt{\text{Sec}[c+d\,x]}\right)+\frac{2\,A\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{9\,d\,\text{Sec}[c+d\,x]^{7/2}}$$

Result (type 6, 5997 leaves):

$$\left((a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{1}{315\,a^3\,d}4\,\left(147\,a^4\,A+33\,a^2\,A\,b^2+8\,A\,b^4+246\,a^3\,b\,B-18\,a\,b^3\,B+189\,a^4\,C+63\,a^2\,b^2\,C\right)\text{Cot}[c]+\right.$$
$$\frac{1}{315\,a^2\,d}\left(402\,a^2\,A\,b-16\,A\,b^3+345\,a^3\,B+36\,a\,b^2\,B+504\,a^2\,b\,C\right)\text{Cos}[d\,x]\,\text{Sin}[c]+$$
$$\frac{\left(133\,a^2\,A+6\,A\,b^2+144\,a\,b\,B+126\,a^2\,C\right)\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{315\,a\,d}+$$
$$\frac{(10\,A\,b+9\,a\,B)\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{63\,d}+\frac{a\,A\,\text{Cos}[4\,d\,x]\,\text{Sin}[4\,c]}{18\,d}+\frac{1}{315\,a^2\,d}$$
$$\left(402\,a^2\,A\,b-16\,A\,b^3+345\,a^3\,B+36\,a\,b^2\,B+504\,a^2\,b\,C\right)\text{Cos}[c]\,\text{Sin}[d\,x]+$$
$$\frac{\left(133\,a^2\,A+6\,A\,b^2+144\,a\,b\,B+126\,a^2\,C\right)\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{315\,a\,d}+$$

$$\left.\left.\frac{(10\,A\,b+9\,a\,B)\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{63\,d}+\frac{a\,A\,\text{Cos}[4\,c]\,\text{Sin}[4\,d\,x]}{18\,d}\right)\right)\Big/$$

$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{7/2}\right)-$$

$$\left(248\,A\,b\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\,\text{Csc}[c]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}+a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(105\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{7/2}\right)-$$

$$\left(8\,A\,b^3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\,\text{Csc}[c]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(315\,a^2\,d\,(b+a\,\text{Cos}[c+d\,x])^{3/2}\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{7/2}\right)-$$

$$\left(20\,a\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\text{Csc}[c]$$

$$(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(21\,d\,(b+a\,\text{Cos}[c+d\,x])^{3/2}\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{7/2}\right)-$$

$$\left(68\,b^2\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\Big]\,\mathrm{Csc}[c]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(35\,a\,d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{3/2}\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sec}[c+d\,x]^{7/2}\right)-$$

$$\left(16\,b\,C\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.$$

$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\Big]\,\mathrm{Csc}[c]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(5\, d\, (b + a\, \text{Cos}[c + d\, x])^{3/2}\, (A + 2\, C + 2\, B\, \text{Cos}[c + d\, x] + A\, \text{Cos}[2\, c + 2\, d\, x])\right.$$
$$\left.\sqrt{1 + \text{Cot}[c]^2}\, \text{Sec}[c + d\, x]^{7/2}\right) -$$
$$\left(14\, a^2\, A\, \text{Csc}[c]\, (a + b\, \text{Sec}[c + d\, x])^{3/2}\, (A + B\, \text{Sec}[c + d\, x] + C\, \text{Sec}[c + d\, x]^2)\right.$$
$$\left(\left(\text{AppellF1}\left[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\left(\left(\text{Sec}[c]\, \left(b + a\, \text{Cos}[c]\, \text{Cos}[d\, x + \text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$
$$\left.\left.\left.\sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/ \left(a\, \sqrt{1 + \text{Tan}[c]^2}\, \left(1 - \frac{b\, \text{Sec}[c]}{a\, \sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right),$$
$$-\left(\left(\text{Sec}[c]\, \left(b + a\, \text{Cos}[c]\, \text{Cos}[d\, x + \text{ArcTan}[\text{Tan}[c]]]\, \sqrt{1 + \text{Tan}[c]^2}\right)\right)\right) \Big/$$
$$\left.\left.\left(a\, \sqrt{1 + \text{Tan}[c]^2}\, \left(-1 - \frac{b\, \text{Sec}[c]}{a\, \sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right)\right]\, \text{Sin}[d\, x + \text{ArcTan}[\text{Tan}[c]]]\, \text{Tan}[c]\right) \Big/$$
$$\left(\sqrt{1 + \text{Tan}[c]^2}\, \sqrt{\left(\left(a\, \sqrt{1 + \text{Tan}[c]^2} - a\, \text{Cos}[d\, x + \text{ArcTan}[\text{Tan}[c]]]\, \sqrt{1 + \text{Tan}[c]^2}\right) \Big/\right.}\right.$$
$$\left.\left(b\, \text{Sec}[c] + a\, \sqrt{1 + \text{Tan}[c]^2}\right)\right)\, \sqrt{\left(\left(a\, \sqrt{1 + \text{Tan}[c]^2} +\right.\right.}$$
$$\left.\left. a\, \text{Cos}[d\, x + \text{ArcTan}[\text{Tan}[c]]]\, \sqrt{1 + \text{Tan}[c]^2}\right) \Big/ \left(-b\, \text{Sec}[c] + a\, \sqrt{1 + \text{Tan}[c]^2}\right)\right)$$
$$\left.\sqrt{b + a\, \text{Cos}[c]\, \text{Cos}[d\, x + \text{ArcTan}[\text{Tan}[c]]]\, \sqrt{1 + \text{Tan}[c]^2}}\right) -$$
$$\left(\frac{\text{Sin}[d\, x + \text{ArcTan}[\text{Tan}[c]]]\, \text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \left(2\, a\, \text{Cos}[c]\, \left(b + a\, \text{Cos}[c]\, \text{Cos}[\right.\right.\right.$$
$$\left.\left.\left. d\, x + \text{ArcTan}[\text{Tan}[c]]]\, \sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/ \left(a^2\, \text{Cos}[c]^2 + a^2\, \text{Sin}[c]^2\right)\right) \Big/$$
$$\left.\left.\left(\sqrt{b + a\, \text{Cos}[c]\, \text{Cos}[d\, x + \text{ArcTan}[\text{Tan}[c]]]\, \sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right) \Big/$$
$$\left(15\, d\, (b + a\, \text{Cos}[c + d\, x])^{3/2}\, (A + 2\, C + 2\, B\, \text{Cos}[c + d\, x] + A\, \text{Cos}[2\, c + 2\, d\, x])\, \text{Sec}[c + d\, x]^{7/2}\right) -$$
$$\left(22\, A\, b^2\, \text{Csc}[c]\, (a + b\, \text{Sec}[c + d\, x])^{3/2}\, (A + B\, \text{Sec}[c + d\, x] + C\, \text{Sec}[c + d\, x]^2)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right)\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/$$

$$\left.\left.\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(105\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{7/2}\right)-$$

$$\left(16\,A\,b^4\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right)\Big]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\mathrm{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\mathrm{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big/\left(-b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\right)-$$

$$\left(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\left(2\,a\,\mathrm{Cos}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(315\,a^2\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^{3/2}\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{7/2}\right)-$$

$$\left(164\,a\,b\,B\,\mathrm{Csc}[c]\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\mathrm{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right)\Big]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\,\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(105\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{7/2}\right)+$$

$$\Bigg(4\,b^3\,B\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\right.$$

$$\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\Bigg) -$$

$$\Bigg(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \Big(2\,a\,\text{Cos}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\right)\Bigg)\Bigg) \Big/$$

$$\Big(35\,a\,d\,\left(b + a\,\text{Cos}[c + d\,x]\right)^{3/2}\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)$$
$$\text{Sec}[c + d\,x]^{7/2}\Big) -$$

$$\Bigg(6\,a^2\,C\,\text{Csc}[c]\,\left(a + b\,\text{Sec}[c + d\,x]\right)^{3/2}\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\Bigg(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/ \left(a\,\sqrt{1 + \text{Tan}[c]^2}\,\left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/$$

$$\left(a\,\sqrt{1 + \text{Tan}[c]^2}\,\left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg) \Big/$$

$$\Bigg(\sqrt{1 + \text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1 + \text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\Big) \Big/}$$

$$\overline{\left(b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1 + \text{Tan}[c]^2} +}$$

$$\overline{a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\Big) \Big/ \left(-b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\Bigg) -$$

$$\Bigg(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \Big(2\,a\,\text{Cos}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[$$

$$d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2 \text{Cos}[c]^2 + a^2 \text{Sin}[c]^2\right)\Bigg) \Bigg/$$

$$\left(\sqrt{b + a \text{Cos}[c] \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}}\right)\Bigg)\Bigg) \Bigg/$$

$$\Big(5 d \left(b + a \text{Cos}[c + d x]\right)^{3/2} \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \text{Sec}[c + d x]^{7/2}\Big) -$$

$$\Bigg(2 b^2 C \text{Csc}[c] \left(a + b \text{Sec}[c + d x]\right)^{3/2} \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\Bigg(\Big(\text{Sec}[c] \Big(b + a \text{Cos}[c] \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Bigg/ \left(a \sqrt{1 + \text{Tan}[c]^2} \left(1 - \frac{b \text{Sec}[c]}{a \sqrt{1 + \text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c] \Big(b + a \text{Cos}[c] \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Bigg/$$

$$\left(a \sqrt{1 + \text{Tan}[c]^2} \left(-1 - \frac{b \text{Sec}[c]}{a \sqrt{1 + \text{Tan}[c]^2}}\right)\right)\Bigg)\Big] \text{Sin}[d x + \text{ArcTan}[\text{Tan}[c]]] \text{Tan}[c]\Bigg) \Bigg/$$

$$\Bigg(\sqrt{1 + \text{Tan}[c]^2} \sqrt{\Big(\Big(a \sqrt{1 + \text{Tan}[c]^2} - a \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}\Big) \Big/}$$

$$\overline{\left(b \text{Sec}[c] + a \sqrt{1 + \text{Tan}[c]^2}\right)\Big)} \sqrt{\Big(\Big(a \sqrt{1 + \text{Tan}[c]^2} +}$$

$$\overline{a \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}\Big) \Big/ \left(-b \text{Sec}[c] + a \sqrt{1 + \text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b + a \text{Cos}[c] \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}}\Bigg) -$$

$$\Bigg(\frac{\text{Sin}[d x + \text{ArcTan}[\text{Tan}[c]]] \text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \Big(2 a \text{Cos}[c] \Big(b + a \text{Cos}[c] \text{Cos}[$$

$$d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2 \text{Cos}[c]^2 + a^2 \text{Sin}[c]^2\right)\Bigg) \Bigg/$$

$$\left(\sqrt{b + a \text{Cos}[c] \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}}\right)\Bigg)\Bigg) \Bigg/$$

$$\Big(5 d \left(b + a \text{Cos}[c + d x]\right)^{3/2} \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right)$$

$\left.\text{Sec}[c+d x]^{7/2}\right)$

Problem 1045: Result unnecessarily involves imaginary or complex numbers.

$$\int \sqrt{\text{Sec}[c+d x]}\,(a+b\,\text{Sec}[c+d x])^{5/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 4, 550 leaves, 15 steps):

$$\left(\left(472 a^2 b B+128 b^3 B+4 a b^2 (132 A+89 C)+a^3 (384 A+133 C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{\text{Sec}[c+d x]}\right)\Big/\left(192 d\sqrt{a+b\,\text{Sec}[c+d x]}\right)+$$
$$\left(\left(40 a^3 b B+160 a b^3 B-5 a^4 C+120 a^2 b^2 (2 A+C)+16 b^4 (4 A+3 C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\ \text{EllipticPi}\left[2,\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{\text{Sec}[c+d x]}\right)\Big/\left(64 b d\sqrt{a+b\,\text{Sec}[c+d x]}\right)-$$
$$\left(\left(264 a^2 b B+128 b^3 B+15 a^3 C+4 a b^2 (108 A+71 C)\right)\text{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d x]}\right)\Big/\left(192 b d\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\sqrt{\text{Sec}[c+d x]}\right)+\frac{1}{192 b d}$$
$$\left(264 a^2 b B+128 b^3 B+15 a^3 C+4 a b^2 (108 A+71 C)\right)\sqrt{\text{Sec}[c+d x]}\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]+$$
$$\frac{1}{32 d}\left(16 A b^2+24 a b B+5 a^2 C+12 b^2 C\right)\text{Sec}[c+d x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]+$$
$$\frac{(8 b B+5 a C)\,\text{Sec}[c+d x]^{3/2}(a+b\,\text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{24 d}+$$
$$\frac{C\,\text{Sec}[c+d x]^{3/2}(a+b\,\text{Sec}[c+d x])^{5/2}\,\text{Sin}[c+d x]}{4 d}$$

Result (type 4, 925 leaves):

$$-\left(\left(\left(a+b\,\text{Sec}[c+d x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right.\right.$$
$$\left(\left(2\left(-768 a^3 A b-192 a A b^3-416 a^2 b^2 B-236 a^3 b C-144 a b^3 C\right)\right.\right.$$

$$\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\ \mathrm{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\ \frac{2\,a}{a+b}\right]\Bigg)\Bigg/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$

$$\Bigg(2\left(-1008\,a^2\,A\,b^2-384\,A\,b^4+24\,a^3\,b\,B-832\,a\,b^3\,B+45\,a^4\,C-436\,a^2\,b^2\,C-288\,b^4\,C\right)$$

$$\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\ \mathrm{EllipticPi}\left[2,\ \frac{1}{2}\left(c+d\,x\right),\ \frac{2\,a}{a+b}\right]\Bigg)\Bigg/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$

$$\Bigg(2\,\mathrm{i}\left(432\,a^2\,A\,b^2+264\,a^3\,b\,B+128\,a\,b^3\,B+15\,a^4\,C+284\,a^2\,b^2\,C\right)$$

$$\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\ \sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\ \mathrm{Cos}\left[2\left(c+d\,x\right)\right]$$

$$\Bigg(-2\,b\left(a+b\right)\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\ \sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\ \frac{-a+b}{a+b}\right]+$$

$$a\Bigg(2\,b\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\ \sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\ \frac{-a+b}{a+b}\right]+$$

$$a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},\ \mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\ \sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\ \frac{-a+b}{a+b}\right]\Bigg)\Bigg)$$

$$\mathrm{Sin}[c+d\,x]\Bigg)\Bigg/\Bigg(\sqrt{\frac{1}{a-b}}\ b\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\ \sqrt{\frac{a^2-a^2\,\mathrm{Cos}[c+d\,x]^2}{a^2}}$$

$$\left(-a^2+2\,b^2-4\,b\left(b+a\,\mathrm{Cos}[c+d\,x]\right)+2\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(384\,b\,d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\mathrm{Sec}[c+d\,x]^{9/2}\Bigg)+$$

$$\Bigg(\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\frac{1}{12}\,\mathrm{Sec}[c+d\,x]^3\left(8\,b^2\,B\,\mathrm{Sin}[c+d\,x]+17\,a\,b\,C\,\mathrm{Sin}[c+d\,x]\right)+$$

$$\frac{1}{48}\,\mathrm{Sec}[c+d\,x]^2$$

$$\left(48\,A\,b^2\,\mathrm{Sin}[c+d\,x]+104\,a\,b\,B\,\mathrm{Sin}[c+d\,x]+59\,a^2\,C\,\mathrm{Sin}[c+d\,x]+36\,b^2\,C\,\mathrm{Sin}[c+d\,x]\right)+$$

$$\left(\frac{1}{96\,b}\text{Sec}[c+d\,x]\left(432\,a\,A\,b^2\,\text{Sin}[c+d\,x]+264\,a^2\,b\,B\,\text{Sin}[c+d\,x]+128\,b^3\,B\,\text{Sin}[c+d\,x]+15\,a^3\,C\,\text{Sin}[c+d\,x]+284\,a\,b^2\,C\,\text{Sin}[c+d\,x]\right)+\frac{1}{2}\,b^2\,C\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]\right)\Big)\Big/\left(d\,(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{9/2}\right)$$

Problem 1046: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 453 leaves, 14 steps):

$$\left(\left(48\,a^3\,B+66\,a\,b^2\,B+8\,b^3\,(3\,A+2\,C)+a^2\,b\,(96\,A+59\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(24\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$
$$\left(\left(30\,a^2\,b\,B+8\,b^3\,B+5\,a^3\,C+20\,a\,b^2\,(2\,A+C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(8\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$
$$\left(\left(54\,a\,b\,B-a^2\,(48\,A-33\,C)+8\,b^2\,(3\,A+2\,C)\right)\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(24\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}\right)+\frac{1}{24\,d}$$
$$\left(24\,A\,b^2+42\,a\,b\,B+15\,a^2\,C+16\,b^2\,C\right)\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+$$
$$\frac{(6\,b\,B+5\,a\,C)\,\sqrt{\text{Sec}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{12\,d}+$$
$$\frac{C\,\sqrt{\text{Sec}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 817 leaves):

$$\left((a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\left(2\left(288 a^2 A b+96 a^3 B+24 a b^2 B+52 a^2 b C\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.\right.\right.$$

$$\left.\operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(\sqrt{b+a \operatorname{Cos}[c+d x]}\right)+$$

$$\left(2\left(48 a^3 A+216 a A b^2+126 a^2 b B+48 b^3 B-3 a^3 C+104 a b^2 C\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.$$

$$\left.\operatorname{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(\sqrt{b+a \operatorname{Cos}[c+d x]}\right)+$$

$$\left(2 i\left(48 a^3 A-24 a A b^2-54 a^2 b B-33 a^3 C-16 a b^2 C\right)\sqrt{\frac{a-a \operatorname{Cos}[c+d x]}{a+b}}\right.$$

$$\sqrt{\frac{a+a \operatorname{Cos}[c+d x]}{a-b}} \operatorname{Cos}[2(c+d x)]$$

$$\left(-2 b(a+b) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{\frac{1}{a-b}} \sqrt{b+a \operatorname{Cos}[c+d x]}\right], \frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2 b \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{\frac{1}{a-b}} \sqrt{b+a \operatorname{Cos}[c+d x]}\right], \frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a \operatorname{EllipticPi}\left[1-\frac{a}{b}, i \operatorname{ArcSinh}\left[\sqrt{\frac{1}{a-b}} \sqrt{b+a \operatorname{Cos}[c+d x]}\right], \frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\operatorname{Sin}[c+d x]\right) \Big/ \left(\sqrt{\frac{1}{a-b}}\, b \sqrt{1-\operatorname{Cos}[c+d x]^2} \sqrt{\frac{a^2-a^2 \operatorname{Cos}[c+d x]^2}{a^2}}\right.$$

$$\left.\left.\left.\left.\left(-a^2+2 b^2-4 b(b+a \operatorname{Cos}[c+d x])+2(b+a \operatorname{Cos}[c+d x])^2\right)\right)\right)\right)\right) \Big/$$

$$\left(48 d(b+a \operatorname{Cos}[c+d x])^{5/2}(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right.$$
$$\left.\operatorname{Sec}[c+d x]^{9/2}\right)+$$

$$\left((a+b \operatorname{Sec}[c+d x])^{5/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$

$$\left(\frac{1}{6} \operatorname{Sec}[c+d x]^2\left(6 b^2 B \operatorname{Sin}[c+d x]+13 a b C \operatorname{Sin}[c+d x]\right)+\frac{1}{12} \operatorname{Sec}[c+d x]\right.$$
$$\left(24 A b^2 \operatorname{Sin}[c+d x]+54 a b B \operatorname{Sin}[c+d x]+33 a^2 C \operatorname{Sin}[c+d x]+16 b^2 C \operatorname{Sin}[c+d x]\right)+$$

$$\left.\left.\frac{2}{3} b^2 C \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]\right)\right) \Big/ \left(d\,(b+a \operatorname{Cos}[c+d x])^2\,(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\,\operatorname{Sec}[c+d x]^{9/2}\right)$$

Problem 1047: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+b \operatorname{Sec}[c+d x])^{5/2}\,\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\operatorname{Sec}[c+d x]^{3/2}}\,dx$$

Optimal (type 4, 427 leaves, 14 steps):

$$\left(\left(48 a^2 b B+12 b^3 B+8 a^3 (A+3 C)+a b^2 (16 A+33 C)\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{\operatorname{Sec}[c+d x]}\right) \Big/ \left(12 d \sqrt{a+b \operatorname{Sec}[c+d x]}\right)+$$
$$\left(b \left(8 A b^2+20 a b B+15 a^2 C+4 b^2 C\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticPi}\left[2, \frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{\operatorname{Sec}[c+d x]}\right) \Big/ \left(4 d \sqrt{a+b \operatorname{Sec}[c+d x]}\right)+$$
$$\left(\left(24 a^2 B-12 b^2 B+a b (56 A-27 C)\right) \operatorname{EllipticE}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Big/ \left(12 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \sqrt{\operatorname{Sec}[c+d x]}\right)-\frac{1}{12 d}$$
$$b\,(8 a A-12 b B-21 a C) \sqrt{\operatorname{Sec}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]-$$
$$\frac{b\,(4 A-3 C) \sqrt{\operatorname{Sec}[c+d x]}\,(a+b \operatorname{Sec}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{6 d}+$$
$$\frac{2 A\,(a+b \operatorname{Sec}[c+d x])^{5/2} \operatorname{Sin}[c+d x]}{3 d \sqrt{\operatorname{Sec}[c+d x]}}$$

Result (type 4, 766 leaves):

$$\left((a+b \operatorname{Sec}[c+d x])^{5/2}\,\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left(\left(2 \left(16 a^3 A+144 a A b^2+144 a^2 b B+48 a^3 C+12 a b^2 C\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.\right.$$

$$\text{EllipticF}\left[\frac{1}{2}(c+dx),\frac{2a}{a+b}\right]\Bigg)\Bigg/\left(\sqrt{b+a\,\text{Cos}[c+dx]}\right)+$$

$$\Bigg(2\left(56a^2Ab+48Ab^3+24a^3B+108ab^2B+63a^2bC+24b^3C\right)\sqrt{\frac{b+a\,\text{Cos}[c+dx]}{a+b}}$$

$$\text{EllipticPi}\left[2,\frac{1}{2}(c+dx),\frac{2a}{a+b}\right]\Bigg)\Bigg/\left(\sqrt{b+a\,\text{Cos}[c+dx]}\right)+$$

$$\Bigg(2\,\text{i}\left(56a^2Ab+24a^3B-12ab^2B-27a^2bC\right)\sqrt{\frac{a-a\,\text{Cos}[c+dx]}{a+b}}\sqrt{\frac{a+a\,\text{Cos}[c+dx]}{a-b}}\,\text{Cos}\Big[$$

$$2(c+dx)\Big]\Bigg(-2b(a+b)\,\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+dx]}\right],\frac{-a+b}{a+b}\right]+$$

$$a\Bigg(2b\,\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+dx]}\right],\frac{-a+b}{a+b}\right]+$$

$$a\,\text{EllipticPi}\left[1-\frac{a}{b},\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+dx]}\right],\frac{-a+b}{a+b}\right]\Bigg)\Bigg)$$

$$\text{Sin}[c+dx]\Bigg)\Bigg/\Bigg(\sqrt{\frac{1}{a-b}}\,b\sqrt{1-\text{Cos}[c+dx]^2}\sqrt{\frac{a^2-a^2\,\text{Cos}[c+dx]^2}{a^2}}$$

$$\left(-a^2+2b^2-4b\left(b+a\,\text{Cos}[c+dx]\right)+2\left(b+a\,\text{Cos}[c+dx]\right)^2\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Big(24d\left(b+a\,\text{Cos}[c+dx]\right)^{5/2}\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)$$
$$\text{Sec}[c+dx]^{9/2}\Big)+$$

$$\Bigg(\left(a+b\,\text{Sec}[c+dx]\right)^{5/2}\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$

$$\Bigg(\frac{4}{3}a^2A\,\text{Sin}[c+dx]+\frac{1}{2}\text{Sec}[c+dx]\left(4b^2B\,\text{Sin}[c+dx]+9abC\,\text{Sin}[c+dx]\right)+$$

$$b^2C\,\text{Sec}[c+dx]\,\text{Tan}[c+dx]\Bigg)\Bigg)\Bigg/$$

$$\Big(d\left(b+a\,\text{Cos}[c+dx]\right)^2\left(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx]\right)$$
$$\text{Sec}[c+dx]^{9/2}\Big)$$

Problem 1048: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)}{\mathrm{Sec}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 4, 419 leaves, 14 steps):

$$\left((10\,a^3\,B+20\,a\,b^2\,B-b^3\,(16\,A-15\,C)+4\,a^2\,b\,(4\,A+15\,C))\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/\left(15\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\left(b^2\,(2\,b\,B+5\,a\,C)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/\left(d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\left((70\,a\,b\,B+b^2\,(46\,A-15\,C)+6\,a^2\,(3\,A+5\,C))\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/\left(15\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)-\frac{1}{15\,d}b\,(16\,A\,b+10\,a\,B-15\,b\,C)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]+\frac{2\,(A\,b+a\,B)\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}+\frac{2\,A\,(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}\,\mathrm{Sin}[c+d\,x]}{5\,d\,\mathrm{Sec}[c+d\,x]^{3/2}}$$

Result (type 4, 755 leaves):

$$\left((a+b\,\mathrm{Sec}[c+d\,x])^{5/2}\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\right.$$
$$\left(\left(\left(2\,(68\,a^2\,A\,b+60\,A\,b^3+20\,a^3\,B+180\,a\,b^2\,B+180\,a^2\,b\,C)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right.\right.\right.$$
$$\left.\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$
$$\left(2\,(18\,a^3\,A+46\,a\,A\,b^2+70\,a^2\,b\,B+60\,b^3\,B+30\,a^3\,C+135\,a\,b^2\,C)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right.$$
$$\left.\mathrm{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$

$$\left(2\,i\,\left(18\,a^3\,A+46\,a\,A\,b^2+70\,a^2\,b\,B+30\,a^3\,C-15\,a\,b^2\,C\right)\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\right.$$
$$\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]$$
$$\left(-2\,b\,\left(a+b\right)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\right],\,\frac{-a+b}{a+b}\right]+\right.$$
$$a\,\left(2\,b\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\right],\,\frac{-a+b}{a+b}\right]+\right.$$
$$\left.\left.a\,\text{EllipticPi}\left[1-\frac{a}{b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\right],\,\frac{-a+b}{a+b}\right]\right)\right)$$
$$\left.\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\right.$$
$$\left.\left.\left.\left(-a^2+2\,b^2-4\,b\,\left(b+a\,\text{Cos}[c+d\,x]\right)+2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)\right)\right)\right)\Big/$$
$$\left(30\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^{9/2}\right)+$$
$$\left(\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(\frac{4}{15}\,a\,\left(11\,A\,b+5\,a\,B\right)\,\text{Sin}[c+d\,x]+\frac{2}{5}\,a^2\,A\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]+2\,b^2\,C\,\text{Tan}[c+d\,x]\right)\right)\Big/$$
$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^{9/2}\right)$$

Problem 1049: Unable to integrate problem.

$$\int\frac{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{7/2}}\,dx$$

Optimal (type 4, 441 leaves, 14 steps):

$$-\left(\left(2\left(15\,A\,b^4-56\,a^3\,b\,B+56\,a\,b^3\,B+10\,a^2\,b^2\,(A-7\,C)-5\,a^4\,(5\,A+7\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right.\right.$$
$$\left.\left.\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(105\,a\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\right)+$$
$$\frac{2\,b^3\,C\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}}{d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$
$$\left(2\left(15\,A\,b^3+63\,a^3\,B+161\,a\,b^2\,B+5\,a^2\,b\,(29\,A+49\,C)\right)\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right.$$
$$\left.\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(105\,a\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}\right)+$$
$$\frac{2\left(15\,A\,b^2+56\,a\,b\,B+5\,a^2\,(5\,A+7\,C)\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{105\,d\,\sqrt{\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,(5\,A\,b+7\,a\,B)\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{35\,d\,\text{Sec}[c+d\,x]^{3/2}}+$$
$$\frac{2\,A\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{7\,d\,\text{Sec}[c+d\,x]^{5/2}}$$

Result (type 8, 47 leaves):

$$\int\frac{(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{7/2}}\,dx$$

Problem 1050: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{9/2}}\,dx$$

Optimal (type 4, 452 leaves, 11 steps):

$$-\left(\left(2\left(a^2-b^2\right)\left(10 A b^3-75 a^3 B-45 a b^2 B-6 a^2 b\left(19 A+28 C\right)\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.\right.$$

$$\left.\left.\operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{\operatorname{Sec}[c+d x]}\right)\Big/\left(315 a^2 d\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\right)-$$

$$\left(2\left(10 A b^4-435 a^3 b B-45 a b^3 B-21 a^4(7 A+9 C)-3 a^2 b^2(93 A+161 C)\right)\right.$$

$$\left.\operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/$$

$$\left(315 a^2 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\sqrt{\operatorname{Sec}[c+d x]}\right)+$$

$$\frac{2\left(15 A b^2+90 a b B+7 a^2(7 A+9 C)\right)\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{315 d \operatorname{Sec}[c+d x]^{3/2}}+$$

$$\left(2\left(5 A b^3+75 a^3 B+135 a b^2 B+a^2 b(163 A+231 C)\right)\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]\right)\Big/$$

$$\left(315 a d\sqrt{\operatorname{Sec}[c+d x]}\right)+$$

$$\frac{2(5 A b+9 a B)(a+b \operatorname{Sec}[c+d x])^{3/2}\operatorname{Sin}[c+d x]}{63 d \operatorname{Sec}[c+d x]^{5/2}}+\frac{2 A(a+b \operatorname{Sec}[c+d x])^{5/2}\operatorname{Sin}[c+d x]}{9 d \operatorname{Sec}[c+d x]^{7/2}}$$

Result (type 6, 6410 leaves):

$$\left((a+b \operatorname{Sec}[c+d x])^{5/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$

$$\left(-\frac{1}{315 a^2 d}4\left(147 a^4 A+279 a^2 A b^2-10 A b^4+435 a^3 b B+45 a b^3 B+189 a^4 C+483 a^2 b^2 C\right)\operatorname{Cot}[c]+\right.$$

$$\frac{1}{315 a d}\left(747 a^2 A b+20 A b^3+345 a^3 B+540 a b^2 B+924 a^2 b C\right)\operatorname{Cos}[d x]\operatorname{Sin}[c]+$$

$$\frac{\left(133 a^2 A+150 A b^2+270 a b B+126 a^2 C\right)\operatorname{Cos}[2 d x]\operatorname{Sin}[2 c]}{315 d}+$$

$$\frac{a(19 A b+9 a B)\operatorname{Cos}[3 d x]\operatorname{Sin}[3 c]}{63 d}+\frac{a^2 A \operatorname{Cos}[4 d x]\operatorname{Sin}[4 c]}{18 d}+\frac{1}{315 a d}$$

$$\left(747 a^2 A b+20 A b^3+345 a^3 B+540 a b^2 B+924 a^2 b C\right)\operatorname{Cos}[c]\operatorname{Sin}[d x]+$$

$$\frac{\left(133 a^2 A+150 A b^2+270 a b B+126 a^2 C\right)\operatorname{Cos}[2 c]\operatorname{Sin}[2 d x]}{315 d}+$$

$$\left.\left.\frac{a(19 A b+9 a B)\operatorname{Cos}[3 c]\operatorname{Sin}[3 d x]}{63 d}+\frac{a^2 A \operatorname{Cos}[4 c]\operatorname{Sin}[4 d x]}{18 d}\right)\right)\Big/$$

$$\left((b+a \operatorname{Cos}[c+d x])^2(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\operatorname{Sec}[c+d x]^{9/2}\right)-$$

$$\left(116 a A b \operatorname{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\Big]\ \mathrm{Csc}[c]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(35\,d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(124\,A\,b^3\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.$$

$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\Big]\ \mathrm{Csc}[c]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(63\,a\,d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(20\,a^2\,B\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\,\left(b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(1+\frac{b\,\mathrm{Csc}[c]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\mathrm{Csc}[c]\,\left(b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\right]\mathrm{Csc}[c]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\,\sqrt{1+\mathrm{Cot}[c]^2}-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\,\sqrt{1+\mathrm{Cot}[c]^2}+a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(21\,d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(36\,b^2\,B\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\,\left(b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(1+\frac{b\,\mathrm{Csc}[c]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\mathrm{Csc}[c]\,\left(b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\right]\mathrm{Csc}[c]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\,\sqrt{1+\mathrm{Cot}[c]^2}-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(7\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^{5/2}\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right.$$

$$\left.\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(68\,a\,b\,C\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\right]\mathrm{Csc}[c]$$

$$(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(15\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^{5/2}\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right.$$

$$\left.\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(4\,b^3\,C\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\Big]\,\mathrm{Csc}[c]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\Big(a\,d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sec}[c+d\,x]^{9/2}\Big)-$$

$$\Big(14\,a^3\,A\,\mathrm{Csc}[c]\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Bigg(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\right.$$

$$\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\left(\left(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\right/$$

$$\left.\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right)\Big]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\mathrm{Tan}[c]^2}\,\sqrt{\left(\left(a\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right/}$$

$$\left.\left(b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\sqrt{\Big(\Big(a\sqrt{1+\mathrm{Tan}[c]^2}+}$$

$$\left.a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/\left(-b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b + a\,\text{Cos}[c]\;\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1 + \text{Tan}[c]^2}}\;\right) -$$

$$\left(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \left(2\,a\,\text{Cos}[c]\;\left(b + a\,\text{Cos}[c]\;\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x + \text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1 + \text{Tan}[c]^2}\right)\right)\Big/\;\left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b + a\,\text{Cos}[c]\;\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(15\,d\;\left(b + a\,\text{Cos}[c + d\,x]\right)^{5/2}\;\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\;\text{Sec}[c + d\,x]^{9/2}\right) -$$

$$\left(62\,a\,A\,b^2\,\text{Csc}[c]\;\left(a + b\,\text{Sec}[c + d\,x]\right)^{5/2}\;\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\left(\left(\text{Sec}[c]\;\left(b + a\,\text{Cos}[c]\;\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1 + \text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1 + \text{Tan}[c]^2}\;\left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\;\left(b + a\,\text{Cos}[c]\;\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1 + \text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left.\left(a\,\sqrt{1 + \text{Tan}[c]^2}\;\left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right)\right]\;\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1 + \text{Tan}[c]^2}\;\sqrt{\left(\left(a\,\sqrt{1 + \text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1 + \text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\right)\;\sqrt{\left(\left(a\,\sqrt{1 + \text{Tan}[c]^2} + \right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1 + \text{Tan}[c]^2}\right)\Big/\;\left(-b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b + a\,\text{Cos}[c]\;\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1 + \text{Tan}[c]^2}}\;\right) -$$

$$\left(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \left(2\,a\,\text{Cos}[c]\;\left(b + a\,\text{Cos}[c]\;\text{Cos}[\right.\right.\right.$$

$$\text{d x} + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg) \Big/$$

$$\left(35\,d\,\left(b + a\,\text{Cos}[c+d\,x]\right)^{5/2}\left(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{9/2}\right) +$$

$$\Bigg(4\,A\,b^4\,\text{Csc}[c]\,\left(a + b\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\Bigg(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/ \left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/$$

$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\ \text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg) \Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\Big) \Big/}$$

$$\overline{\left(b\,\text{Sec}[c] + a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}\ \sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2} +}$$

$$\overline{a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\Big) \Big/ \left(-b\,\text{Sec}[c] + a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\Bigg) -$$

$$\Bigg(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \Big(2\,a\,\text{Cos}[c]\,\Big(b + a\,\text{Cos}[c]\ \text{Cos}[$$

$$\text{d x} + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg) \Big/$$

$$\Big(63\,a\,d\,\left(b + a\,\text{Cos}[c+d\,x]\right)^{5/2}\left(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)$$

$$\text{Sec}[c+d\,x]^{9/2}\Big) -$$

$$\Bigg(58\,a^2\,b\,B\,\mathrm{Csc}[c]\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\Bigg(\Big(\mathrm{Sec}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/\left(a\,\sqrt{1+\mathrm{Tan}[c]^2}\,\left(1-\frac{b\,\mathrm{Sec}[c]}{a\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\mathrm{Sec}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\,\sqrt{1+\mathrm{Tan}[c]^2}\,\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\mathrm{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\Big(b\,\mathrm{Sec}[c]+a\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\mathrm{Tan}[c]^2}+}$$

$$\overline{a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/\Big(-b\,\mathrm{Sec}[c]+a\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)}$$

$$\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\Big(2\,a\,\mathrm{Cos}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[$$

$$d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\Bigg)\Bigg)\Big/$$

$$\Big(21\,d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\mathrm{Sec}[c+d\,x]^{9/2}\Big)-$$

$$\Bigg(2\,b^3\,B\,\mathrm{Csc}[c]\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\Bigg(\Big(\mathrm{Sec}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Big),$$

$$-\Bigg(\Big(\mathrm{Sec}[c]\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg)\Bigg]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\mathrm{Tan}[c]^2}\sqrt{\Big(\Big(a\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/}$$

$$\Big(b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\sqrt{\Big(\Big(a\sqrt{1+\mathrm{Tan}[c]^2}+}$$

$$a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/\Big(-b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)$$

$$\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\Big(2\,a\,\mathrm{Cos}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[$$

$$d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/\Big(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\Big)\Bigg)\Big/$$

$$\Big(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\Big)\Big)\Big)\Big)\Big/$$

$$\Big(7\,d\,\big(b+a\,\mathrm{Cos}[c+d\,x]\big)^{5/2}\big(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\big)$$
$$\mathrm{Sec}[c+d\,x]^{9/2}\Big)-$$

$$\Big(6\,a^3\,C\,\mathrm{Csc}[c]\,\big(a+b\,\mathrm{Sec}[c+d\,x]\big)^{5/2}\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Big(\Big(\mathrm{Sec}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Big),$$

$$-\Big(\Big(\mathrm{Sec}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Big)\Big)\Big]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Big)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\ \sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Big)\Big)\Big)\Big/$$

$$\left(5\,d\,(b+a\,\text{Cos}[c+d\,x])^{5/2}\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\ \text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(46\,a\,b^2\,C\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),\right.\right.\right.$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Big)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)\sqrt{\Bigg(\Bigg(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Big/$$

$$\left(15\,d\,(b+a\,\text{Cos}[c+d\,x])^{5/2}\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{9/2}\right)$$

Problem 1051: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Sec}[c+d\,x]^{11/2}}\,dx$$

Optimal (type 4, 565 leaves, 12 steps):

$$\left(2\left(a^2-b^2\right)\left(40\,A\,b^4+1254\,a^3\,b\,B-110\,a\,b^3\,B+75\,a^4\,(9\,A+11\,C)+15\,a^2\,b^2\,(19\,A+33\,C)\right)\right.$$
$$\left.\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/$$
$$\left(3465\,a^3\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+$$
$$\left(2\left(40\,A\,b^5+1617\,a^5\,B+3069\,a^3\,b^2\,B-110\,a\,b^4\,B+15\,a^2\,b^3\,(17\,A+33\,C)+15\,a^4\,b\,(247\,A+319\,C)\right)\right.$$
$$\left.\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/$$
$$\left(3465\,a^3\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\sqrt{\mathrm{Sec}[c+d\,x]}\right)+$$
$$\frac{2\left(5\,A\,b^2+44\,a\,b\,B+3\,a^2\,(9\,A+11\,C)\right)\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{231\,d\,\mathrm{Sec}[c+d\,x]^{5/2}}+$$
$$\left(2\left(15\,A\,b^3+539\,a^3\,B+825\,a\,b^2\,B+5\,a^2\,b\,(229\,A+297\,C)\right)\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]\right)\Big/$$
$$\left(3465\,a\,d\,\mathrm{Sec}[c+d\,x]^{3/2}\right)-$$
$$\left(2\left(20\,A\,b^4-1793\,a^3\,b\,B-55\,a\,b^3\,B-75\,a^4\,(9\,A+11\,C)-5\,a^2\,b^2\,(205\,A+297\,C)\right)\right.$$
$$\left.\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]\right)\Big/\left(3465\,a^2\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)+$$
$$\frac{2\,(5\,A\,b+11\,a\,B)\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{99\,d\,\mathrm{Sec}[c+d\,x]^{7/2}}+\frac{2\,A\,(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}\,\mathrm{Sin}[c+d\,x]}{11\,d\,\mathrm{Sec}[c+d\,x]^{9/2}}$$

Result (type 6, 7479 leaves):

$$\left((a+b\,\mathrm{Sec}[c+d\,x])^{5/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{1}{3465\,a^3\,d}4\,(3705\,a^4\,A\,b+255\,a^2\,A\,b^3+40\,A\,b^5+1617\,a^5\,B+\right.$$
$$3069\,a^3\,b^2\,B-110\,a\,b^4\,B+4785\,a^4\,b\,C+495\,a^2\,b^3\,C)\,\mathrm{Cot}[c]+\frac{1}{6930\,a^2\,d}$$
$$\left(6525\,a^4\,A+9330\,a^2\,A\,b^2-160\,A\,b^4+16\,434\,a^3\,b\,B+440\,a\,b^3\,B+7590\,a^4\,C+11\,880\,a^2\,b^2\,C\right)$$
$$\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]+\frac{1}{3465\,a\,d}\left(3095\,a^2\,A\,b+30\,A\,b^3+1463\,a^3\,B+1650\,a\,b^2\,B+2970\,a^2\,b\,C\right)$$
$$\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]+\frac{\left(513\,a^2\,A+452\,A\,b^2+836\,a\,b\,B+396\,a^2\,C\right)\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]}{2772\,d}+$$
$$\frac{a\,(23\,A\,b+11\,a\,B)\,\mathrm{Cos}[4\,d\,x]\,\mathrm{Sin}[4\,c]}{198\,d}+\frac{a^2\,A\,\mathrm{Cos}[5\,d\,x]\,\mathrm{Sin}[5\,c]}{44\,d}+\frac{1}{6930\,a^2\,d}$$
$$\left(6525\,a^4\,A+9330\,a^2\,A\,b^2-160\,A\,b^4+16\,434\,a^3\,b\,B+440\,a\,b^3\,B+7590\,a^4\,C+11\,880\,a^2\,b^2\,C\right)$$
$$\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]+\frac{1}{3465\,a\,d}\left(3095\,a^2\,A\,b+30\,A\,b^3+1463\,a^3\,B+1650\,a\,b^2\,B+2970\,a^2\,b\,C\right)$$
$$\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]+\frac{\left(513\,a^2\,A+452\,A\,b^2+836\,a\,b\,B+396\,a^2\,C\right)\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{2772\,d}+$$

$$\left.\left.\frac{a\,(23\,A\,b+11\,a\,B)\,\text{Cos}[4\,c]\,\text{Sin}[4\,d\,x]}{198\,d}+\frac{a^2\,A\,\text{Cos}[5\,c]\,\text{Sin}[5\,d\,x]}{44\,d}\right)\right)\Big/$$

$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(60\,a^2\,A\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\,\text{Csc}[c]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}+a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(77\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(884\,A\,b^2\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\,\text{Csc}[c]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(231\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(8\,A\,b^4\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\text{Csc}[c]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(693\,a^2\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(116\,a\,b\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]\ \text{Csc}[c]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\ \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(35\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\ \text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(124\,b^3\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]\ \text{Csc}[c]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\ \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(63\,a\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{9/2}\right)-$$
$$\left(20\,a^2\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\,\text{Csc}[c]$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$
$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}+a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$
$$\left.\sqrt{b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(21\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{9/2}\right)-$$
$$\left(36\,b^2\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\,\text{Csc}[c]$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(7\,d\,(b+a\,\text{Cos}[c+d\,x])^{5/2}\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(494\,a^2\,A\,b\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(231\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\Bigg(34\,A\,b^3\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Bigg[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Bigg(\text{Sec}[c]\,\Bigg(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)\Bigg)\Bigg/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Bigg(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)\Bigg/$$

$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Bigg]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Bigg(2\,a\,\text{Cos}[c]\,\Bigg(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Bigg)\Bigg)\Bigg/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(231\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\Bigg(16\,A\,b^5\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right)\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right)\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/$$

$$\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(693\,a^2\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(14\,a^3\,B\,\text{Csc}[c]\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right)\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$- \left(\left(\text{Sec}[c] \left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2} \right) \right) \Big/ \left(a\sqrt{1+\text{Tan}[c]^2} \left(-1 - \frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}} \right) \right) \right) \Big] \text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c] \Bigg) \Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\, \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2} \right) \Big/ \left(b\,\text{Sec}[c] + a\sqrt{1+\text{Tan}[c]^2} \right) \right)}\, \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2} + a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2} \right) \Big/ \left(-b\,\text{Sec}[c] + a\sqrt{1+\text{Tan}[c]^2} \right) \right)}\, \sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}} \right) -$$

$$\left(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \left(2\,a\,\text{Cos}[c] \left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2} \right) \right) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2 \right) \right) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}} \right) \Bigg) \Bigg) \Bigg) \Big/$$

$$\left(15\,d\,\left(b + a\,\text{Cos}[c + d\,x] \right)^{5/2} \left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x] \right) \text{Sec}[c + d\,x]^{9/2} \right) -$$

$$\Bigg(62\,a\,b^2\,B\,\text{Csc}[c]\,\left(a + b\,\text{Sec}[c + d\,x] \right)^{5/2} \left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2 \right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\left(\left(\text{Sec}[c] \left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2} \right) \right) \Big/ \left(a\sqrt{1+\text{Tan}[c]^2} \left(1 - \frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}} \right) \right) \right),$$

$$- \left(\left(\text{Sec}[c] \left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2} \right) \right) \Big/ \left(a\sqrt{1+\text{Tan}[c]^2} \left(-1 - \frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}} \right) \right) \right) \Big] \text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c] \Bigg) \Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(35\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^{9/2}\right)+$$

$$\left(4\,b^4\,B\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big/$$

$$\left(63\,a\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^{9/2}\right)-$$

$$\left(58\,a^2\,b\,C\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.\right.}\right.$$

$$\left.\left.\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.\left.d x+\text{ArcTan}[\text{Tan}[c]]\right]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(21\,d\left(b+a\,\text{Cos}[c+d x]\right)^{5/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d x]+A\,\text{Cos}[2\,c+2\,d x]\right)\right.$$
$$\left.\text{Sec}[c+d x]^{9/2}\right)-$$

$$\left(2\,b^3\,C\,\text{Csc}[c]\left(a+b\,\text{Sec}[c+d x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.\right.}\right.$$

$$\left.\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.\left.d x+\text{ArcTan}[\text{Tan}[c]]\right]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(7\,d\left(b+a\,\text{Cos}[c+d x]\right)^{5/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d x]+A\,\text{Cos}[2\,c+2\,d x]\right)\right)$$

$\text{Sec}[c+d\,x]^{9/2}\Big)$

Problem 1052: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 350 leaves, 13 steps):

$$\frac{(4\,b\,B-a\,C)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}}{4\,b\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\left(\left(8\,A\,b^2-4\,a\,b\,B+3\,a^2\,C+4\,b^2\,C\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(4\,b^2\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$

$$\frac{(4\,b\,B-3\,a\,C)\;\text{EllipticE}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}}{4\,b^2\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{(4\,b\,B-3\,a\,C)\sqrt{\text{Sec}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{4\,b^2\,d}+$$

$$\frac{C\,\text{Sec}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{2\,b\,d}$$

Result (type 4, 690 leaves):

$$\Bigg(\sqrt{b+a\,\text{Cos}[c+d\,x]}\;\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\frac{8\,a\,b\,C\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\Bigg(2\left(16\,A\,b^2-12\,a\,b\,B+9\,a^2\,C+8\,b^2\,C\right)\right.$$

$$\left.\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\Bigg)\Big/\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+\right.$$

$$\left(2\,i\,\left(-4\,a\,b\,B+3\,a^2\,C\right)\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right.$$

$$\left(-2\,b\,\left(a+b\right)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2\,b\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\text{EllipticPi}\left[1-\frac{a}{b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\right],\,\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left.\left(-a^2+2\,b^2-4\,b\,\left(b+a\,\text{Cos}[c+d\,x]\right)+2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)\right)\right)\Big/$$

$$\left(8\,b^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\right.$$
$$\left.\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\right)+$$

$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left.\left(\frac{\text{Sec}[c+d\,x]\,\left(4\,b\,B\,\text{Sin}[c+d\,x]-3\,a\,C\,\text{Sin}[c+d\,x]\right)}{2\,b^2}+\frac{C\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{b}\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\right.$$
$$\left.\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\right)$$

Problem 1053: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 260 leaves, 12 steps):

$$\frac{(2\,A+C)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}}{d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\left((2\,b\,B-a\,C)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-\frac{C\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}{b\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{C\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{b\,d}$$

Result (type 4, 623 leaves) :

$$\left(2\,C\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c+d\,x]\right)\Big/\left(b\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$

$$\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\frac{8\,A\,b\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\right.$$

$$\frac{2\,\left(4\,b\,B-3\,a\,C\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\,\frac{1}{2}\,\left(c+d\,x\right),\,\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\text{Cos}[c+d\,x]}}-$$

$$\left(2\,i\,a\,C\,\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right.$$

$$\left(-2\,b\,\left(a+b\right)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$a\,\left(2\,b\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\text{EllipticPi}\left[1-\frac{a}{b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left.\left(-a^2+2\,b^2-4\,b\,\left(b+a\,\text{Cos}[c+d\,x]\right)+2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)\right)\right)\right)\Big/$$

$$\left(2\,b\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)$$

Problem 1054: Unable to integrate problem.

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\sqrt{\operatorname{Sec}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}} \, dx$$

Optimal (type 4, 219 leaves, 11 steps):

$$-\left(\left(2 (A b - a B) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{\operatorname{Sec}[c + d x]}\right) \Big/ \left(a d \sqrt{a + b \operatorname{Sec}[c + d x]}\right)\right) + \frac{2 C \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticPi}\left[2, \frac{1}{2} (c + d x), \frac{2 a}{a+b}\right] \sqrt{\operatorname{Sec}[c + d x]}}{d \sqrt{a + b \operatorname{Sec}[c + d x]}} + \frac{2 A \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), \frac{2 a}{a+b}\right] \sqrt{a + b \operatorname{Sec}[c + d x]}}{a d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \sqrt{\operatorname{Sec}[c + d x]}}$$

Result (type 8, 47 leaves):

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\sqrt{\operatorname{Sec}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}} \, dx$$

Problem 1055: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\operatorname{Sec}[c + d x]^{3/2} \sqrt{a + b \operatorname{Sec}[c + d x]}} \, dx$$

Optimal (type 4, 216 leaves, 8 steps):

$$\left(2 \left(2 A b^2 - 3 a b B + a^2 (A + 3 C)\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{\operatorname{Sec}[c + d x]}\right) \Big/ \left(3 a^2 d \sqrt{a + b \operatorname{Sec}[c + d x]}\right) - \frac{2 (2 A b - 3 a B) \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), \frac{2 a}{a+b}\right] \sqrt{a + b \operatorname{Sec}[c + d x]}}{3 a^2 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \sqrt{\operatorname{Sec}[c + d x]}} + \frac{2 A \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{3 a d \sqrt{\operatorname{Sec}[c + d x]}}$$

Result (type 6, 1959 leaves):

$$\left(\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left.\left(-\frac{4\,\left(-2\,A\,b+3\,a\,B\right)\,\mathrm{Cot}[c]}{3\,a^2\,d}+\frac{4\,A\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{3\,a\,d}+\frac{4\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{3\,a\,d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)-$$
$$\left(4\,A\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\,\left(b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(1+\frac{b\,\mathrm{Csc}[c]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\mathrm{Csc}[c]\,\left(b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\right]\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}$$
$$\mathrm{Csc}[c]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$
$$\sqrt{\frac{a\,\sqrt{1+\mathrm{Cot}[c]^2}-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$
$$\sqrt{\frac{a\,\sqrt{1+\mathrm{Cot}[c]^2}+a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$
$$\left.\sqrt{b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,a\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\right.$$
$$\left.\mathrm{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)-$$
$$\left(4\,C\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\,\left(b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(1+\frac{b\,\mathrm{Csc}[c]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\mathrm{Csc}[c]\,\left(b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\right]\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}$$
$$\mathrm{Csc}[c]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\Big(a\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}$$

$$\left.\text{Sec}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$

$$\Big(4\,A\,b\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\ \text{Csc}[c]\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\text{Sec}[c]\ \Big(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\ \left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\left(\left(\text{Sec}[c]\ \left(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left(a\sqrt{1+\text{Tan}[c]^2}\ \left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}$$

$$\overline{\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\overline{\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\ \Big(b+a\,\text{Cos}[c]\ \text{Cos}[$$

$$d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg/$$

$$\left(3\,a\,d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right) -$$

$$\Bigg(2\,B\,\sqrt{b + a\,\text{Cos}[c+d\,x]}\,\text{Csc}[c]\,\left(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\Bigg(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\left(b\,\text{Sec}[c] + a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2} +}$$

$$\overline{a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c] + a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg) -$$

$$\Bigg(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \Big(2\,a\,\text{Cos}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg/$$

$$\left(d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\right.$$

$$\left.\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)$$

Problem 1056: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Sec}[c+d\,x]^{5/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 291 leaves, 9 steps):

$$-\left(\left(2\left(8\,A\,b^3-5\,a^3\,B-10\,a\,b^2\,B+a^2\,b\,(7\,A+15\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(15\,a^3\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\right)+\left(2\left(8\,A\,b^2-10\,a\,b\,B+3\,a^2\,(3\,A+5\,C)\right)\text{EllipticE}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(15\,a^3\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}\right)+\frac{2\,A\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{5\,a\,d\,\text{Sec}[c+d\,x]^{3/2}}-\frac{2\,(4\,A\,b-5\,a\,B)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,a^2\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 6, 3039 leaves):

$$\left((b+a\,\text{Cos}[c+d\,x])\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(-\frac{4\left(9\,a^2\,A+8\,A\,b^2-10\,a\,b\,B+15\,a^2\,C\right)\text{Cot}[c]}{15\,a^3\,d}+\frac{4\,(-4\,A\,b+5\,a\,B)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{15\,a^2\,d}+\frac{2\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,a\,d}+\frac{4\,(-4\,A\,b+5\,a\,B)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{15\,a^2\,d}+\frac{2\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,a\,d}\right)\right)\Big/\left((A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$

$$\left(8\,A\,b\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\sqrt{b+a\,\text{Cos}[c+d\,x]}\right.$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(15\,a^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right.$$

$$\left.\text{Sec}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$

$$\left(4\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\sqrt{b+a\,\text{Cos}[c+d\,x]}$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right.$$

$$\left.\text{Sec}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$

$$\left(6\,A\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\text{Csc}[c]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Big(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\Big(a\sqrt{1+\text{Tan}[c]^2}\,\Big(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\Big)\Big)\Big),$$

$$-\Big(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/$$

$$\Big(a\sqrt{1+\text{Tan}[c]^2}\,\Big(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\Big)\Big)\Big)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\Big(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\Big)\Big)}\,\sqrt{\Big(\Big(a\sqrt{1+\text{Tan}[c]^2}+}$$

$$\overline{a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\Big(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\Big)\Big)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\Big(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\Big)\Bigg)\Bigg/$$

$$\Bigg(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Big(5\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\Big)-$$

$$\Bigg(16\,A\,b^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\text{Csc}[c]\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Big(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\Big(a\sqrt{1+\text{Tan}[c]^2}\,\Big(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\Big)\Big)\Big),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(15\,a^2\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\text{Sec}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$

$$\left(4\,b\,B\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),\right.\right.\right.$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\mathrm{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right/}\right.$$

$$\left.\left(b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\mathrm{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big/\left(-b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\right)-$$

$$\left(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\left(2\,a\,\mathrm{Cos}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right)\Big/$$

$$\left(3\,a\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\mathrm{Sec}[c+d\,x]^{3/2}\right.$$

$$\left.\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)-$$

$$\left(2\,C\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\ \mathrm{Csc}[c]\ \left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\mathrm{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left.\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\right)\right]\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1+\mathrm{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right/}\right.$$

$$\left.\left(b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\mathrm{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big/\left(-b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b + a \operatorname{Cos}[c] \operatorname{Cos}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}}\right) -$$

$$\left(\frac{\operatorname{Sin}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]}{\sqrt{1 + \operatorname{Tan}[c]^2}} + \left(2 a \operatorname{Cos}[c] \left(b + a \operatorname{Cos}[c] \operatorname{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}\right)\right) \Big/ \left(a^2 \operatorname{Cos}[c]^2 + a^2 \operatorname{Sin}[c]^2\right)\right) \Big/$$

$$\left.\left.\left(\sqrt{b + a \operatorname{Cos}[c] \operatorname{Cos}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}}\right)\right)\right) \Big/$$

$$\left(d \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right) \operatorname{Sec}[c + d x]^{3/2} \sqrt{a + b \operatorname{Sec}[c + d x]}\right)$$

Problem 1057: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\operatorname{Sec}[c + d x]^{7/2} \sqrt{a + b \operatorname{Sec}[c + d x]}} \, dx$$

Optimal (type 4, 380 leaves, 10 steps):

$$\left(2 \left(48 A b^4 - 49 a^3 b B - 56 a b^3 B + 5 a^4 (5 A + 7 C) + 2 a^2 b^2 (16 A + 35 C)\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}}\right.$$

$$\left.\operatorname{EllipticF}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{\operatorname{Sec}[c + d x]}\right) \Big/ \left(105 a^4 d \sqrt{a + b \operatorname{Sec}[c + d x]}\right) -$$

$$\left(2 \left(48 A b^3 - 63 a^3 B - 56 a b^2 B + a^2 (44 A b + 70 b C)\right) \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right]\right.$$

$$\left.\sqrt{a + b \operatorname{Sec}[c + d x]}\right) \Big/ \left(105 a^4 d \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \sqrt{\operatorname{Sec}[c + d x]}\right) +$$

$$\frac{2 A \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{7 a d \operatorname{Sec}[c + d x]^{5/2}} - \frac{2 (6 A b - 7 a B) \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{35 a^2 d \operatorname{Sec}[c + d x]^{3/2}} +$$

$$\frac{2 \left(24 A b^2 - 28 a b B + 5 a^2 (5 A + 7 C)\right) \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{105 a^3 d \sqrt{\operatorname{Sec}[c + d x]}}$$

Result (type 6, 4470 leaves):

$$\left((b + a \operatorname{Cos}[c + d x]) \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)\right.$$

$$\left(-\frac{4\left(-44 a^2 A b-48 A b^3+63 a^3 B+56 a b^2 B-70 a^2 b C\right) \text{Cot}[c]}{105 a^4 d}+\frac{\left(115 a^2 A+96 A b^2-112 a b B+140 a^2 C\right) \text{Cos}[d x] \text{Sin}[c]}{105 a^3 d}+\frac{2(-6 A b+7 a B) \text{Cos}[2 d x] \text{Sin}[2 c]}{35 a^2 d}+\frac{A \text{Cos}[3 d x] \text{Sin}[3 c]}{7 a d}+\frac{\left(115 a^2 A+96 A b^2-112 a b B+140 a^2 C\right) \text{Cos}[c] \text{Sin}[d x]}{105 a^3 d}+\frac{2(-6 A b+7 a B) \text{Cos}[2 c] \text{Sin}[2 d x]}{35 a^2 d}+\frac{A \text{Cos}[3 c] \text{Sin}[3 d x]}{7 a d}\right)\right) \Big/$$

$$\left(\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \text{Sec}[c+d x]^{3/2} \sqrt{a+b \text{Sec}[c+d x]}\right)-$$

$$\left(20 A \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{\text{Csc}[c]\left(b-a \sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a \sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b \text{Csc}[c]}{a \sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a \sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a \sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b \text{Csc}[c]}{a \sqrt{1+\text{Cot}[c]^2}}\right)}\right] \sqrt{b+a \text{Cos}[c+d x]}$$

$$\text{Csc}[c]\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a \sqrt{1+\text{Cot}[c]^2}-a \sqrt{1+\text{Cot}[c]^2} \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}{a \sqrt{1+\text{Cot}[c]^2}-b \text{Csc}[c]}}$$

$$\sqrt{\frac{a \sqrt{1+\text{Cot}[c]^2}+a \sqrt{1+\text{Cot}[c]^2} \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}{a \sqrt{1+\text{Cot}[c]^2}+b \text{Csc}[c]}}$$

$$\left.\sqrt{b-a \sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(21 a d\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \sqrt{1+\text{Cot}[c]^2}\right.$$

$$\left.\text{Sec}[c+d x]^{3/2} \sqrt{a+b \text{Sec}[c+d x]}\right)+$$

$$\left(16 A b^2 \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{\text{Csc}[c]\left(b-a \sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a \sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b \text{Csc}[c]}{a \sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]\sqrt{b+a\,\text{Cos}[c+d\,x]}$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\Big(35\,a^3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}$$

$$\text{Sec}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}\Big)-$$

$$\left(8\,b\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]\sqrt{b+a\,\text{Cos}[c+d\,x]}$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(15\,a^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$

$$\left(4\,C\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2},\,\frac{1}{2},\,\frac{3}{2},\,\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\,\sqrt{b+a\,\text{Cos}[c+d\,x]}$$

$$\text{Csc}[c]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}+a\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\;\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$

$$\left(88\,A\,b\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\;\text{Csc}[c]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\right)\Big/$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\ \Big(b+a\,\text{Cos}[c]\ \text{Cos}[\right.$$

$$\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\right)\Big)\Big)\Big/$$

$$\left(105\,a\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\ \text{Sec}[c+d\,x]^{3/2}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$

$$\Big(32\,A\,b^3\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\ \text{Csc}[c]\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Big(\Big(\text{Sec}[c]\ \Big(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\left.\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\ \left(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\Big(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\Big(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\Big)\Bigg)\Big/$$

$$\Bigg(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)\Bigg)\Bigg)\Big/$$

$$\Big(35\,a^3\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\Big)-$$

$$\Bigg(6\,B\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\text{Csc}[c]\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\Bigg(a\,\sqrt{1+\text{Tan}[c]^2}\,\Bigg(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)\Bigg)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/$$

$$\Bigg(a\,\sqrt{1+\text{Tan}[c]^2}\,\Bigg(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)\Bigg)\Bigg)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\Big(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}+}$$

$$a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\Big(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\,\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Big/$$

$$\Big(5\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\Big)-$$

$$\Bigg(16\,b^2\,B\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\text{Csc}[c]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\,\Big)\Big)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\,\Big)\Big)\Big/$$

$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\,\Big)\Big/}$$

$$\overline{\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}+}$$

$$\overline{a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\,\Big)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\,\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Big/$$

$$\Big(15\,a^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}$$

$$\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\Big)+$$

$$\Big(4\,b\,C\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\;\mathrm{Csc}[c]\;\big(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Big(\Big(\mathrm{Sec}[c]\;\big(b+a\,\mathrm{Cos}[c]\;\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\big)\Big)\Big/\Big(a\,\sqrt{1+\mathrm{Tan}[c]^2}\;\Big(1-\frac{b\,\mathrm{Sec}[c]}{a\,\sqrt{1+\mathrm{Tan}[c]^2}}\Big)\Big)\Big),$$

$$-\Big(\Big(\mathrm{Sec}[c]\;\big(b+a\,\mathrm{Cos}[c]\;\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\;\sqrt{1+\mathrm{Tan}[c]^2}\big)\Big)\Big/$$

$$\Big(a\,\sqrt{1+\mathrm{Tan}[c]^2}\;\Big(-1-\frac{b\,\mathrm{Sec}[c]}{a\,\sqrt{1+\mathrm{Tan}[c]^2}}\Big)\Big)\Big)\Big]\;\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\;\mathrm{Tan}[c]\Bigg)\Big/$$

$$\Big(\sqrt{1+\mathrm{Tan}[c]^2}\;\sqrt{\Big(\Big(a\,\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\;\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\Big(b\,\mathrm{Sec}[c]+a\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)}\;\sqrt{\Big(\Big(a\,\sqrt{1+\mathrm{Tan}[c]^2}+}$$

$$\overline{a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\;\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/\Big(-b\,\mathrm{Sec}[c]+a\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)}$$

$$\sqrt{b+a\,\mathrm{Cos}[c]\;\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\;\sqrt{1+\mathrm{Tan}[c]^2}}\Big)-$$

$$\Bigg(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\;\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\Big(2\,a\,\mathrm{Cos}[c]\;\Big(b+a\,\mathrm{Cos}[c]\;\mathrm{Cos}[$$

$$d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\;\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/\big(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\big)\Bigg)\Big/$$

$$\Big(\sqrt{b+a\,\mathrm{Cos}[c]\;\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\;\sqrt{1+\mathrm{Tan}[c]^2}}\Big)\Bigg)\Bigg)\Big/$$

$$\Big(3\,a\,d\,\big(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\big)\;\mathrm{Sec}[c+d\,x]^{3/2}$$

$$\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\Big)$$

Problem 1058: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{\text{Sec}[c+d x]}\,\left(a A+(A b+a B)\,\text{Sec}[c+d x]+b B\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 253 leaves, 13 steps):

$$\frac{(2 a A+b B)\,\sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{\text{Sec}[c+d x]}}{d\,\sqrt{a+b\,\text{Sec}[c+d x]}}+\left((2 A b+a B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{\text{Sec}[c+d x]}\right)\Big/\left(d\,\sqrt{a+b\,\text{Sec}[c+d x]}\right)-\frac{B\,\text{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d x]}}{d\,\sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}}\,\sqrt{\text{Sec}[c+d x]}}+\frac{B\,\sqrt{\text{Sec}[c+d x]}\,\sqrt{a+b\,\text{Sec}[c+d x]}\;\text{Sin}[c+d x]}{d}$$

Result (type 4, 521 leaves):

$$\frac{B\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+\frac{1}{4\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

$$\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,\left(\frac{8\,a\,A\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\right.$$

$$\frac{2\left(4\,A\,b+a\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\text{Cos}[c+d\,x]}}-$$

$$\left(2\,\mathrm{i}\,a\,B\,\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\,\text{Cos}\left[2\left(c+d\,x\right)\right]\right.$$

$$\left(-2\,b\left(a+b\right)\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2\,b\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\text{EllipticPi}\left[1-\frac{a}{b},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left(-a^2+2\,b^2-4\,b\left(b+a\,\text{Cos}[c+d\,x]\right)+2\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)\right)\right)$$

Problem 1059: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sec}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}}\,dx$$

Optimal (type 4, 393 leaves, 13 steps) :

$$\frac{C\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}}{b\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\left((2\,b\,B-3\,a\,C)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/$$

$$\left(b^2\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$

$$\left(\left(2\,A\,b^2-2\,a\,b\,B+3\,a^2\,C-b^2\,C\right)\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/$$

$$\left(b^2\,\left(a^2-b^2\right)\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\sqrt{\text{Sec}[c+d\,x]}\right)-$$

$$\frac{2\,\left(A\,b^2-a\,(b\,B-a\,C)\right)\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{b\,\left(a^2-b^2\right)\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+\frac{1}{b^2\,\left(a^2-b^2\right)\,d}$$

$$\left(2\,A\,b^2-2\,a\,b\,B+3\,a^2\,C-b^2\,C\right)\sqrt{\text{Sec}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]$$

Result (type 4, 774 leaves) :

$$\left((b+a\,\text{Cos}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\left(2\,\left(4\,A\,b^3-4\,a\,b^2\,B+4\,a^2\,b\,C\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\right/\right.$$

$$\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+\left(2\,\left(2\,a\,A\,b^2-6\,a^2\,b\,B+4\,b^3\,B+9\,a^3\,C-7\,a\,b^2\,C\right)\right.$$

$$\left.\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+$$

$$\left(2\,\text{i}\,\left(2\,a\,A\,b^2-2\,a^2\,b\,B+3\,a^3\,C-a\,b^2\,C\right)\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\;\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\;\text{Cos}\Big[\right.$$

$$2\,(c+d\,x)\Big]\left(-2\,b\,(a+b)\,\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2\,b\,\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\text{EllipticPi}\left[1-\frac{a}{b},\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\;b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\;\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left.\left(-a^2+2\,b^2-4\,b\,(b+a\,\text{Cos}[c+d\,x])+2\,(b+a\,\text{Cos}[c+d\,x])^2\right)\right)\right)\right)\Big/$$

$$\left(2\,b^2\,(-a+b)\,(a+b)\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\sqrt{\text{Sec}[c+d\,x]}$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^{3/2}\right)+$$

$$\left((b+a\,\text{Cos}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left.\left(-\frac{4\,\left(a\,A\,b^2\,\text{Sin}[c+d\,x]-a^2\,b\,B\,\text{Sin}[c+d\,x]+a^3\,C\,\text{Sin}[c+d\,x]\right)}{b^2\,\left(-a^2+b^2\right)\,(b+a\,\text{Cos}[c+d\,x])}+\frac{2\,C\,\text{Tan}[c+d\,x]}{b^2}\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^{3/2}\right)$$

Problem 1060: Unable to integrate problem.

$$\int \frac{\sqrt{\operatorname{Sec}[c+d x]}\,\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\left(a+b \operatorname{Sec}[c+d x]\right)^{3/2}}\, dx$$

Optimal (type 4, 311 leaves, 12 steps):

$$\frac{2 A \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{\operatorname{Sec}[c+d x]}}{a d \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$

$$\frac{2 C \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{\operatorname{Sec}[c+d x]}}{b d \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$

$$\left(2\left(A b^2-a(b B-a C)\right) \operatorname{EllipticE}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Bigg/$$

$$\left(a b\left(a^2-b^2\right) d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \sqrt{\operatorname{Sec}[c+d x]}\right)-$$

$$\frac{2\left(A b^2-a(b B-a C)\right) \sqrt{\operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{b\left(a^2-b^2\right) d \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 8, 47 leaves):

$$\int \frac{\sqrt{\operatorname{Sec}[c+d x]}\,\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\left(a+b \operatorname{Sec}[c+d x]\right)^{3/2}}\, dx$$

Problem 1061: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2}{\sqrt{\operatorname{Sec}[c+d x]}\,\left(a+b \operatorname{Sec}[c+d x]\right)^{3/2}}\, dx$$

Optimal (type 4, 249 leaves, 8 steps):

$$-\left(\left(2\,(2\,A\,b-a\,B)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\ \mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/\left(a^2\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\right)-$$

$$\left(2\,\left(2\,A\,b^2-a\,b\,B-a^2\,(A-C)\right)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/$$

$$\left(a^2\,\left(a^2-b^2\right)\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\ \sqrt{\mathrm{Sec}[c+d\,x]}\right)+$$

$$\frac{2\,\left(A\,b^2-a\,(b\,B-a\,C)\right)\,\sqrt{\mathrm{Sec}[c+d\,x]}\ \mathrm{Sin}[c+d\,x]}{a\,\left(a^2-b^2\right)\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 6, 3541 leaves):

$$\left((b+a\,\mathrm{Cos}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(-\frac{1}{a^2\,\left(a^2-b^2\right)\,d}2\,\left(a^2\,A-3\,A\,b^2+2\,a\,b\,B-2\,a^2\,C+a^2\,A\,\mathrm{Cos}[2\,c]-A\,b^2\,\mathrm{Cos}[2\,c]\right)\,\mathrm{Csc}[c]\,\mathrm{Sec}[c]-\right.$$

$$\left(4\,\mathrm{Sec}[c]\,\left(A\,b^3\,\mathrm{Sin}[c]-a\,b^2\,B\,\mathrm{Sin}[c]+a^2\,b\,C\,\mathrm{Sin}[c]-a\,A\,b^2\,\mathrm{Sin}[d\,x]+\right.\right.$$

$$\left.\left.\left.\left.a^2\,b\,B\,\mathrm{Sin}[d\,x]-a^3\,C\,\mathrm{Sin}[d\,x]\right)\right)\Big/\left(a^2\,\left(a^2-b^2\right)\,d\,(b+a\,\mathrm{Cos}[c+d\,x])\right)\right)\right)\Big/$$

$$\left((A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{\mathrm{Sec}[c+d\,x]}\ (a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\right)+$$

$$\left(4\,A\,b\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\,\left(b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(1+\frac{b\,\mathrm{Csc}[c]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\mathrm{Csc}[c]\,\left(b-a\,\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\right]\,(b+a\,\mathrm{Cos}[c+d\,x])^{3/2}$$

$$\mathrm{Csc}[c]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\,\sqrt{1+\mathrm{Cot}[c]^2}-a\,\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\,\sqrt{1+\mathrm{Cot}[c]^2}+a\,\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\,\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(a\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right.$$

$$\left.\sqrt{\text{Sec}[c+d\,x]}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\left(4\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right.$$

$$\left.\sqrt{\text{Sec}[c+d\,x]}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)+$$

$$\left(4\,b\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(a\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right.$$
$$\left.\sqrt{\text{Sec}[c+d\,x]}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\Bigg(2\,a\,A\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\text{Sec}[c]\ \Big(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\ \Big(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}$$

$$\overline{\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\overline{\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\ \left(b+a\,\text{Cos}[c]\ \text{Cos}[\right.\right.\right.$$

$$d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\right)\Bigg)\Bigg) \Big/$$

$$\left(\left(a^2 - b^2\right)\,d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\sqrt{\text{Sec}[c + d\,x]}\,\left(a + b\,\text{Sec}[c + d\,x]\right)^{3/2}\right) +$$

$$\Bigg(4\,A\,b^2\,\left(b + a\,\text{Cos}[c + d\,x]\right)^{3/2}\,\text{Csc}[c]\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\Bigg(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/ \left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/$$

$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg) \Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big) \Big/}$$

$$\overline{\left(b\,\text{Sec}[c] + a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2} +}$$

$$\overline{a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big) \Big/ \left(-b\,\text{Sec}[c] + a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\Bigg) -$$

$$\Bigg(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \Big(2\,a\,\text{Cos}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\right)\Bigg)\Bigg) \Big/$$

$$\Big(a\,\left(a^2 - b^2\right)\,d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\sqrt{\text{Sec}[c + d\,x]}$$

$$\left(a + b\,\text{Sec}[c + d\,x]\right)^{3/2}\Big) -$$

$$\left(2\,b\,B\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\,\text{Csc}[c]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.\right.}\right.$$

$$\left.\left.\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(\left(a^2-b^2\right)\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{\text{Sec}[c+d\,x]}\right.$$

$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)+$$

$$\left(2\,a\,C\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\,\text{Csc}[c]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Big)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\Big(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\,\sqrt{\Big(\Big(a\sqrt{1+\text{Tan}[c]^2}+}$$

$$a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\Big(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\Big)\Big)$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\Big(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\Big)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Big(\big(a^2-b^2\big)\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)$$
$$\sqrt{\text{Sec}[c+d\,x]}$$
$$\big(a+b\,\text{Sec}[c+d\,x]\big)^{3/2}\Big)$$

Problem 1062: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Sec}[c+d\,x]^{3/2}\,\big(a+b\,\text{Sec}[c+d\,x]\big)^{3/2}}\,dx$$

Optimal (type 4, 350 leaves, 9 steps):

$$\left(2\left(8 A b^2-6 a b B+a^2 (A+3 C)\right)\sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{\text{Sec}[c+d x]}\right)\Big/\left(3 a^3 d\sqrt{a+b \text{Sec}[c+d x]}\right)+\left(2\left(8 A b^3+3 a^3 B-6 a b^2 B-a^2 (5 A b-3 b C)\right)\text{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \text{Sec}[c+d x]}\right)\Big/\left(3 a^3\left(a^2-b^2\right) d\sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}}\sqrt{\text{Sec}[c+d x]}\right)+\frac{2\left(A b^2-a (b B-a C)\right)\text{Sin}[c+d x]}{a\left(a^2-b^2\right) d\sqrt{\text{Sec}[c+d x]}\sqrt{a+b \text{Sec}[c+d x]}}-\frac{2\left(4 A b^2-3 a b B-a^2 (A-3 C)\right)\sqrt{a+b \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{3 a^2\left(a^2-b^2\right) d\sqrt{\text{Sec}[c+d x]}}$$

Result (type 6, 4557 leaves):

$$\left((b+a \text{Cos}[c+d x])^2\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\left(-\frac{1}{3 a^3\left(a^2-b^2\right) d}2\left(-5 a^2 A b+11 A b^3+3 a^3 B-9 a b^2 B+6 a^2 b C-5 a^2 A b \text{Cos}[2 c]+5 A b^3 \text{Cos}[2 c]+3 a^3 B \text{Cos}[2 c]-3 a b^2 B \text{Cos}[2 c]\right)\text{Csc}[c]\ \text{Sec}[c]+\frac{4 A \text{Cos}[d x]\ \text{Sin}[c]}{3 a^2 d}+\frac{4 A \text{Cos}[c]\ \text{Sin}[d x]}{3 a^2 d}+\left(4 \text{Sec}[c]\left(A b^4 \text{Sin}[c]-a b^3 B \text{Sin}[c]+a^2 b^2 C \text{Sin}[c]-a A b^3 \text{Sin}[d x]+a^2 b^2 B \text{Sin}[d x]-a^3 b C \text{Sin}[d x]\right)\right)\Big/\left(a^3\left(a^2-b^2\right) d (b+a \text{Cos}[c+d x])\right)\right)\right)\Big/\left(\left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)\sqrt{\text{Sec}[c+d x]}\ (a+b \text{Sec}[c+d x])^{3/2}\right)-$$

$$\left(4 A\ \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b \text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b \text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right](b+a \text{Cos}[c+d x])^{3/2}\right.$$

$$\text{Csc}[c]\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b \text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right.$$

$$\left.\sqrt{\text{Sec}[c+d\,x]}\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\left(8\,A\,b^2\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a^2\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\sqrt{\text{Sec}[c+d\,x]}\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)+$$

$$\left(4\,b\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]\ \left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}$$

$$\text{Csc}[c]\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\ \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(a\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right.$$

$$\left.\sqrt{\text{Sec}[c+d\,x]}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\left(4\,C\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]\ \left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}$$

$$\text{Csc}[c]\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\ \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(\left(a^2-b^2\right) d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \sqrt{1+\text{Cot}[c]^2} \sqrt{\text{Sec}[c+d x]} \left(a+b \text{Sec}[c+d x]\right)^{3/2}\right)+$$

$$\Bigg(10 A b \left(b+a \text{Cos}[c+d x]\right)^{3/2} \text{Csc}[c] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Bigg(\text{Sec}[c] \Big(b+a \text{Cos}[c] \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Bigg)\Bigg/\left(a \sqrt{1+\text{Tan}[c]^2} \left(1-\frac{b \text{Sec}[c]}{a \sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Bigg(\text{Sec}[c] \Big(b+a \text{Cos}[c] \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\Big)\Bigg)\Bigg/$$

$$\left(a \sqrt{1+\text{Tan}[c]^2} \left(-1-\frac{b \text{Sec}[c]}{a \sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big] \text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]] \text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2} \sqrt{\left(\left(a \sqrt{1+\text{Tan}[c]^2}-a \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}$$

$$\overline{\left.\left(b \text{Sec}[c]+a \sqrt{1+\text{Tan}[c]^2}\right)\right)} \sqrt{\left(\left(a \sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\overline{\left.\left.a \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b \text{Sec}[c]+a \sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\sqrt{b+a \text{Cos}[c] \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]] \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2 a \text{Cos}[c] \Big(b+a \text{Cos}[c] \text{Cos}[$$

$$d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2 \text{Cos}[c]^2+a^2 \text{Sin}[c]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{b+a \text{Cos}[c] \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg/$$

$$\left(3 \left(a^2-b^2\right) d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \sqrt{\text{Sec}[c+d x]} \left(a+b \text{Sec}[c+d x]\right)^{3/2}\right)-$$

$$\Bigg(16 A b^3 \left(b+a \text{Cos}[c+d x]\right)^{3/2} \text{Csc}[c] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\overline{\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\overline{\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(3\,a^2\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\right.$$

$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\left(2\,a\,B\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)+$$

$$\Bigg(4\,b^2\,B\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\ \sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(a\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\Bigg(2\,b\,C\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\right.$$

$$\sqrt{b + a \operatorname{Cos}[c] \operatorname{Cos}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}}\Bigg) -$$

$$\left(\frac{\operatorname{Sin}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]}{\sqrt{1 + \operatorname{Tan}[c]^2}} + \left(2 a \operatorname{Cos}[c] \left(b + a \operatorname{Cos}[c] \operatorname{Cos}[\right.\right.\right.$$

$$\left.\left.\left. d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}\right)\right) \Big/ \left(a^2 \operatorname{Cos}[c]^2 + a^2 \operatorname{Sin}[c]^2\right)\right) \Big/$$

$$\left.\left.\left(\sqrt{b + a \operatorname{Cos}[c] \operatorname{Cos}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}}\right)\right)\right) \Big/$$

$$\Big(\left(a^2 - b^2\right) d \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right)$$
$$\sqrt{\operatorname{Sec}[c + d x]}$$
$$\left(a + b \operatorname{Sec}[c + d x]\right)^{3/2}\Big)$$

Problem 1063: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2}{\operatorname{Sec}[c + d x]^{5/2} \left(a + b \operatorname{Sec}[c + d x]\right)^{3/2}} \, dx$$

Optimal (type 4, 461 leaves, 10 steps):

$$-\left(\left(2\left(48 A b^3-5 a^3 B-40 a b^2 B+6 a^2 b\,(2 A+5 C)\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{\operatorname{Sec}[c+d x]}\right)\Big/\left(15 a^4 d \sqrt{a+b \operatorname{Sec}[c+d x]}\right)\right)-$$

$$\left(2\left(48 A b^4+25 a^3 b B-40 a b^3 B-6 a^2 b^2 (4 A-5 C)-3 a^4 (3 A+5 C)\right)\ \text{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/$$

$$\left(15 a^4\left(a^2-b^2\right) d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\sqrt{\operatorname{Sec}[c+d x]}\right)+$$

$$\frac{2\left(A b^2-a\,(b B-a C)\right)\operatorname{Sin}[c+d x]}{a\left(a^2-b^2\right) d \operatorname{Sec}[c+d x]^{3/2}\sqrt{a+b \operatorname{Sec}[c+d x]}}-$$

$$\frac{2\left(6 A b^2-5 a b B-a^2 (A-5 C)\right)\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{5 a^2\left(a^2-b^2\right) d \operatorname{Sec}[c+d x]^{3/2}}+$$

$$\left(2\left(24 A b^3+5 a^3 B-20 a b^2 B-a^2 (9 A b-15 b C)\right)\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]\right)\Big/\left(15 a^3\left(a^2-b^2\right) d \sqrt{\operatorname{Sec}[c+d x]}\right)$$

Result (type 6, 6134 leaves):

$$\left(\left(b+a \operatorname{Cos}[c+d x]\right)^2\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$

$$\left(-\left(\left(2\left(9 a^4 A+24 a^2 A b^2-63 A b^4-25 a^3 b B+55 a b^3 B+15 a^4 C-45 a^2 b^2 C+9 a^4 A \operatorname{Cos}[2 c]+\right.\right.\right.\right.$$

$$24 a^2 A b^2 \operatorname{Cos}[2 c]-33 A b^4 \operatorname{Cos}[2 c]-25 a^3 b B \operatorname{Cos}[2 c]+25 a b^3 B \operatorname{Cos}[2 c]+$$

$$\left.\left.\left.15 a^4 C \operatorname{Cos}[2 c]-15 a^2 b^2 C \operatorname{Cos}[2 c]\right)\operatorname{Csc}[c]\operatorname{Sec}[c]\right)\Big/\left(15 a^4\left(a^2-b^2\right) d\right)\right)+$$

$$\frac{4(-9 A b+5 a B)\operatorname{Cos}[d x]\operatorname{Sin}[c]}{15 a^3 d}+\frac{2 A \operatorname{Cos}[2 d x]\operatorname{Sin}[2 c]}{5 a^2 d}+$$

$$\frac{4(-9 A b+5 a B)\operatorname{Cos}[c]\operatorname{Sin}[d x]}{15 a^3 d}-$$

$$\left(4 \operatorname{Sec}[c]\left(A b^5 \operatorname{Sin}[c]-a b^4 B \operatorname{Sin}[c]+a^2 b^3 C \operatorname{Sin}[c]-a A b^4 \operatorname{Sin}[d x]+a^2 b^3 B \operatorname{Sin}[d x]-\right.\right.$$

$$\left.\left.\left.\left.a^3 b^2 C \operatorname{Sin}[d x]\right)\right)\Big/\left(a^4\left(a^2-b^2\right) d\left(b+a \operatorname{Cos}[c+d x]\right)\right)+\frac{2 A \operatorname{Cos}[2 c]\operatorname{Sin}[2 d x]}{5 a^2 d}\right)\right)\Big/$$

$$\left(\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\sqrt{\operatorname{Sec}[c+d x]}\right.$$

$$\left.\left(a+b \operatorname{Sec}[c+d x]\right)^{3/2}\right)+$$

$$\left(4 A b \operatorname{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\ \operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]$$

$$(b+a\,\text{Cos}[c+d\,x])^{3/2}\,\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$
$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$
$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(5\,a\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\sqrt{1+\text{Cot}[c]^2}\ \sqrt{\text{Sec}[c+d\,x]}\ (a+b\,\text{Sec}[c+d\,x])^{3/2}\right)+$$

$$\left(16\,A\,b^3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\ (b+a\,\text{Cos}[c+d\,x])^{3/2}$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$
$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$
$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(5\, a^3 \left(a^2-b^2\right) d \left(A+2\, C+2\, B\, \text{Cos}[c+d\, x]+A\, \text{Cos}[2\, c+2\, d\, x]\right) \sqrt{1+\text{Cot}[c]^2}\, \sqrt{\text{Sec}[c+d\, x]}\, \left(a+b\, \text{Sec}[c+d\, x]\right)^{3/2}\right) -$$

$$\left(4\, B\, \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\left(a^2-b^2\right) d \left(A+2\, C+2\, B\, \text{Cos}[c+d\, x]+A\, \text{Cos}[2\, c+2\, d\, x]\right) \sqrt{1+\text{Cot}[c]^2}\, \sqrt{\text{Sec}[c+d\, x]}\, \left(a+b\, \text{Sec}[c+d\, x]\right)^{3/2}\right) -$$

$$\left(8\, b^2\, B\, \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a^2\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\sqrt{\text{Sec}[c+d\,x]}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)+$$

$$\left(4\,b\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}$$

$$\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(a\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right.$$

$$\left.\sqrt{\text{Sec}[c+d\,x]}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\left(6\,a\,A\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right)\right.\right.\right.\right.\right.$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)\Bigg)\Bigg/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Bigg/\right.$$

$$\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Bigg/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Bigg/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Bigg/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(5\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\left(16\,A\,b^2\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.\right.$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)\Bigg)\Bigg/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Bigg/\right.$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Bigg)\Bigg]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\ \text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(5\,a\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{\text{Sec}[c+d\,x]}\right.$$
$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)+$$

$$\left(32\,A\,b^4\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\text{Csc}[c]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Bigg]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left(b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)\sqrt{\Bigg(\Bigg(a\sqrt{1+\mathrm{Tan}[c]^2}+a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg/\left(-b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\left(2\,a\,\mathrm{Cos}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\right)\right)\Bigg/$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(5\,a^3\left(a^2-b^2\right)d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{\mathrm{Sec}[c+d\,x]}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\right)+$$

$$\Bigg(10\,b\,B\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{3/2}\mathrm{Csc}[c]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Bigg[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\left(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Bigg/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\left(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Bigg/$$

$$\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg)\Bigg]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\mathrm{Tan}[c]^2}\sqrt{\Bigg(\Bigg(a\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg/\left(b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{\Bigg(\Bigg(a\sqrt{1+\mathrm{Tan}[c]^2}+a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg/\left(-b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\bigg/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\bigg/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\bigg/$$

$$\left(3\,\left(a^2-b^2\right)\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\right)-$$

$$\Bigg(16\,b^3\,B\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\,\text{Csc}[c]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\bigg/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\bigg/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\bigg/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\bigg/\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\bigg/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\bigg/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\bigg/$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Big(3\,a^2\,\left(a^2-b^2\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\sqrt{\mathrm{Sec}[c+d\,x]}$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\Big)-$$

$$\Bigg(2\,a\,C\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{3/2}\,\mathrm{Csc}[c]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\Bigg(\Bigg(\mathrm{Sec}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Bigg)\Big/\left(a\,\sqrt{1+\mathrm{Tan}[c]^2}\,\left(1-\frac{b\,\mathrm{Sec}[c]}{a\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\left(\mathrm{Sec}[c]\,\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\right)\Big/$$

$$\left(a\,\sqrt{1+\mathrm{Tan}[c]^2}\,\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\,\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\mathrm{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\left(b\,\mathrm{Sec}[c]+a\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\mathrm{Tan}[c]^2}+}$$

$$\overline{a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big/\left(-b\,\mathrm{Sec}[c]+a\,\sqrt{1+\mathrm{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\,\Bigg)-$$

$$\Bigg(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\Big(2\,a\,\mathrm{Cos}[c]\,\Big(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[$$

$$d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Big/$$

$$\Big(\left(a^2-b^2\right)\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)$$

$$\sqrt{\mathrm{Sec}[c+d\,x]}$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\Big)+$$

$$\left(4 b^2 C \left(b+a \text{Cos}[c+d x]\right)^{3/2} \text{Csc}[c] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c] \left(b+a \text{Cos}[c] \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a \sqrt{1+\text{Tan}[c]^2} \left(1-\frac{b \text{Sec}[c]}{a \sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c] \left(b+a \text{Cos}[c] \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\right) \sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/$$

$$\left.\left(a \sqrt{1+\text{Tan}[c]^2} \left(-1-\frac{b \text{Sec}[c]}{a \sqrt{1+\text{Tan}[c]^2}}\right)\right)\right] \text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]] \text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2} \sqrt{\left(\left(a \sqrt{1+\text{Tan}[c]^2}-a \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b \text{Sec}[c]+a \sqrt{1+\text{Tan}[c]^2}\right)\right) \sqrt{\left(\left(a \sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b \text{Sec}[c]+a \sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a \text{Cos}[c] \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]] \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2 a \text{Cos}[c] \left(b+a \text{Cos}[c] \text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2 \text{Cos}[c]^2+a^2 \text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left(\sqrt{b+a \text{Cos}[c] \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big/$$

$$\left(a \left(a^2-b^2\right) d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \sqrt{\text{Sec}[c+d x]} \left(a+b \text{Sec}[c+d x]\right)^{3/2}\right)$$

Problem 1064: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x]^{5/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{\left(a+b \text{Sec}[c+d x]\right)^{5/2}} \, dx$$

Optimal (type 4, 563 leaves, 14 steps):

$$\left(\left(2 A b^2-2 a b B+5 a^2 C-3 b^2 C\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{\operatorname{Sec}[c+d x]}\right) \Big/ \left(3 b^2\left(a^2-b^2\right) d \sqrt{a+b \operatorname{Sec}[c+d x]}\right)+\left((2 b B-5 a C) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{\operatorname{Sec}[c+d x]}\right) \Big/ \left(b^3 d \sqrt{a+b \operatorname{Sec}[c+d x]}\right)+\left(\left(8 A b^4+6 a^3 b B-14 a b^3 B-15 a^4 C+26 a^2 b^2 C-3 b^4 C\right) \operatorname{EllipticE}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Big/ \left(3 b^3\left(a^2-b^2\right)^2 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \sqrt{\operatorname{Sec}[c+d x]}\right)-\frac{2\left(A b^2-a(b B-a C)\right) \operatorname{Sec}[c+d x]^{5/2} \operatorname{Sin}[c+d x]}{3 b\left(a^2-b^2\right) d(a+b \operatorname{Sec}[c+d x])^{3/2}}+\left(2\left(3 A b^4+2 a^3 b B-6 a b^3 B-5 a^4 C+a^2 b^2(A+9 C)\right) \operatorname{Sec}[c+d x]^{3/2} \operatorname{Sin}[c+d x]\right) \Big/ \left(3 b^2\left(a^2-b^2\right)^2 d \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-\frac{1}{3 b^3\left(a^2-b^2\right)^2 d}\left(8 A b^4+6 a^3 b B-14 a b^3 B-15 a^4 C+26 a^2 b^2 C-3 b^4 C\right) \sqrt{\operatorname{Sec}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]$$

Result (type 4, 938 leaves):

$$-\left(\left((b+a \operatorname{Cos}[c+d x])^{5/2} \sqrt{\operatorname{Sec}[c+d x]}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.\right.$$
$$\left(\left(2\left(-4 a^2 A b^3-12 A b^5-8 a^3 b^2 B+24 a b^4 B+20 a^4 b C-36 a^2 b^3 C\right)\right.\right.$$
$$\left.\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(\sqrt{b+a \operatorname{Cos}[c+d x]}\right)+$$
$$\left(2\left(-8 a A b^4-18 a^4 b B+38 a^2 b^3 B-12 b^5 B+45 a^5 C-86 a^3 b^2 C+33 a b^4 C\right)\right.$$
$$\left.\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(\sqrt{b+a \operatorname{Cos}[c+d x]}\right)+$$

$$\left(2\,i\,\left(-8\,a\,A\,b^4-6\,a^4\,b\,B+14\,a^2\,b^3\,B+15\,a^5\,C-26\,a^3\,b^2\,C+3\,a\,b^4\,C\right)\right.$$
$$\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]$$
$$\left(-2\,b\,\left(a+b\right)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\right],\,\frac{-a+b}{a+b}\right]+\right.$$
$$a\,\left(2\,b\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\right],\,\frac{-a+b}{a+b}\right]+\right.$$
$$\left.\left.a\,\text{EllipticPi}\left[1-\frac{a}{b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\right],\,\frac{-a+b}{a+b}\right]\right)\right)$$
$$\left.\text{Sin}[c+d\,x]\right)\Bigg/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\right.$$
$$\left.\left.\left.\left(-a^2+2\,b^2-4\,b\,\left(b+a\,\text{Cos}[c+d\,x]\right)+2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)\right)\right)\right)\Bigg/$$
$$\left(6\,\left(a-b\right)^2\,b^3\,\left(a+b\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)+$$
$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{4\,\left(a\,A\,b^2\,\text{Sin}[c+d\,x]-a^2\,b\,B\,\text{Sin}[c+d\,x]+a^3\,C\,\text{Sin}[c+d\,x]\right)}{3\,b^2\,\left(-a^2+b^2\right)\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2}-\right.$$
$$\left(4\,\left(4\,a\,A\,b^4\,\text{Sin}[c+d\,x]+3\,a^4\,b\,B\,\text{Sin}[c+d\,x]-7\,a^2\,b^3\,B\,\text{Sin}[c+d\,x]-6\,a^5\,C\,\text{Sin}[c+d\,x]+\right.\right.$$
$$\left.\left.\left.\left.10\,a^3\,b^2\,C\,\text{Sin}[c+d\,x]\right)\right)\Big/\left(3\,b^3\,\left(-a^2+b^2\right)^2\,\left(b+a\,\text{Cos}[c+d\,x]\right)\right)+\frac{2\,C\,\text{Tan}[c+d\,x]}{b^3}\right)\right)\Bigg/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)$$

Problem 1065: Unable to integrate problem.

$$\int\frac{\text{Sec}[c+d\,x]^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 4, 447 leaves, 13 steps):

$$-\left(\left(2\left(A b^2-a\left(b B-a C\right)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(3\,a\,b\left(a^2-b^2\right)d\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\right)+$$

$$\frac{2\,C\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}}{b^2\,d\sqrt{a+b\,\text{Sec}[c+d\,x]}}-$$

$$\left(2\left(A\,b^4-4\,a\,b^3\,B-3\,a^4\,C+a^2\,b^2\left(3\,A+7\,C\right)\right)\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/$$
$$\left(3\,a\,b^2\left(a^2-b^2\right)^2 d\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\sqrt{\text{Sec}[c+d\,x]}\right)-$$

$$\frac{2\left(A\,b^2-a\left(b\,B-a\,C\right)\right)\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,b\left(a^2-b^2\right)d\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}}+$$

$$\left(2\left(A\,b^4-4\,a\,b^3\,B-3\,a^4\,C+a^2\,b^2\left(3\,A+7\,C\right)\right)\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]\right)\Big/$$
$$\left(3\,b^2\left(a^2-b^2\right)^2 d\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)$$

Result (type 8, 47 leaves) :

$$\int\frac{\text{Sec}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Problem 1066: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d\,x]}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 4, 378 leaves, 9 steps) :

$$-\left(\left(2\left(2 A b^2+a b B-a^2(3 A+C)\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{\operatorname{Sec}[c+d x]}\right)\Big/\left(3 a^2\left(a^2-b^2\right) d \sqrt{a+b \operatorname{Sec}[c+d x]}\right)\right)-$$
$$\left(2\left(2 A b^3+3 a^3 B+a b^2 B-2 a^2 b(3 A+2 C)\right)\text{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/$$
$$\left(3 a^2\left(a^2-b^2\right)^2 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\sqrt{\operatorname{Sec}[c+d x]}\right)-$$
$$\frac{2\left(A b^2-a(b B-a C)\right)\sqrt{\operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{3 b\left(a^2-b^2\right) d(a+b \operatorname{Sec}[c+d x])^{3/2}}+$$
$$\left(2\left(A b^4+2 a^3 b B+2 a b^3 B+a^4 C-5 a^2 b^2(A+C)\right)\sqrt{\operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]\right)\Big/$$
$$\left(3 a b\left(a^2-b^2\right)^2 d\sqrt{a+b \operatorname{Sec}[c+d x]}\right)$$

Result (type 6, 5040 leaves):

$$\frac{1}{(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])(a+b \operatorname{Sec}[c+d x])^{5/2}}$$
$$(b+a \operatorname{Cos}[c+d x])^3\sqrt{\operatorname{Sec}[c+d x]}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\left(\frac{4\left(-6 a^2 A b+2 A b^3+3 a^3 B+a b^2 B-4 a^2 b C\right)\operatorname{Csc}[c]\operatorname{Sec}[c]}{3 a^2\left(a^2-b^2\right)^2 d}-\right.$$
$$\left(4 \operatorname{Sec}[c]\left(A b^3 \operatorname{Sin}[c]-a b^2 B \operatorname{Sin}[c]+a^2 b C \operatorname{Sin}[c]-a A b^2 \operatorname{Sin}[d x]+\right.\right.$$
$$\left.\left.a^2 b B \operatorname{Sin}[d x]-a^3 C \operatorname{Sin}[d x]\right)\right)\Big/\left(3 a^2\left(a^2-b^2\right) d(b+a \operatorname{Cos}[c+d x])^2\right)+$$
$$\left(4 \operatorname{Sec}[c]\left(7 a^2 A b^2 \operatorname{Sin}[c]-3 A b^4 \operatorname{Sin}[c]-4 a^3 b B \operatorname{Sin}[c]+a^4 C \operatorname{Sin}[c]+\right.\right.$$
$$3 a^2 b^2 C \operatorname{Sin}[c]-6 a^3 A b \operatorname{Sin}[d x]+2 a A b^3 \operatorname{Sin}[d x]+3 a^4 B \operatorname{Sin}[d x]+$$
$$\left.\left.\left.a^2 b^2 B \operatorname{Sin}[d x]-4 a^3 b C \operatorname{Sin}[d x]\right)\right)\Big/\left(3 a^2\left(a^2-b^2\right)^2 d(b+a \operatorname{Cos}[c+d x])\right)\right)-$$
$$\left(4 a A\, \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)},\right.\right.$$
$$\left.\frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(-1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)}\right]$$
$$(b+a \operatorname{Cos}[c+d x])^{5/2}\operatorname{Csc}[c]\sqrt{\operatorname{Sec}[c+d x]}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$

$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2} - a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2} - b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2} + a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2} + b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b - a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(\left(a^2 - b^2\right)^2 d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a + b\,\text{Sec}[c + d\,x]\right)^{5/2}\right) -$$

$$\left(4\,A\,b^2\,\text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{\text{Csc}[c]\,\left(b - a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\,\left(1 + \frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\,\left(b - a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\,\left(-1 + \frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]$$

$$\left(b + a\,\text{Cos}[c + d\,x]\right)^{5/2}\text{Csc}[c]\,\sqrt{\text{Sec}[c + d\,x]}\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$

$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2} - a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2} - b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2} + a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2} + b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b - a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(3\,a\,\left(a^2 - b^2\right)^2 d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\left(a + b\,\text{Sec}[c + d\,x]\right)^{5/2}\right) +$$

$$\left(16\,b\,B\,\text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{\text{Csc}[c]\,\left(b - a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\,\left(1 + \frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\ \sqrt{\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(4\,a\,C\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\ \sqrt{\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(4\,b^2\,C\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2},\,\frac{1}{2},\,\frac{3}{2},\,\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\right]$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}+a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(a\,\left(a^2-b^2\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(4\,a\,A\,b\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left.\left.\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\text{a Cos}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\sqrt{1+\text{Tan}[\text{c}]^2}\Big)\Big/\left(-\text{b Sec}[\text{c}]+\text{a}\sqrt{1+\text{Tan}[\text{c}]^2}\right)\Big)$$

$$\sqrt{\text{b}+\text{a Cos}[\text{c}]\,\text{Cos}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\sqrt{1+\text{Tan}[\text{c}]^2}}\,\Big)-$$

$$\Bigg(\frac{\text{Sin}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\text{Tan}[\text{c}]}{\sqrt{1+\text{Tan}[\text{c}]^2}}+\Big(2\,\text{a Cos}[\text{c}]\,\Big(\text{b}+\text{a Cos}[\text{c}]\,\text{Cos}[$$

$$\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\sqrt{1+\text{Tan}[\text{c}]^2}\Big)\Big)\Big/\left(\text{a}^2\,\text{Cos}[\text{c}]^2+\text{a}^2\,\text{Sin}[\text{c}]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{\text{b}+\text{a Cos}[\text{c}]\,\text{Cos}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\sqrt{1+\text{Tan}[\text{c}]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(\left(\text{a}^2-\text{b}^2\right)^2\text{d}\,\left(\text{A}+2\,\text{C}+2\,\text{B Cos}[\text{c}+\text{d x}]+\text{A Cos}[2\,\text{c}+2\,\text{d x}]\right)\,\left(\text{a}+\text{b Sec}[\text{c}+\text{d x}]\right)^{5/2}\right)+$$

$$\Bigg(4\,\text{A}\,\text{b}^3\,\left(\text{b}+\text{a Cos}[\text{c}+\text{d x}]\right)^{5/2}\text{Csc}[\text{c}]\,\sqrt{\text{Sec}[\text{c}+\text{d x}]}\,\left(\text{A}+\text{B Sec}[\text{c}+\text{d x}]+\text{C Sec}[\text{c}+\text{d x}]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\text{Sec}[\text{c}]\,\Big(\text{b}+\text{a Cos}[\text{c}]\,\text{Cos}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]$$

$$\sqrt{1+\text{Tan}[\text{c}]^2}\Big)\Big)\Big/\left(\text{a}\sqrt{1+\text{Tan}[\text{c}]^2}\,\left(1-\frac{\text{b Sec}[\text{c}]}{\text{a}\sqrt{1+\text{Tan}[\text{c}]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[\text{c}]\,\Big(\text{b}+\text{a Cos}[\text{c}]\,\text{Cos}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\sqrt{1+\text{Tan}[\text{c}]^2}\Big)\Big)\Big/$$

$$\left(\text{a}\sqrt{1+\text{Tan}[\text{c}]^2}\,\left(-1-\frac{\text{b Sec}[\text{c}]}{\text{a}\sqrt{1+\text{Tan}[\text{c}]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\text{Tan}[\text{c}]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[\text{c}]^2}\,\sqrt{\Big(\Big(\text{a}\sqrt{1+\text{Tan}[\text{c}]^2}-\text{a Cos}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\sqrt{1+\text{Tan}[\text{c}]^2}\Big)\Big/}$$

$$\left(\text{b Sec}[\text{c}]+\text{a}\sqrt{1+\text{Tan}[\text{c}]^2}\right)\Big)}\,\sqrt{\Big(\Big(\text{a}\sqrt{1+\text{Tan}[\text{c}]^2}+}$$

$$\text{a Cos}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\sqrt{1+\text{Tan}[\text{c}]^2}\Big)\Big/\left(-\text{b Sec}[\text{c}]+\text{a}\sqrt{1+\text{Tan}[\text{c}]^2}\right)\Big)$$

$$\sqrt{\text{b}+\text{a Cos}[\text{c}]\,\text{Cos}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\sqrt{1+\text{Tan}[\text{c}]^2}}\,\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[\text{d x}+\text{ArcTan}[\text{Tan}[\text{c}]]]\,\text{Tan}[\text{c}]}{\sqrt{1+\text{Tan}[\text{c}]^2}}+\Big(2\,\text{a Cos}[\text{c}]\,\Big(\text{b}+\text{a Cos}[\text{c}]\,\text{Cos}[$$

$$d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2} \Big) \Big) \Big/ \left(a^2 \text{Cos}[c]^2 + a^2 \text{Sin}[c]^2\right) \Bigg) \Big/$$

$$\left(\sqrt{b + a \text{Cos}[c] \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}} \right) \Bigg) \Bigg) \Big/$$

$$\left(3 a \left(a^2 - b^2\right)^2 d \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \left(a + b \text{Sec}[c + d x]\right)^{5/2}\right) +$$

$$\Bigg(2 a^2 B \left(b + a \text{Cos}[c + d x]\right)^{5/2} \text{Csc}[c] \sqrt{\text{Sec}[c + d x]}$$

$$\left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\Bigg(\Bigg(\text{Sec}[c] \Big(b + a \text{Cos}[c] \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/ \left(a \sqrt{1 + \text{Tan}[c]^2} \left(1 - \frac{b \text{Sec}[c]}{a \sqrt{1 + \text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c] \Big(b + a \text{Cos}[c] \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/$$

$$\left(a \sqrt{1 + \text{Tan}[c]^2} \left(-1 - \frac{b \text{Sec}[c]}{a \sqrt{1 + \text{Tan}[c]^2}}\right)\right)\Bigg)\Big] \text{Sin}[d x + \text{ArcTan}[\text{Tan}[c]]] \text{Tan}[c]\Bigg) \Big/$$

$$\Bigg(\sqrt{1 + \text{Tan}[c]^2} \sqrt{\Big(\Big(a \sqrt{1 + \text{Tan}[c]^2} - a \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}\Big) \Big/}$$

$$\overline{\left(b \text{Sec}[c] + a \sqrt{1 + \text{Tan}[c]^2}\right)\Big)} \sqrt{\Big(\Big(a \sqrt{1 + \text{Tan}[c]^2} +}$$

$$\overline{a \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}\Big) \Big/ \left(-b \text{Sec}[c] + a \sqrt{1 + \text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b + a \text{Cos}[c] \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}}\Bigg) -$$

$$\Bigg(\frac{\text{Sin}[d x + \text{ArcTan}[\text{Tan}[c]]] \text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \Big(2 a \text{Cos}[c] \Big(b + a \text{Cos}[c] \text{Cos}[$$

$$d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2 \text{Cos}[c]^2 + a^2 \text{Sin}[c]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{b + a \text{Cos}[c] \text{Cos}[d x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}}\right)\Bigg)\Bigg) \Big/$$

$$\left(\left(a^2 - b^2\right)^2 d \left(A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x]\right) \left(a + b \text{Sec}[c + d x]\right)^{5/2}\right) +$$

$$\Bigg(2 b^2 B \left(b + a \operatorname{Cos}[c + d x]\right)^{5/2} \operatorname{Csc}[c] \sqrt{\operatorname{Sec}[c + d x]}$$

$$\left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)$$

$$\Bigg(\Bigg(\operatorname{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\Bigg(\Big(\operatorname{Sec}[c] \Big(b + a \operatorname{Cos}[c] \operatorname{Cos}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]]$$

$$\sqrt{1 + \operatorname{Tan}[c]^2}\Big)\Big) \Big/ \Bigg(a \sqrt{1 + \operatorname{Tan}[c]^2} \left(1 - \frac{b \operatorname{Sec}[c]}{a \sqrt{1 + \operatorname{Tan}[c]^2}}\right)\Bigg)\Bigg),$$

$$-\Bigg(\Big(\operatorname{Sec}[c] \Big(b + a \operatorname{Cos}[c] \operatorname{Cos}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}\Big)\Big) \Big/$$

$$\Bigg(a \sqrt{1 + \operatorname{Tan}[c]^2} \left(-1 - \frac{b \operatorname{Sec}[c]}{a \sqrt{1 + \operatorname{Tan}[c]^2}}\right)\Bigg)\Bigg)\Big] \operatorname{Sin}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]\Bigg) \Big/$$

$$\Bigg(\sqrt{1 + \operatorname{Tan}[c]^2} \sqrt{\Big(\Big(a \sqrt{1 + \operatorname{Tan}[c]^2} - a \operatorname{Cos}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}\Big) \Big/}$$

$$\overline{\Big(b \operatorname{Sec}[c] + a \sqrt{1 + \operatorname{Tan}[c]^2}\Big)\Big)} \sqrt{\Big(\Big(a \sqrt{1 + \operatorname{Tan}[c]^2} +}$$

$$\overline{a \operatorname{Cos}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}\Big) \Big/ \Big(-b \operatorname{Sec}[c] + a \sqrt{1 + \operatorname{Tan}[c]^2}\Big)\Big)}$$

$$\sqrt{b + a \operatorname{Cos}[c] \operatorname{Cos}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}}\Bigg) -$$

$$\Bigg(\frac{\operatorname{Sin}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]}{\sqrt{1 + \operatorname{Tan}[c]^2}} + \Big(2 a \operatorname{Cos}[c] \Big(b + a \operatorname{Cos}[c] \operatorname{Cos}[$$

$$d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}\Big)\Big) \Big/ \left(a^2 \operatorname{Cos}[c]^2 + a^2 \operatorname{Sin}[c]^2\right)\Bigg) \Big/$$

$$\Bigg(\sqrt{b + a \operatorname{Cos}[c] \operatorname{Cos}[d x + \operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1 + \operatorname{Tan}[c]^2}}\Bigg)\Bigg)\Bigg) \Big/$$

$$\Big(3 \left(a^2 - b^2\right)^2 d \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right)$$

$$\left(a + b \operatorname{Sec}[c + d x]\right)^{5/2}\Big) -$$

$$\Bigg(8 a b C \left(b + a \operatorname{Cos}[c + d x]\right)^{5/2} \operatorname{Csc}[c] \sqrt{\operatorname{Sec}[c + d x]}$$

$$\left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right)\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/$$

$$\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\Big/\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big/$$

$$\left(3\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)$$

Problem 1067: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\sqrt{\text{Sec}[c+d\,x]}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 4, 401 leaves, 9 steps):

$$\left(2\left(8\,A\,b^3+3\,a^3\,B-2\,a\,b^2\,B-a^2\,b\,(9\,A+C)\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/\left(3\,a^3\,(a^2-b^2)\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+$$
$$\left(2\left(8\,A\,b^4+6\,a^3\,b\,B-2\,a\,b^3\,B+3\,a^4\,(A-C)-a^2\,b^2\,(15\,A+C)\right)\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/\left(3\,a^3\,(a^2-b^2)^2\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)+$$
$$\frac{2\left(A\,b^2-a\,(b\,B-a\,C)\right)\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{3\,a\,(a^2-b^2)\,d\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}-$$
$$\left(2\left(4\,A\,b^4+5\,a^3\,b\,B-a\,b^3\,B-2\,a^4\,C-2\,a^2\,b^2\,(4\,A+C)\right)\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]\right)\Big/\left(3\,a^2\,(a^2-b^2)^2\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)$$

Result (type 6, 6142 leaves):

$$\frac{1}{(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}}$$
$$(b+a\,\mathrm{Cos}[c+d\,x])^3\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(-\frac{1}{3\,a^3\,(a^2-b^2)^2\,d}2\,\big(3\,a^4\,A-24\,a^2\,A\,b^2+13\,A\,b^4+12\,a^3\,b\,B-4\,a\,b^3\,B-6\,a^4\,C-$$
$$2\,a^2\,b^2\,C+3\,a^4\,A\,\mathrm{Cos}[2\,c]-6\,a^2\,A\,b^2\,\mathrm{Cos}[2\,c]+3\,A\,b^4\,\mathrm{Cos}[2\,c]\big)\,\mathrm{Csc}[c]\,\mathrm{Sec}[c]+$$
$$\big(4\,\mathrm{Sec}[c]\,\big(A\,b^4\,\mathrm{Sin}[c]-a\,b^3\,B\,\mathrm{Sin}[c]+a^2\,b^2\,C\,\mathrm{Sin}[c]-a\,A\,b^3\,\mathrm{Sin}[d\,x]+$$
$$a^2\,b^2\,B\,\mathrm{Sin}[d\,x]-a^3\,b\,C\,\mathrm{Sin}[d\,x]\big)\big)\Big/\left(3\,a^3\,(a^2-b^2)\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^2\right)-$$
$$\big(4\,\mathrm{Sec}[c]\,\big(10\,a^2\,A\,b^3\,\mathrm{Sin}[c]-6\,A\,b^5\,\mathrm{Sin}[c]-7\,a^3\,b^2\,B\,\mathrm{Sin}[c]+3\,a\,b^4\,B\,\mathrm{Sin}[c]+4\,a^4\,b\,C\,\mathrm{Sin}[c]-$$
$$9\,a^3\,A\,b^2\,\mathrm{Sin}[d\,x]+5\,a\,A\,b^4\,\mathrm{Sin}[d\,x]+6\,a^4\,b\,B\,\mathrm{Sin}[d\,x]-2\,a^2\,b^3\,B\,\mathrm{Sin}[d\,x]-$$
$$3\,a^5\,C\,\mathrm{Sin}[d\,x]-a^3\,b^2\,C\,\mathrm{Sin}[d\,x]\big)\big)\Big/\left(3\,a^3\,(a^2-b^2)^2\,d\,(b+a\,\mathrm{Cos}[c+d\,x])\right)\Bigg)+$$
$$\Bigg(8\,A\,b\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},$$
$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\Big]$$
$$(b+a\,\mathrm{Cos}[c+d\,x])^{5/2}\,\mathrm{Csc}[c]\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(8\,A\,b^3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\ \sqrt{\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a^2\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(4\,a\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\sqrt{\text{Sec}[c+d\,x]}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(4\,b^2\,B\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\sqrt{\text{Sec}[c+d\,x]}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\sqrt{1+\text{Cot}[c]^2}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\Bigg)+$$

$$\Bigg(16\,b\,C\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\ \sqrt{\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \Bigg)\Bigg/$$

$$\left(3\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\Bigg(2\,a^2\,A\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\ \sqrt{\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\text{Sec}[c]\ \Big(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Bigg/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\right)\Bigg/$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Big]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\ \sqrt{\Big(\Big(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)\sqrt{\Bigg(\Big(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\;\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\Bigg(10\,A\,b^2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)\sqrt{\Bigg(\Big(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\;\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Big/$$

$$\left(\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\Bigg(16\,A\,b^4\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Bigg/$$

$$\left(3\,a^2\,\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\Bigg(4\,a\,b\,B\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.$$
$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Bigg/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$
$$-\Bigg(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Bigg/$$
$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$
$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Bigg/\right.}$$
$$\overline{\left.\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$
$$\overline{\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Bigg/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$
$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$
$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$
$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Bigg/$$
$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Bigg/$$

$$\left(\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\left(4\,b^3\,B\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\right.$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$
$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$
$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$
$$\left.\left.\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$
$$\left(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$
$$\left.\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$
$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)$$
$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)-$$
$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$
$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$
$$\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big/$$
$$\left(3\,a\,\left(a^2-b^2\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)+$$
$$\left(2\,a^2\,C\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\right.$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right)\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/$$

$$\left.\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big/$$

$$\left(\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\left(2\,b^2\,C\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\sqrt{\text{Sec}[c+d\,x]}\right.$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$- \left(\left(\text{Sec}[c] \left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2} \right) \right) \Big/ \right.$$

$$\left(a \sqrt{1 + \text{Tan}[c]^2} \left(-1 - \frac{b\,\text{Sec}[c]}{a \sqrt{1 + \text{Tan}[c]^2}} \right) \right) \Big] \text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c] \Big) \Big/$$

$$\left(\sqrt{1 + \text{Tan}[c]^2} \sqrt{\left(\left(a \sqrt{1 + \text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2} \right) \Big/ \right.} \right.$$

$$\left(b\,\text{Sec}[c] + a \sqrt{1 + \text{Tan}[c]^2} \right) \Big) \sqrt{\left(\left(a \sqrt{1 + \text{Tan}[c]^2} + \right. \right.}$$

$$a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2} \Big) \Big/ \left(-b\,\text{Sec}[c] + a \sqrt{1 + \text{Tan}[c]^2} \right) \Big)$$

$$\left. \sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}} \right) -$$

$$\left(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \left(2\,a\,\text{Cos}[c] \left(b + a\,\text{Cos}[c]\,\text{Cos}[\right. \right. \right.$$

$$\left. d\,x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2} \right) \Big) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2 \right) \Big) \Big/$$

$$\left. \left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]] \sqrt{1 + \text{Tan}[c]^2}} \right) \right) \Big) \Big/$$

$$\left(3 \left(a^2 - b^2 \right)^2 d \left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x] \right) \right.$$

$$\left. \left(a + b\,\text{Sec}[c + d\,x] \right)^{5/2} \right)$$

Problem 1068: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2}{\text{Sec}[c + d\,x]^{3/2} \left(a + b\,\text{Sec}[c + d\,x] \right)^{5/2}}\, dx$$

Optimal (type 4, 521 leaves, 10 steps):

$$-\left(\left(2\left(16 A b^4+9 a^3 b B-8 a b^3 B-2 a^2 b^2(8 A-C)-a^4(A+3 C)\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.\right.$$

$$\left.\left.\operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{\operatorname{Sec}[c+d x]}\right) \Big/\left(3 a^4\left(a^2-b^2\right) d \sqrt{a+b \operatorname{Sec}[c+d x]}\right)\right)-$$

$$\left(2\left(16 A b^5-3 a^5 B+15 a^3 b^2 B-8 a b^4 B-2 a^2 b^3(14 A-C)+a^4(8 A b-6 b C)\right)\right.$$

$$\left.\operatorname{EllipticE}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Big/$$

$$\left(3 a^4\left(a^2-b^2\right)^2 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \sqrt{\operatorname{Sec}[c+d x]}\right)+$$

$$\frac{2\left(A b^2-a(b B-a C)\right) \operatorname{Sin}[c+d x]}{3 a\left(a^2-b^2\right) d \sqrt{\operatorname{Sec}[c+d x]}\,(a+b \operatorname{Sec}[c+d x])^{3/2}}+$$

$$\frac{2\left(10 a^2 A b^2-6 A b^4-7 a^3 b B+3 a b^3 B+4 a^4 C\right) \operatorname{Sin}[c+d x]}{3 a^2\left(a^2-b^2\right)^2 d \sqrt{\operatorname{Sec}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$

$$\left(2\left(8 A b^4+8 a^3 b B-4 a b^3 B+a^4(A-5 C)-a^2 b^2(13 A-C)\right) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]\right) \Big/$$

$$\left(3 a^3\left(a^2-b^2\right)^2 d \sqrt{\operatorname{Sec}[c+d x]}\right)$$

Result (type 6, 7608 leaves) :

$$\frac{1}{(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])(a+b \operatorname{Sec}[c+d x])^{5/2}}$$

$$(b+a \operatorname{Cos}[c+d x])^3 \sqrt{\operatorname{Sec}[c+d x]}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$

$$\left(-\frac{1}{3 a^4\left(a^2-b^2\right)^2 d} 2\left(-8 a^4 A b+40 a^2 A b^3-24 A b^5+3 a^5 B-24 a^3 b^2 B+13 a b^4 B+12 a^4 b C-\right.\right.$$

$$4 a^2 b^3 C-8 a^4 A b \operatorname{Cos}[2 c]+16 a^2 A b^3 \operatorname{Cos}[2 c]-8 A b^5 \operatorname{Cos}[2 c]+3 a^5 B \operatorname{Cos}[2 c]-$$

$$\left.6 a^3 b^2 B \operatorname{Cos}[2 c]+3 a b^4 B \operatorname{Cos}[2 c]\right) \operatorname{Csc}[c] \operatorname{Sec}[c]+\frac{4 A \operatorname{Cos}[d x] \operatorname{Sin}[c]}{3 a^3 d}+$$

$$\frac{4 A \operatorname{Cos}[c] \operatorname{Sin}[d x]}{3 a^3 d}-\left(4 \operatorname{Sec}[c]\left(A b^5 \operatorname{Sin}[c]-a b^4 B \operatorname{Sin}[c]+a^2 b^3 C \operatorname{Sin}[c]-a A b^4 \operatorname{Sin}[d x]+\right.\right.$$

$$\left.\left.a^2 b^3 B \operatorname{Sin}[d x]-a^3 b^2 C \operatorname{Sin}[d x]\right)\right) \Big/\left(3 a^4\left(a^2-b^2\right) d(b+a \operatorname{Cos}[c+d x])^2\right)+$$

$$\left(4 \operatorname{Sec}[c]\left(13 a^2 A b^4 \operatorname{Sin}[c]-9 A b^6 \operatorname{Sin}[c]-10 a^3 b^3 B \operatorname{Sin}[c]+6 a b^5 B \operatorname{Sin}[c]+\right.\right.$$

$$7 a^4 b^2 C \operatorname{Sin}[c]-3 a^2 b^4 C \operatorname{Sin}[c]-12 a^3 A b^3 \operatorname{Sin}[d x]+8 a A b^5 \operatorname{Sin}[d x]+$$

$$\left.\left.9 a^4 b^2 B \operatorname{Sin}[d x]-5 a^2 b^4 B \operatorname{Sin}[d x]-6 a^5 b C \operatorname{Sin}[d x]+2 a^3 b^3 C \operatorname{Sin}[d x]\right)\right) \Big/$$

$$\left.\left(3 a^4\left(a^2-b^2\right)^2 d(b+a \operatorname{Cos}[c+d x])\right)\right)-\left(4 a A \operatorname{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2},\right.\right.$$

$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},$$

$$\left.\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\right]$$

$$\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\mathrm{Csc}[c]\sqrt{\mathrm{Sec}[c+d\,x]}$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$
$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$
$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$
$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\sqrt{1+\mathrm{Cot}[c]^2}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(28\,A\,b^2\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\right]$$

$$\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\mathrm{Csc}[c]\sqrt{\mathrm{Sec}[c+d\,x]}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a\,\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\left(16\,A\,b^4\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\,\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a^3\,\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\text{Cot}[c]^2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\left(8\,b\,B\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\mathrm{Csc}[c]\ \sqrt{\mathrm{Sec}[c+d\,x]}\ \left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\ \left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(8\,b^3\,B\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$

$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\mathrm{Csc}[c]\ \sqrt{\mathrm{Sec}[c+d\,x]}\ \left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a^2\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\sqrt{1+\text{Cot}[c]^2}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\Big) -$$

$$\Bigg(4\,a\,C\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\ \left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\ \left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\ \sqrt{\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\left(\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right) -$$

$$\Bigg(4\,b^2\,C\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\ \left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},$$

$$\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\ \left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\ \sqrt{\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b - a\sqrt{1 + \text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(3\,a\,\left(a^2 - b^2\right)^2 d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\right.$$
$$\left.\sqrt{1 + \text{Cot}[c]^2}\ \left(a + b\,\text{Sec}[c + d\,x]\right)^{5/2}\right) +$$

$$\left(16\,a\,A\,b\,\left(b + a\,\text{Cos}[c + d\,x]\right)^{5/2} \text{Csc}[c]\,\sqrt{\text{Sec}[c + d\,x]}\ \left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)\right.$$

$$\left(\left(\left(\text{AppellF1}\left[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\left(\left(\text{Sec}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$
$$\left.\left.\left.\sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/ \left(a\,\sqrt{1 + \text{Tan}[c]^2}\ \left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right),$$
$$-\left(\left(\text{Sec}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/\right.$$
$$\left.\left.\left.\left(a\,\sqrt{1 + \text{Tan}[c]^2}\ \left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right)\right]\,\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right) \Big/$$
$$\left(\sqrt{1 + \text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1 + \text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right) \Big/\right.}\right.$$
$$\left.\left(b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\right)\,\sqrt{\left(\left(a\,\sqrt{1 + \text{Tan}[c]^2} + \right.\right.}$$
$$\left.\left.a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right) \Big/ \left(-b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\right)$$
$$\left.\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\right) -$$
$$\left(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \left(2\,a\,\text{Cos}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$
$$\left.\left.\left.d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\right) \Big/$$
$$\left.\left.\left.\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right)\right) \Big/$$
$$\left(3\,\left(a^2 - b^2\right)^2 d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\left(a + b\,\text{Sec}[c + d\,x]\right)^{5/2}\right) -$$

$$\Bigg(56\,A\,b^3\,(b+a\,\text{Cos}[c+d\,x])^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/$$

$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}+}$$

$$\overline{a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg/$$

$$\left(3\,a\,\left(a^2-b^2\right)^2\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\right)+$$

$$\Bigg(32\,A\,b^5\,(b+a\,\text{Cos}[c+d\,x])^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Big(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg)\Bigg/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Bigg(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)\Bigg/$$

$$\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg)\Bigg]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\mathrm{Tan}[c]^2}\sqrt{\Bigg(\Bigg(a\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg/}$$

$$\overline{\left(b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)}\sqrt{\Bigg(\Bigg(a\sqrt{1+\mathrm{Tan}[c]^2}+}$$

$$\overline{a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg/\left(-b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\Bigg(2\,a\,\mathrm{Cos}[c]\,\Bigg(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[$$

$$d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg)\Bigg/\left(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(3\,a^3\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\Bigg(2\,a^2\,B\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\mathrm{Csc}[c]\sqrt{\mathrm{Sec}[c+d\,x]}$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Bigg(\mathrm{Sec}[c]\,\Bigg(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg)\Bigg/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Bigg(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)\Bigg/$$

$$\left(a \sqrt{1+\text{Tan}[c]^2} \left(-1-\frac{b \,\text{Sec}[c]}{a \sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big] \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg) \Bigg/$$

$$\left(\sqrt{1+\text{Tan}[c]^2} \sqrt{\left(\left(a \sqrt{1+\text{Tan}[c]^2} - a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right) \Big/ \left(b\,\text{Sec}[c] + a \sqrt{1+\text{Tan}[c]^2}\right)\right)} \sqrt{\left(\left(a \sqrt{1+\text{Tan}[c]^2} + a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right) \Big/ \left(-b\,\text{Sec}[c] + a \sqrt{1+\text{Tan}[c]^2}\right)\right)} \sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}}\right) -$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \left(2\,a\,\text{Cos}[c] \left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right)\right) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\right) \Bigg/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}}\right)\right)\right) \Bigg/$$

$$\left(\left(a^2-b^2\right)^2 d \left(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c+2\,d\,x]\right) \left(a + b\,\text{Sec}[c+d\,x]\right)^{5/2}\right) +$$

$$\Bigg(10\,b^2\,B \left(b + a\,\text{Cos}[c+d\,x]\right)^{5/2} \text{Csc}[c] \sqrt{\text{Sec}[c+d\,x]} \left(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\left(\left(\text{Sec}[c] \left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right)\right) \Big/ \left(a \sqrt{1+\text{Tan}[c]^2} \left(1-\frac{b\,\text{Sec}[c]}{a \sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c] \left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right)\right) \Big/ \left(a \sqrt{1+\text{Tan}[c]^2} \left(-1-\frac{b\,\text{Sec}[c]}{a \sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big] \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg) \Bigg/$$

$$\left(\sqrt{1+\text{Tan}[c]^2} \sqrt{\left(\left(a \sqrt{1+\text{Tan}[c]^2} - a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}\right) \Big/\right.}\right.$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)\sqrt{\Bigg(\Bigg(a\sqrt{1+\text{Tan}[c]^2}+}$$

$$a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Bigg)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\ \Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Bigg(2\,a\,\text{Cos}[c]\,\Bigg(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Bigg)\Bigg)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\Bigg(16\,b^4\,B\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Bigg(\text{Sec}[c]\,\Bigg(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)\Bigg)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Bigg(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)\Big/$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\sqrt{\Bigg(\Bigg(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Bigg)\Big/}$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)\sqrt{\Bigg(\Bigg(a\sqrt{1+\text{Tan}[c]^2}+}$$

$$a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Bigg)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\ \Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Big/$$

$$\left(3\,a^2\,\left(a^2-b^2\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\Bigg(4\,a\,b\,C\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Big(\left(a^2 - b^2\right)^2 d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right) \left(a + b\,\text{Sec}[c + d\,x]\right)^{5/2}\Big) +$$

$$\Bigg(4\,b^3\,C\,\left(b + a\,\text{Cos}[c + d\,x]\right)^{5/2}\text{Csc}[c]\,\sqrt{\text{Sec}[c + d\,x]}\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$

$$\Bigg(\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\left(\left(\text{Sec}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/ \left(a\,\sqrt{1 + \text{Tan}[c]^2}\,\left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/ \left(a\,\sqrt{1 + \text{Tan}[c]^2}\,\left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg) \Big/$$

$$\Bigg(\sqrt{1 + \text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1 + \text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right) \Big/ \left(b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\,\sqrt{1 + \text{Tan}[c]^2} + a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right) \Big/ \left(-b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\right)}$$

$$\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\,\Bigg) -$$

$$\Bigg(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \left(2\,a\,\text{Cos}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right)\right) \Big/ \left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg) \Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Big(3\,a\,\left(a^2 - b^2\right)^2 d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right) \left(a + b\,\text{Sec}[c + d\,x]\right)^{5/2}\Big)$$

Problem 1069: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2}{\mathrm{Sec}[c + d\,x]^{5/2}\,(a + b\,\mathrm{Sec}[c + d\,x])^{5/2}}\,dx$$

Optimal (type 4, 663 leaves, 11 steps):

$$\left(2\,\left(128\,A\,b^5 + 5\,a^5\,B + 80\,a^3\,b^2\,B - 80\,a\,b^4\,B - 4\,a^2\,b^3\,(29\,A - 10\,C) - a^4\,b\,(17\,A + 45\,C)\right)\right.$$
$$\left.\sqrt{\frac{b + a\,\mathrm{Cos}[c + d\,x]}{a + b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,\frac{2\,a}{a + b}\right]\sqrt{\mathrm{Sec}[c + d\,x]}\right)\Big/$$
$$\left(15\,a^5\,(a^2 - b^2)\,d\,\sqrt{a + b\,\mathrm{Sec}[c + d\,x]}\right) +$$
$$\left(2\,\left(128\,A\,b^6 - 40\,a^5\,b\,B + 140\,a^3\,b^3\,B - 80\,a\,b^5\,B + 5\,a^4\,b^2\,(11\,A - 15\,C) - 4\,a^2\,b^4\,(53\,A - 10\,C) +\right.\right.$$
$$\left.\left.3\,a^6\,(3\,A + 5\,C)\right)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,\frac{2\,a}{a + b}\right]\sqrt{a + b\,\mathrm{Sec}[c + d\,x]}\right)\Big/$$
$$\left(15\,a^5\,(a^2 - b^2)^2\,d\,\sqrt{\frac{b + a\,\mathrm{Cos}[c + d\,x]}{a + b}}\;\sqrt{\mathrm{Sec}[c + d\,x]}\right) +$$
$$\frac{2\,(A\,b^2 - a\,(b\,B - a\,C))\,\mathrm{Sin}[c + d\,x]}{3\,a\,(a^2 - b^2)\,d\,\mathrm{Sec}[c + d\,x]^{3/2}\,(a + b\,\mathrm{Sec}[c + d\,x])^{3/2}} -$$
$$\frac{2\,\left(8\,A\,b^4 + 9\,a^3\,b\,B - 5\,a\,b^3\,B - 2\,a^2\,b^2\,(6\,A - C) - 6\,a^4\,C\right)\,\mathrm{Sin}[c + d\,x]}{3\,a^2\,(a^2 - b^2)^2\,d\,\mathrm{Sec}[c + d\,x]^{3/2}\,\sqrt{a + b\,\mathrm{Sec}[c + d\,x]}} +$$
$$\left(2\,\left(48\,A\,b^4 + 50\,a^3\,b\,B - 30\,a\,b^3\,B + a^4\,(3\,A - 35\,C) - a^2\,b^2\,(71\,A - 15\,C)\right)\right.$$
$$\left.\sqrt{a + b\,\mathrm{Sec}[c + d\,x]}\;\mathrm{Sin}[c + d\,x]\right)\Big/\left(15\,a^3\,(a^2 - b^2)^2\,d\,\mathrm{Sec}[c + d\,x]^{3/2}\right) -$$
$$\left(2\,\left(64\,A\,b^5 - 5\,a^5\,B + 65\,a^3\,b^2\,B - 40\,a\,b^4\,B + 2\,a^4\,b\,(7\,A - 20\,C) - 2\,a^2\,b^3\,(49\,A - 10\,C)\right)\right.$$
$$\left.\sqrt{a + b\,\mathrm{Sec}[c + d\,x]}\;\mathrm{Sin}[c + d\,x]\right)\Big/\left(15\,a^4\,(a^2 - b^2)^2\,d\,\sqrt{\mathrm{Sec}[c + d\,x]}\right)$$

Result (type 6, 9192 leaves):

$$\frac{1}{(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x])\,(a + b\,\mathrm{Sec}[c + d\,x])^{5/2}}$$
$$(b + a\,\mathrm{Cos}[c + d\,x])^3\,\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)$$
$$\left(-\frac{1}{15\,a^5\,(a^2 - b^2)^2\,d}\,2\,\left(9\,a^6\,A + 55\,a^4\,A\,b^2 - 287\,a^2\,A\,b^4 + 183\,A\,b^6 - 40\,a^5\,b\,B + 200\,a^3\,b^3\,B - 120\,a\,b^5\,B +\right.\right.$$
$$15\,a^6\,C - 120\,a^4\,b^2\,C + 65\,a^2\,b^4\,C + 9\,a^6\,A\,\mathrm{Cos}[2\,c] + 55\,a^4\,A\,b^2\,\mathrm{Cos}[2\,c] - 137\,a^2\,A\,b^4\,\mathrm{Cos}[2\,c] +$$
$$73\,A\,b^6\,\mathrm{Cos}[2\,c] - 40\,a^5\,b\,B\,\mathrm{Cos}[2\,c] + 80\,a^3\,b^3\,B\,\mathrm{Cos}[2\,c] - 40\,a\,b^5\,B\,\mathrm{Cos}[2\,c] +$$
$$\left.15\,a^6\,C\,\mathrm{Cos}[2\,c] - 30\,a^4\,b^2\,C\,\mathrm{Cos}[2\,c] + 15\,a^2\,b^4\,C\,\mathrm{Cos}[2\,c]\right)\,\mathrm{Csc}[c]\,\mathrm{Sec}[c] +$$

$$\frac{4\left(-14\,A\,b+5\,a\,B\right)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{15\,a^4\,d}+\frac{2\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,a^3\,d}+$$
$$\frac{4\left(-14\,A\,b+5\,a\,B\right)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{15\,a^4\,d}+$$
$$\left(4\,\text{Sec}[c]\,\left(A\,b^6\,\text{Sin}[c]-a\,b^5\,B\,\text{Sin}[c]+a^2\,b^4\,C\,\text{Sin}[c]-a\,A\,b^5\,\text{Sin}[d\,x]+a^2\,b^4\,B\,\text{Sin}[d\,x]-a^3\,b^3\,C\,\text{Sin}[d\,x]\right)\right)\Big/\left(3\,a^5\,\left(a^2-b^2\right)\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)-$$
$$\left(4\,\text{Sec}[c]\,\left(16\,a^2\,A\,b^5\,\text{Sin}[c]-12\,A\,b^7\,\text{Sin}[c]-13\,a^3\,b^4\,B\,\text{Sin}[c]+9\,a\,b^6\,B\,\text{Sin}[c]+10\,a^4\,b^3\,C\,\text{Sin}[c]-6\,a^2\,b^5\,C\,\text{Sin}[c]-15\,a^3\,A\,b^4\,\text{Sin}[d\,x]+11\,a\,A\,b^6\,\text{Sin}[d\,x]+12\,a^4\,b^3\,B\,\text{Sin}[d\,x]-8\,a^2\,b^5\,B\,\text{Sin}[d\,x]-9\,a^5\,b^2\,C\,\text{Sin}[d\,x]+5\,a^3\,b^4\,C\,\text{Sin}[d\,x]\right)\right)\Big/$$
$$\left(3\,a^5\,\left(a^2-b^2\right)^2\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\right)+\frac{2\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,a^3\,d}\Bigg)+$$

$$\Bigg(32\,A\,b\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},$$
$$\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(-1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)}\Big]$$
$$\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$
$$\sqrt{\frac{a\,\sqrt{1+\text{Cot}[c]^2}+a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\,\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$
$$\sqrt{b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$
$$\left(15\,\left(a^2-b^2\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\sqrt{1+\text{Cot}[c]^2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\Bigg(176\,A\,b^3\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\,\left(b-a\,\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\,\sqrt{1+\text{Cot}[c]^2}\,\left(1+\frac{b\,\text{Csc}[c]}{a\,\sqrt{1+\text{Cot}[c]^2}}\right)},$$

$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\mathrm{Csc}[c]\sqrt{\mathrm{Sec}[c+d\,x]}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(15\,a^2\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\mathrm{Cot}[c]^2}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(128\,A\,b^5\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.$$

$$\frac{\mathrm{Csc}[c]\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\Big]$$

$$\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\mathrm{Csc}[c]\sqrt{\mathrm{Sec}[c+d\,x]}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(15\, a^4 \left(a^2-b^2\right)^2 d \left(A+2\, C+2\, B \operatorname{Cos}[c+d\, x]+A \operatorname{Cos}[2\, c+2\, d\, x]\right) \sqrt{1+\operatorname{Cot}[c]^2} \left(a+b \operatorname{Sec}[c+d\, x]\right)^{5/2}\right)-$$

$$\left(4\, a\, B \operatorname{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d\, x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d\, x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(-1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)}\right]$$

$$\left(b+a \operatorname{Cos}[c+d\, x]\right)^{5/2} \operatorname{Csc}[c] \sqrt{\operatorname{Sec}[c+d\, x]} \left(A+B \operatorname{Sec}[c+d\, x]+C \operatorname{Sec}[c+d\, x]^2\right)$$

$$\operatorname{Sec}[d\, x-\operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{\frac{a\sqrt{1+\operatorname{Cot}[c]^2}-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[d\, x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}{a\sqrt{1+\operatorname{Cot}[c]^2}-b \operatorname{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\operatorname{Cot}[c]^2}+a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[d\, x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}{a\sqrt{1+\operatorname{Cot}[c]^2}+b \operatorname{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d\, x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right) \Big/$$

$$\left(3 \left(a^2-b^2\right)^2 d \left(A+2\, C+2\, B \operatorname{Cos}[c+d\, x]+A \operatorname{Cos}[2\, c+2\, d\, x]\right) \sqrt{1+\operatorname{Cot}[c]^2} \left(a+b \operatorname{Sec}[c+d\, x]\right)^{5/2}\right)-$$

$$\left(28\, b^2 B \operatorname{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d\, x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\operatorname{Csc}[c]\left(b-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d\, x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\right)}{a\sqrt{1+\operatorname{Cot}[c]^2}\left(-1+\frac{b \operatorname{Csc}[c]}{a\sqrt{1+\operatorname{Cot}[c]^2}}\right)}\right]$$

$$\left(b+a \operatorname{Cos}[c+d\, x]\right)^{5/2} \operatorname{Csc}[c] \sqrt{\operatorname{Sec}[c+d\, x]} \left(A+B \operatorname{Sec}[c+d\, x]+C \operatorname{Sec}[c+d\, x]^2\right)$$

$$\operatorname{Sec}[d\, x-\operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{\frac{a\sqrt{1+\operatorname{Cot}[c]^2}-a\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[d\, x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}{a\sqrt{1+\operatorname{Cot}[c]^2}-b \operatorname{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a\,\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\left(16\,b^4\,B\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\,\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\,\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\mathrm{Csc}[c]\,\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\,\left(-1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)}\right]$$

$$\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\mathrm{Csc}[c]\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}-b\,\mathrm{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\mathrm{Cot}[c]^2}+a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}{a\sqrt{1+\mathrm{Cot}[c]^2}+b\,\mathrm{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a^3\,\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\left(8\,b\,C\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\mathrm{Csc}[c]\,\left(b-a\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\right)}{a\sqrt{1+\mathrm{Cot}[c]^2}\,\left(1+\frac{b\,\mathrm{Csc}[c]}{a\sqrt{1+\mathrm{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]$$

$$(b+a\,\text{Cos}[c+d\,x])^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(8\,b^3\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)},\right.\right.$$

$$\left.\frac{\text{Csc}[c]\left(b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\right)}{a\sqrt{1+\text{Cot}[c]^2}\left(-1+\frac{b\,\text{Csc}[c]}{a\sqrt{1+\text{Cot}[c]^2}}\right)}\right]$$

$$(b+a\,\text{Cos}[c+d\,x])^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}-b\,\text{Csc}[c]}}$$

$$\sqrt{\frac{a\sqrt{1+\text{Cot}[c]^2}+a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}{a\sqrt{1+\text{Cot}[c]^2}+b\,\text{Csc}[c]}}$$

$$\left.\sqrt{b-a\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,a^2\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\sqrt{1+\text{Cot}[c]^2}\ \left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\Big) -$$

$$\Bigg(6\,a^2\,A\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Big(\Big(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.$$

$$\left.\sqrt{1+\text{Tan}[c]^2}\right)\Big)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Big),$$

$$-\Big(\Big(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)\Big/$$

$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Big)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}+}$$

$$\overline{a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\Big)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Big/$$

$$\left(5\,\left(a^2-b^2\right)^2 d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\Bigg(22\,A\,b^2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Big(\Big(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg)\Bigg/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg],$$

$$-\Bigg(\Bigg(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)\Bigg/$$

$$\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(-1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg)\Bigg]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\mathrm{Tan}[c]^2}\sqrt{\Bigg(\Bigg(a\sqrt{1+\mathrm{Tan}[c]^2}-a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg/\left(b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)}\sqrt{\Bigg(\Bigg(a\sqrt{1+\mathrm{Tan}[c]^2}+a\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg/\left(-b\,\mathrm{Sec}[c]+a\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\Bigg(2\,a\,\mathrm{Cos}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)\Bigg/\left(a^2\,\mathrm{Cos}[c]^2+a^2\,\mathrm{Sin}[c]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(3\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\Bigg(424\,A\,b^4\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\mathrm{Csc}[c]\sqrt{\mathrm{Sec}[c+d\,x]}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{AppellF1}\Bigg[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Bigg(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\right.$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)\Bigg)\Bigg/\left(a\sqrt{1+\mathrm{Tan}[c]^2}\left(1-\frac{b\,\mathrm{Sec}[c]}{a\sqrt{1+\mathrm{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Bigg(\mathrm{Sec}[c]\left(b+a\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}\right)\Bigg)\Bigg/$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Bigg)\Bigg]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)}\right.$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(15\,a^2\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(256\,A\,b^6\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\sqrt{\text{Sec}[c+d\,x]}\right.$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),\right.\right.\right.$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Bigg]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)\sqrt{\Bigg(\Bigg(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Bigg)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(15\,a^4\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)+$$

$$\Bigg(16\,a\,b\,B\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\sqrt{\text{Sec}[c+d\,x]}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Bigg[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\Bigg(\Bigg(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\Bigg(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)\Big/$$

$$\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Bigg]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\sqrt{\Bigg(\Bigg(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Bigg)\Big/\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{\Bigg(\Bigg(a\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\Bigg)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Bigg)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(3\,\left(a^2-b^2\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\Bigg(56\,b^3\,B\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}\,\sqrt{\left(\left(a\,\sqrt{1+\text{Tan}[c]^2}+a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\right)\right)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\left(3\,a\,\left(a^2 - b^2\right)^2 d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\right.$$
$$\left.\left(a + b\,\text{Sec}[c + d\,x]\right)^{5/2}\right) +$$

$$\Bigg(32\,b^5\,B\,\left(b + a\,\text{Cos}[c + d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c + d\,x]}$$
$$\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$
$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\Bigg(\Bigg(\text{Sec}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]$$
$$\sqrt{1 + \text{Tan}[c]^2}\Big)\Bigg)\Bigg/\left(a\,\sqrt{1 + \text{Tan}[c]^2}\,\left(1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\Bigg),$$
$$-\Bigg(\Bigg(\text{Sec}[c]\,\left(b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\right)\Bigg)\Bigg/$$
$$\left(a\,\sqrt{1 + \text{Tan}[c]^2}\,\left(-1 - \frac{b\,\text{Sec}[c]}{a\,\sqrt{1 + \text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$
$$\Bigg(\sqrt{1 + \text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1 + \text{Tan}[c]^2} - a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\Big)\Big/}$$
$$\left(b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\Big)\,\sqrt{\Big(\Big(a\,\sqrt{1 + \text{Tan}[c]^2} +}$$
$$a\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\Big)\Big/\left(-b\,\text{Sec}[c] + a\,\sqrt{1 + \text{Tan}[c]^2}\right)\Big)$$
$$\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\,\Bigg) -$$
$$\Bigg(\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \Big(2\,a\,\text{Cos}[c]\,\Big(b + a\,\text{Cos}[c]\,\text{Cos}[$$
$$d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2 + a^2\,\text{Sin}[c]^2\right)\Bigg)\Bigg/$$
$$\left(\sqrt{b + a\,\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}\,\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\left(3\,a^3\,\left(a^2 - b^2\right)^2 d\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\right.$$
$$\left.\left(a + b\,\text{Sec}[c + d\,x]\right)^{5/2}\right) -$$

$$\Bigg(2\,a^2\,C\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{AppellF1}\Big[-\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{2},\,-\Bigg(\Bigg(\text{Sec}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)\Bigg)\Bigg/\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg),$$

$$-\Bigg(\left(\text{Sec}[c]\,\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\right)\right)\Bigg/$$

$$\left(a\,\sqrt{1+\text{Tan}[c]^2}\,\left(-1-\frac{b\,\text{Sec}[c]}{a\,\sqrt{1+\text{Tan}[c]^2}}\right)\right)\Bigg)\Big]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\text{Tan}[c]^2}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/}$$

$$\overline{\Big(b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)}\,\sqrt{\Big(\Big(a\,\sqrt{1+\text{Tan}[c]^2}+}$$

$$\overline{a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big/\Big(-b\,\text{Sec}[c]+a\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)}$$

$$\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\Bigg)-$$

$$\Bigg(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\Big(2\,a\,\text{Cos}[c]\,\Big(b+a\,\text{Cos}[c]\,\text{Cos}[$$

$$d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}\Big)\Big)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right)\Bigg)\Bigg)\Bigg/$$

$$\Big(\left(a^2-b^2\right)^2\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\Big)+$$

$$\Bigg(10\,b^2\,C\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Csc}[c]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right)\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/$$

$$\left.\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left.\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\right)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$

$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)-$$

$$\left(16\,b^4\,C\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\text{Csc}[c]\sqrt{\text{Sec}[c+d\,x]}\right.$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\right.\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a\sqrt{1+\text{Tan}[c]^2}\left(1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right),$$

$$-\left(\left(\text{Sec}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\right.$$

$$\left.\left(a\sqrt{1+\text{Tan}[c]^2}\left(-1-\frac{b\,\text{Sec}[c]}{a\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\Big]\;\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]\Big)\Big/$$

$$\left(\sqrt{1+\text{Tan}[c]^2}\;\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}-a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\right.}\right.$$

$$\left(b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)\;\sqrt{\left(\left(a\sqrt{1+\text{Tan}[c]^2}+\right.\right.}$$

$$\left.a\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\Big/\left(-b\,\text{Sec}[c]+a\sqrt{1+\text{Tan}[c]^2}\right)\Big)$$

$$\left.\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)-$$

$$\left(\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\left(2\,a\,\text{Cos}[c]\left(b+a\,\text{Cos}[c]\,\text{Cos}[\right.\right.\right.$$

$$\left.\left.\left.d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}\right)\right)\Big/\left(a^2\,\text{Cos}[c]^2+a^2\,\text{Sin}[c]^2\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{b+a\,\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\right)\right)\right)\right)\Big/$$

$$\left(3\,a^2\left(a^2-b^2\right)^2 d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right.$$
$$\left.\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right)$$

Problem 1070: Attempted integration timed out after 120 seconds.

$$\int\left(a+b\,\text{Sec}[c+d\,x]\right)^{2/3}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 8, 248 leaves, 8 steps):

$$\left(\sqrt{2}\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{5}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sec}[c+d\,x]),\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Tan}[c+d\,x]\right)\bigg/\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\,\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{2/3}\right)+$$
$$\left(\sqrt{2}\,(b\,B-a\,C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{2}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sec}[c+d\,x]),\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Tan}[c+d\,x]\right)\bigg/$$
$$\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\,\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{2/3}\right)+A\,\text{Int}\left[(a+b\,\text{Sec}[c+d\,x])^{2/3},x\right]$$

Result (type 1, 1 leaves):

???

Problem 1072: Attempted integration timed out after 120 seconds.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{(a+b\,\text{Sec}[c+d\,x])^{1/3}}\,dx$$

Optimal (type 8, 245 leaves, 8 steps):

$$\left(\sqrt{2}\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{2}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sec}[c+d\,x]),\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^{2/3}\,\text{Tan}[c+d\,x]\right)\bigg/\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\,\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{2/3}\right)+$$
$$\left(\sqrt{2}\,(b\,B-a\,C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sec}[c+d\,x]),\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}\right]\right.$$
$$\left.\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{1/3}\,\text{Tan}[c+d\,x]\right)\bigg/$$
$$\left(b\,d\,\sqrt{1+\text{Sec}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])^{1/3}\right)+A\,\text{Int}\left[\frac{1}{(a+b\,\text{Sec}[c+d\,x])^{1/3}},x\right]$$

Result (type 1, 1 leaves):

???

Problem 1078: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\text{Cos}[c+d\,x]^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 48 leaves, 3 steps):

$$\frac{2\,(A+3\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+\frac{2\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 124 leaves):

$$-\left(\left(4\sqrt{\text{Cos}[c+d\,x]}\,\left(C+A\,\text{Cos}[c+d\,x]^2\right)\text{Sin}[c]\left(\left(A+3\,C\right)\sqrt{\text{Cos}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2}\,\sqrt{\text{Csc}[c]^2}\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]-A\,\text{Csc}[c]\,\text{Sin}[c+d\,x]\right)\right)\Big/\left(3\,d\,\left(A+2\,C+A\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)\right)\right)$$

Problem 1079: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Cos}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 44 leaves, 3 steps):

$$\frac{2\,\left(A-C\right)\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{d}+\frac{2\,C\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 289 leaves):

$$\left(\text{Cos}[c+d\,x]^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(-\frac{4\,\left(\left(A-2\,C\right)\,\text{Cos}[d\,x]+A\,\text{Cos}[2\,c+d\,x]\right)\,\text{Csc}[c]}{d\,\sqrt{\text{Cos}[c+d\,x]}}+\left(2\,\left(A-C\right)\,\text{Csc}\left[\frac{c}{2}\right]\left(3\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]+e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right)\text{Sec}\left[\frac{c}{2}\right]\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,d\,\left(\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\right)\right)\right)\Big/\left(2\,\left(A+2\,C+A\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)\right)$$

Problem 1083: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\text{Cos}[c+d\,x]^{9/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 165 leaves, 8 steps):

$$\frac{2a(7A+9C)\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]}{15d}+\frac{2a(5A+7C)\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{21d}+\frac{2a(5A+7C)\sqrt{\text{Cos}[c+dx]}\,\text{Sin}[c+dx]}{21d}+\frac{2a(7A+9C)\,\text{Cos}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{45d}+\frac{2aA\,\text{Cos}[c+dx]^{5/2}\,\text{Sin}[c+dx]}{7d}+\frac{2aA\,\text{Cos}[c+dx]^{7/2}\,\text{Sin}[c+dx]}{9d}$$

Result (type 5, 918 leaves):

$$a\left(\sqrt{\text{Cos}[c+dx]}\,(1+\text{Cos}[c+dx])\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\right.$$
$$\left(-\frac{(7A+9C)\,\text{Cot}[c]}{15d}+\frac{(23A+28C)\,\text{Cos}[dx]\,\text{Sin}[c]}{84d}+\frac{(19A+18C)\,\text{Cos}[2dx]\,\text{Sin}[2c]}{180d}+\right.$$
$$\frac{A\,\text{Cos}[3dx]\,\text{Sin}[3c]}{28d}+\frac{A\,\text{Cos}[4dx]\,\text{Sin}[4c]}{72d}+\frac{(23A+28C)\,\text{Cos}[c]\,\text{Sin}[dx]}{84d}+$$
$$\left.\frac{(19A+18C)\,\text{Cos}[2c]\,\text{Sin}[2dx]}{180d}+\frac{A\,\text{Cos}[3c]\,\text{Sin}[3dx]}{28d}+\frac{A\,\text{Cos}[4c]\,\text{Sin}[4dx]}{72d}\right)-$$
$$\left(5A\,(1+\text{Cos}[c+dx])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[dx-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\,\text{Sec}[dx-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[dx-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[dx-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[dx-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(21d\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(C\,(1+\text{Cos}[c+dx])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[dx-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\,\text{Sec}[dx-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[dx-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[dx-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[dx-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3d\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{30d}7A\,(1+\text{Cos}[c+dx])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[dx+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-\frac{1}{10\,d}$$

$$3\,C\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 1084: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{7/2}\,(a+a\,\text{Sec}[c+d\,x])\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 134 leaves, 7 steps):

$$\frac{2\,a\,(3\,A+5\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,d}+\frac{2\,a\,(5\,A+7\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{21\,d}+\frac{2\,a\,(5\,A+7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{21\,d}+\frac{2\,a\,A\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{5\,d}+\frac{2\,a\,A\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{7\,d}$$

Result (type 5, 872 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,(1+\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(-\frac{(3\,A+5\,C)\,\text{Cot}[c]}{5\,d}+\frac{(23\,A+28\,C)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{84\,d}+\frac{A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{10\,d}+\frac{A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{28\,d}+\frac{(23\,A+28\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{84\,d}+\frac{A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{10\,d}+\frac{A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{28\,d}\right)-\right.$$

$$\left(5\,A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(21\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(C\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{10\,d}3\,A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\Bigg)-\frac{1}{2\,d}$$

$$C\,(1+\text{Cos}[c+d\,x])\ \text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)\Bigg)$$

Problem 1085: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{5/2}\ (a+a\,\text{Sec}[c+d\,x])\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)\, dx$$

Optimal (type 4, 101 leaves, 6 steps):

$$\frac{2\,a\,(3\,A+5\,C)\ \text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{2\,a\,(A+3\,C)\ \text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+\frac{2\,a\,A\,\sqrt{\text{Cos}[c+d\,x]}\ \text{Sin}[c+d\,x]}{3\,d}+\frac{2\,a\,A\,\text{Cos}[c+d\,x]^{3/2}\ \text{Sin}[c+d\,x]}{5\,d}$$

Result (type 5, 824 leaves):

$$a \left(\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(1+\mathrm{Cos}[c+d\,x]\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(-\frac{(3\,A+5\,C)\,\mathrm{Cot}[c]}{5\,d}+\frac{A\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{3\,d}+\frac{A\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]}{10\,d}+\frac{A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{3\,d}+\frac{A\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{10\,d}\right)-\left(A\,\left(1+\mathrm{Cos}[c+d\,x]\right)\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/\left(3\,d\,\sqrt{1+\mathrm{Cot}[c]^2}\right)-\frac{1}{d\,\sqrt{1+\mathrm{Cot}[c]^2}}C\,\left(1+\mathrm{Cos}[c+d\,x]\right)\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}-\frac{1}{10\,d}3\,A\,\left(1+\mathrm{Cos}[c+d\,x]\right)\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\,\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)-\frac{1}{2\,d}$$

$$C\left(1+\text{Cos}[c+d x]\right)\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\sqrt{1+\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\sqrt{\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}}\right)\Bigg)$$

Problem 1086: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\text{Cos}[c+d x]^{3/2}\left(a+a\,\text{Sec}[c+d x]\right)\left(A+C\,\text{Sec}[c+d x]^2\right)dx$$

Optimal (type 4, 95 leaves, 6 steps):

$$\frac{2 a\,(A-C)\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{d}+\frac{2 a\,(A+3 C)\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{3 d}+\frac{2 a\,C\,\text{Sin}[c+d x]}{d\sqrt{\text{Cos}[c+d x]}}+\frac{2 a\,A\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]}{3 d}$$

Result (type 5, 813 leaves):

$$a\left(\sqrt{\text{Cos}[c+d x]}\left(1+\text{Cos}[c+d x]\right)\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\left(-\frac{\left(A-2 C+A\,\text{Cos}[2 c]\right)\text{Csc}[c]\,\text{Sec}[c]}{2 d}+\frac{A\,\text{Cos}[d x]\,\text{Sin}[c]}{3 d}+\frac{A\,\text{Cos}[c]\,\text{Sin}[d x]}{3 d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d x]\,\text{Sin}[d x]}{d}\right)-\left(A\left(1+\text{Cos}[c+d x]\right)\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right.\right.$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{d\,\sqrt{1+\text{Cot}[c]^2}}C\,\left(1+\text{Cos}[c+d\,x]\right)\ \text{Csc}[c]$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\ \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\frac{1}{2\,d}A\,\left(1+\text{Cos}[c+d\,x]\right)\ \text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)+$$

$$\frac{1}{2\,d}C\,\left(1+\text{Cos}[c+d\,x]\right)\ \text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 1087: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 95 leaves, 6 steps):

$$\frac{2\,a\,(A-C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{d}+\frac{2\,a\,(3\,A+C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+\frac{2\,a\,C\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,a\,C\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 817 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\right.$$

$$\left(-\frac{\left(A-2\,C+A\,\text{Cos}[2\,c]\right)\,\text{Csc}[c]\,\text{Sec}[c]}{2\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{3\,d}+\right.$$

$$\left.\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(C\,\text{Sin}[c]+3\,C\,\text{Sin}[d\,x]\right)}{3\,d}\right)-\frac{1}{d\,\sqrt{1+\text{Cot}[c]^2}}$$

$$A\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$

$$\left(C\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{2\,d}A\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)+$$

$$\frac{1}{2\,d}C\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 1088: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(a+a\,\text{Sec}[c+d\,x]\right)\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 132 leaves, 7 steps):

$$-\frac{2\,a\,(5\,A+3\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,d}+\frac{2\,a\,(3\,A+C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+\frac{2\,a\,C\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{2\,a\,C\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,a\,(5\,A+3\,C)\,\text{Sin}[c+d\,x]}{5\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 851 leaves) :

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,(1+\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\frac{(5\,A+3\,C)\,\text{Csc}[c]\,\text{Sec}[c]}{5\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\text{Sin}[d\,x]}{5\,d}+\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,(3\,C\,\text{Sin}[c]+5\,C\,\text{Sin}[d\,x])}{15\,d}+\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(5\,C\,\text{Sin}[c]+15\,A\,\text{Sin}[d\,x]+9\,C\,\text{Sin}[d\,x])}{15\,d}\right)-\frac{1}{d\,\sqrt{1+\text{Cot}[c]^2}}\right.$$

$$A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\left(C\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)+\frac{1}{2\,d}A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\,-\frac{1}{4}\right\},\,\left\{\frac{3}{4}\right\},\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)+\frac{1}{10\,d}$$

$$3\,C\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 1089: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 165 leaves, 8 steps):

$$-\frac{2\,a\,(5\,A+3\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{2\,a\,(7\,A+5\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{21\,d}+$$

$$\frac{2\,a\,C\,\text{Sin}[c+d\,x]}{7\,d\,\text{Cos}[c+d\,x]^{7/2}}+\frac{2\,a\,C\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{2\,a\,(7\,A+5\,C)\,\text{Sin}[c+d\,x]}{21\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,a\,(5\,A+3\,C)\,\text{Sin}[c+d\,x]}{5\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 895 leaves):

$$a \left(\sqrt{\text{Cos}[c+d x]} \left(1+\text{Cos}[c+d x]\right) \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \left(\frac{(5 A+3 C) \text{Csc}[c] \text{Sec}[c]}{5 d} + \right.\right.$$

$$\frac{C \text{Sec}[c] \text{Sec}[c+d x]^4 \text{Sin}[d x]}{7 d} + \frac{\text{Sec}[c] \text{Sec}[c+d x]^3 \left(5 C \text{Sin}[c]+7 C \text{Sin}[d x]\right)}{35 d} +$$

$$\frac{1}{105 d} \text{Sec}[c] \text{Sec}[c+d x]^2 \left(21 C \text{Sin}[c]+35 A \text{Sin}[d x]+25 C \text{Sin}[d x]\right) + \frac{1}{105 d}$$

$$\left.\text{Sec}[c] \text{Sec}[c+d x] \left(35 A \text{Sin}[c]+25 C \text{Sin}[c]+105 A \text{Sin}[d x]+63 C \text{Sin}[d x]\right)\right) -$$

$$\left(A \left(1+\text{Cos}[c+d x]\right) \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right) \Big/ \left(3 d \sqrt{1+\text{Cot}[c]^2}\right) -$$

$$\left(5 C \left(1+\text{Cos}[c+d x]\right) \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(21 d \sqrt{1+\text{Cot}[c]^2}\right) + \frac{1}{2 d} A \left(1+\text{Cos}[c+d x]\right) \text{Csc}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2}, -\frac{1}{4}\right\}, \left\{\frac{3}{4}\right\}, \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]] \text{Tan}[c]\right) \Big/$$

$$\left(\sqrt{1-\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]} \sqrt{1+\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c] \text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]] \sqrt{1+\text{Tan}[c]^2}} \sqrt{1+\text{Tan}[c]^2}\right) -$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)+\frac{1}{10\,d}$$

$$3\,C\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 1090: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{11/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 230 leaves, 10 steps):

$$\frac{4\,a^2\,\left(7\,A+9\,C\right)\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{15\,d}+\frac{8\,a^2\,\left(25\,A+33\,C\right)\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{231\,d}+$$
$$\frac{8\,a^2\,\left(25\,A+33\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{231\,d}+\frac{4\,a^2\,\left(7\,A+9\,C\right)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{45\,d}+$$
$$\frac{2\,a^2\,\left(89\,A+99\,C\right)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{693\,d}+\frac{2\,A\,\text{Cos}[c+d\,x]^{5/2}\,\left(a+a\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{11\,d}+$$
$$\frac{8\,A\,\text{Cos}[c+d\,x]^{5/2}\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{99\,d}$$

Result (type 5, 976 leaves):

$$a^2 \left(\sqrt{\text{Cos}[c+d\,x]}\ \left(1+\text{Cos}[c+d\,x]\right)^2 \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$

$$\left(-\frac{(7\,A+9\,C)\ \text{Cot}[c]}{15\,d}+\frac{(941\,A+1122\,C)\ \text{Cos}[d\,x]\ \text{Sin}[c]}{3696\,d}+\frac{(19\,A+18\,C)\ \text{Cos}[2\,d\,x]\ \text{Sin}[2\,c]}{180\,d}+\right.$$

$$\frac{(101\,A+44\,C)\ \text{Cos}[3\,d\,x]\ \text{Sin}[3\,c]}{2464\,d}+\frac{A\,\text{Cos}[4\,d\,x]\ \text{Sin}[4\,c]}{72\,d}+\frac{A\,\text{Cos}[5\,d\,x]\ \text{Sin}[5\,c]}{352\,d}+$$

$$\frac{(941\,A+1122\,C)\ \text{Cos}[c]\ \text{Sin}[d\,x]}{3696\,d}+\frac{(19\,A+18\,C)\ \text{Cos}[2\,c]\ \text{Sin}[2\,d\,x]}{180\,d}+$$

$$\left.\frac{(101\,A+44\,C)\ \text{Cos}[3\,c]\ \text{Sin}[3\,d\,x]}{2464\,d}+\frac{A\,\text{Cos}[4\,c]\ \text{Sin}[4\,d\,x]}{72\,d}+\frac{A\,\text{Cos}[5\,c]\ \text{Sin}[5\,d\,x]}{352\,d}\right)-$$

$$\left(50\,A\ \left(1+\text{Cos}[c+d\,x]\right)^2 \text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4 \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(231\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(2\,C\ \left(1+\text{Cos}[c+d\,x]\right)^2 \text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4 \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(7\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{30\,d}7\,A\ \left(1+\text{Cos}[c+d\,x]\right)^2 \text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg) -$$

$$\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg) - \frac{1}{10\,d}$$

$$3\,C\,(1+\text{Cos}[c+d\,x])^2\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big)\Big/$$

$$\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg) -$$

$$\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)$$

Problem 1091: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{9/2}\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 197 leaves, 9 steps):

$$\frac{16\,a^2\,(2\,A+3\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{15\,d}+\frac{4\,a^2\,(5\,A+7\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{21\,d}+$$

$$\frac{4\,a^2\,(5\,A+7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{21\,d}+\frac{2\,a^2\,(19\,A+21\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{105\,d}+$$

$$\frac{2\,A\,\text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Cos}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{9\,d}+$$

$$\frac{8\,A\,\text{Cos}[c+d\,x]^{3/2}\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{63\,d}$$

Result (type 5, 1118 leaves):

$$\left(\text{Cos}[c+d\,x]^{9/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{8\,(2\,A+3\,C)\,\text{Cot}[c]}{15\,d}+\frac{(23\,A+28\,C)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{42\,d}+\frac{(37\,A+18\,C)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{180\,d}+\right.$$
$$\frac{A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{14\,d}+\frac{A\,\text{Cos}[4\,d\,x]\,\text{Sin}[4\,c]}{72\,d}+\frac{(23\,A+28\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{42\,d}+$$
$$\left.\left.\frac{(37\,A+18\,C)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{180\,d}+\frac{A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{14\,d}+\frac{A\,\text{Cos}[4\,c]\,\text{Sin}[4\,d\,x]}{72\,d}\right)\right)\Big/$$
$$(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])-\frac{1}{21\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$10\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\frac{1}{3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$2\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\left(8\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$\left(15\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-\Bigg(4\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$

$$\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.$$

$$\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg)-$$

$$\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/\left(5\,d\,\left(A+\right.\right.$$

$$\left.\left.2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1092: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{7/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 164 leaves, 8 steps):

$$\frac{4\,a^2\,(3\,A+5\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{8\,a^2\,(3\,A+7\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{21\,d}+$$

$$\frac{2\,a^2\,(33\,A+35\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{105\,d}+\frac{2\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{7\,d}+$$

$$\frac{8\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{35\,d}$$

Result (type 5, 1070 leaves):

$$\left(\text{Cos}[c+d x]^{9/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\,(a+a\,\text{Sec}[c+d x])^2\,\left(A+C\,\text{Sec}[c+d x]^2\right)\,\left(-\frac{2\,(3 A+5 C)\,\text{Cot}[c]}{5 d}+\frac{(51 A+28 C)\,\text{Cos}[d x]\,\text{Sin}[c]}{84 d}+\frac{A\,\text{Cos}[2 d x]\,\text{Sin}[2 c]}{5 d}+\frac{A\,\text{Cos}[3 d x]\,\text{Sin}[3 c]}{28 d}+\frac{(51 A+28 C)\,\text{Cos}[c]\,\text{Sin}[d x]}{84 d}+\frac{A\,\text{Cos}[2 c]\,\text{Sin}[2 d x]}{5 d}+\frac{A\,\text{Cos}[3 c]\,\text{Sin}[3 d x]}{28 d}\right)\right)\Big/$$

$$(A+2 C+A\,\text{Cos}[2 c+2 d x])-\frac{1}{7 d\,(A+2 C+A\,\text{Cos}[2 c+2 d x])\,\sqrt{1+\text{Cot}[c]^2}}$$

$$4 A\,\text{Cos}[c+d x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\,(a+a\,\text{Sec}[c+d x])^2\,\left(A+C\,\text{Sec}[c+d x]^2\right)$$

$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{3 d\,(A+2 C+A\,\text{Cos}[2 c+2 d x])\,\sqrt{1+\text{Cot}[c]^2}}$$

$$4 C\,\text{Cos}[c+d x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\,(a+a\,\text{Sec}[c+d x])^2\,\left(A+C\,\text{Sec}[c+d x]^2\right)$$

$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\Bigg(3 A\,\text{Cos}[c+d x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\,(a+a\,\text{Sec}[c+d x])^2\,\left(A+C\,\text{Sec}[c+d x]^2\right)$$

$$\Bigg(\bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\bigg)\Big/\bigg(\sqrt{1-\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-\left(C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right.$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\left(d\,\left(A+\right.\right.$$

$$\left.\left.2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1093: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{5/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 158 leaves, 8 steps):

$$\frac{16\,a^2\,A\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{4\,a^2\,(A+3\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+$$

$$\frac{2\,a^2\,(7\,A-15\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d}+\frac{2\,C\,\left(a+a\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}+$$

$$\frac{2\,(A-5\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 5, 799 leaves) :

$$\left(\text{Cos}[c+d x]^{9/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a\,\text{Sec}[c+d x])^2 \left(A+C\,\text{Sec}[c+d x]^2\right) \left(-\frac{(8 A-5 C+8 A\,\text{Cos}[2 c]+5 C\,\text{Cos}[2 c])\,\text{Csc}[c]\,\text{Sec}[c]}{10 d}+\frac{2 A\,\text{Cos}[d x]\,\text{Sin}[c]}{3 d}+\frac{A\,\text{Cos}[2 d x]\,\text{Sin}[2 c]}{10 d}+\frac{2 A\,\text{Cos}[c]\,\text{Sin}[d x]}{3 d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d x]\,\text{Sin}[d x]}{d}+\frac{A\,\text{Cos}[2 c]\,\text{Sin}[2 d x]}{10 d}\right)\right)\Big/$$

$$(A+2 C+A\,\text{Cos}[2 c+2 d x])-\frac{1}{3 d\,(A+2 C+A\,\text{Cos}[2 c+2 d x])\sqrt{1+\text{Cot}[c]^2}}$$

$$2 A\,\text{Cos}[c+d x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a\,\text{Sec}[c+d x])^2 \left(A+C\,\text{Sec}[c+d x]^2\right)$$

$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{d\,(A+2 C+A\,\text{Cos}[2 c+2 d x])\sqrt{1+\text{Cot}[c]^2}}$$

$$2 C\,\text{Cos}[c+d x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a\,\text{Sec}[c+d x])^2 \left(A+C\,\text{Sec}[c+d x]^2\right)$$

$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\left(4 A\,\text{Cos}[c+d x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a\,\text{Sec}[c+d x])^2 \left(A+C\,\text{Sec}[c+d x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d x+\text{ArcTan}[\text{Tan}[\right.\right.$$

$$\left.c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\Bigg) -$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\Big(5\,d\,\big(A+$$

$$2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\big)\Big)$$

Problem 1094: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{3/2}\ (a+a\,\text{Sec}[c+d\,x])^2\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 154 leaves, 8 steps):

$$\frac{4\,a^2\,(A-C)\ \text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{d}+$$
$$\frac{8\,a^2\,(A+C)\ \text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+\frac{2\,a^2\,(A-5\,C)\ \sqrt{\text{Cos}[c+d\,x]}\ \text{Sin}[c+d\,x]}{3\,d}+$$
$$\frac{2\,C\,(a+a\,\text{Cos}[c+d\,x])^2\ \text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{8\,C\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)\ \text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 1040 leaves):

$$\Bigg(\text{Cos}[c+d\,x]^{9/2}\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\ (a+a\,\text{Sec}[c+d\,x])^2\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-\frac{(A-2\,C+A\,\text{Cos}[2\,c])\ \text{Csc}[c]\ \text{Sec}[c]}{d}+\frac{A\,\text{Cos}[d\,x]\ \text{Sin}[c]}{3\,d}+\frac{A\,\text{Cos}[c]\ \text{Sin}[d\,x]}{3\,d}+\right.$$
$$\left.\left.\frac{C\,\text{Sec}[c]\ \text{Sec}[c+d\,x]^2\ \text{Sin}[d\,x]}{3\,d}+\frac{\text{Sec}[c]\ \text{Sec}[c+d\,x]\ (C\,\text{Sin}[c]+6\,C\,\text{Sin}[d\,x])}{3\,d}\right)\right)\Big/$$
$$(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])-\frac{1}{3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\ \sqrt{1+\text{Cot}[c]^2}}$$
$$4\,A\,\text{Cos}[c+d\,x]^4\ \text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\ (a+a\,\text{Sec}[c+d\,x])^2\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$
$$\frac{1}{3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\ \sqrt{1+\text{Cot}[c]^2}}$$

$$4\,C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,-$$
$$\left(A\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$
$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$
$$\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/$$
$$(d\,(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]))+\left(C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right.$$
$$\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/$$
$$\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\left.\left.\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\left(d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1095: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Cos}[c+d\,x]}\ \left(a+a\,\text{Sec}[c+d\,x]\right)^2\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 156 leaves, 8 steps):

$$-\frac{16\,a^2\,C\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,d}+\frac{4\,a^2\,(3\,A+C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+\frac{2\,a^2\,(15\,A+17\,C)\,\text{Sin}[c+d\,x]}{15\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,C\,\left(a+a\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{8\,C\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{15\,d\,\text{Cos}[c+d\,x]^{3/2}}$$

Result (type 5, 800 leaves):

$$\left(\text{Cos}[c+d\,x]^{9/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(-\frac{\left(-5\,A-16\,C+5\,A\,\text{Cos}[2\,c]\right)\,\text{Csc}[c]\,\text{Sec}[c]}{10\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\text{Sin}[d\,x]}{5\,d}+\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(3\,C\,\text{Sin}[c]+10\,C\,\text{Sin}[d\,x]\right)}{15\,d}+\frac{1}{15\,d}\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(10\,C\,\text{Sin}[c]+15\,A\,\text{Sin}[d\,x]+24\,C\,\text{Sin}[d\,x]\right)\right)\right)\Big/\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)-\frac{1}{d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}}$$

$$2\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\frac{1}{3\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}}$$
$$2\,C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,+$$
$$\left(4\,C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[\right.\right.$$
$$\left.c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$
$$\left.\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\,\sqrt{1+\mathrm{Tan}[c]^2}\right)-$$
$$\left.\left.\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/\left(5\,d\,\left(A+\right.\right.$$
$$\left.\left.2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1096: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{\mathrm{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 197 leaves, 9 steps):

$$-\frac{4 a^2 (5 A+3 C) \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{5 d}+\frac{8 a^2 (7 A+3 C) \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{21 d}+$$
$$\frac{2 a^2 (35 A+33 C) \text{Sin}[c+d x]}{105 d \text{Cos}[c+d x]^{3/2}}+\frac{4 a^2 (5 A+3 C) \text{Sin}[c+d x]}{5 d \sqrt{\text{Cos}[c+d x]}}+$$
$$\frac{2 C (a+a \text{Cos}[c+d x])^2 \text{Sin}[c+d x]}{7 d \text{Cos}[c+d x]^{7/2}}+\frac{8 C \left(a^2+a^2 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{35 d \text{Cos}[c+d x]^{5/2}}$$

Result (type 5, 1092 leaves) :

$$\Bigg(\text{Cos}[c+d x]^{9/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2$$
$$\left(A+C \text{Sec}[c+d x]^2\right) \left(\frac{2 (5 A+3 C) \text{Csc}[c] \text{Sec}[c]}{5 d}+\frac{C \text{Sec}[c] \text{Sec}[c+d x]^4 \text{Sin}[d x]}{7 d}+\right.$$
$$\frac{\text{Sec}[c] \text{Sec}[c+d x]^3 (5 C \text{Sin}[c]+14 C \text{Sin}[d x])}{35 d}+\frac{1}{105 d}$$
$$\text{Sec}[c] \text{Sec}[c+d x]^2 (42 C \text{Sin}[c]+35 A \text{Sin}[d x]+60 C \text{Sin}[d x])+\frac{1}{105 d}$$
$$\left.\text{Sec}[c] \text{Sec}[c+d x] (35 A \text{Sin}[c]+60 C \text{Sin}[c]+210 A \text{Sin}[d x]+126 C \text{Sin}[d x])\right)\Bigg)\Big/$$
$$(A+2 C+A \text{Cos}[2 c+2 d x])-\frac{1}{3 d (A+2 C+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}}$$
$$4 A \text{Cos}[c+d x]^4 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(A+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\frac{1}{7 d (A+2 C+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}}$$
$$4 C \text{Cos}[c+d x]^4 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(A+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}+$$
$$\Bigg(A \text{Cos}[c+d x]^4 \text{Csc}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(A+C \text{Sec}[c+d x]^2\right)$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$(d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]))+\left(3\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\right.$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\left(5\,d\,(A+\right.$$

$$2\,C+A\,\text{Cos}[2\,c+2\,d\,x]))$$

Problem 1097: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a\,\text{Sec}[c + d\,x])^2\,(A + C\,\text{Sec}[c + d\,x]^2)}{\text{Cos}[c + d\,x]^{3/2}}\,dx$$

Optimal (type 4, 230 leaves, 10 steps):

$$-\frac{16\,a^2\,(3\,A + 2\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{15\,d} + \frac{4\,a^2\,(7\,A + 5\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{21\,d} + \frac{2\,a^2\,(21\,A + 19\,C)\,\text{Sin}[c + d\,x]}{105\,d\,\text{Cos}[c + d\,x]^{5/2}} + \frac{4\,a^2\,(7\,A + 5\,C)\,\text{Sin}[c + d\,x]}{21\,d\,\text{Cos}[c + d\,x]^{3/2}} + \frac{16\,a^2\,(3\,A + 2\,C)\,\text{Sin}[c + d\,x]}{15\,d\,\sqrt{\text{Cos}[c + d\,x]}} + \frac{2\,C\,(a + a\,\text{Cos}[c + d\,x])^2\,\text{Sin}[c + d\,x]}{9\,d\,\text{Cos}[c + d\,x]^{9/2}} + \frac{8\,C\,(a^2 + a^2\,\text{Cos}[c + d\,x])\,\text{Sin}[c + d\,x]}{63\,d\,\text{Cos}[c + d\,x]^{7/2}}$$

Result (type 5, 1137 leaves):

$$\frac{1}{A + 2\,C + A\,\text{Cos}[2\,c + 2\,d\,x]}\,\text{Cos}[c + d\,x]^{9/2}\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4 (a + a\,\text{Sec}[c + d\,x])^2\,(A + C\,\text{Sec}[c + d\,x]^2) \left(\frac{8\,(3\,A + 2\,C)\,\text{Csc}[c]\,\text{Sec}[c]}{15\,d} + \frac{C\,\text{Sec}[c]\,\text{Sec}[c + d\,x]^5\,\text{Sin}[d\,x]}{9\,d} + \frac{\text{Sec}[c]\,\text{Sec}[c + d\,x]^4\,(7\,C\,\text{Sin}[c] + 18\,C\,\text{Sin}[d\,x])}{63\,d} + \frac{1}{105\,d}2\,\text{Sec}[c]\,\text{Sec}[c + d\,x]\,(35\,A\,\text{Sin}[c] + 25\,C\,\text{Sin}[c] + 84\,A\,\text{Sin}[d\,x] + 56\,C\,\text{Sin}[d\,x]) + \frac{1}{315\,d}\text{Sec}[c]\,\text{Sec}[c + d\,x]^3\,(90\,C\,\text{Sin}[c] + 63\,A\,\text{Sin}[d\,x] + 112\,C\,\text{Sin}[d\,x]) + \frac{1}{315\,d}\text{Sec}[c]\,\text{Sec}[c + d\,x]^2\,(63\,A\,\text{Sin}[c] + 112\,C\,\text{Sin}[c] + 210\,A\,\text{Sin}[d\,x] + 150\,C\,\text{Sin}[d\,x])\right) -$$

$$\frac{1}{3\,d\,(A + 2\,C + A\,\text{Cos}[2\,c + 2\,d\,x])\,\sqrt{1 + \text{Cot}[c]^2}}\,2\,A\,\text{Cos}[c + d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4 (a + a\,\text{Sec}[c + d\,x])^2\,(A + C\,\text{Sec}[c + d\,x]^2)\,\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]} -$$

$$\frac{1}{21\,d\,(A + 2\,C + A\,\text{Cos}[2\,c + 2\,d\,x])\,\sqrt{1 + \text{Cot}[c]^2}}\,10\,C\,\text{Cos}[c + d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4 (a + a\,\text{Sec}[c + d\,x])^2\,(A + C\,\text{Sec}[c + d\,x]^2)\,\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]} +$$

$$\left(4\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\left.\left.\right)\right)\Big/$$

$$\left(5\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+\left(8\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right.$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\left(15\,d\,\left(A+\right.\right.$$

$$\left.\left.2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1098: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^{13/2} \left(a+a\,\text{Sec}[c+d x]\right)^3 \left(A+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 279 leaves, 11 steps):

$$\frac{4 a^3 (175 A+221 C)\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{195 d}+\frac{4 a^3 (95 A+121 C)\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{231 d}+\frac{4 a^3 (95 A+121 C)\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]}{231 d}+\frac{4 a^3 (175 A+221 C)\,\text{Cos}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{585 d}+\frac{40 a^3 (118 A+143 C)\,\text{Cos}[c+d x]^{5/2}\,\text{Sin}[c+d x]}{9009 d}+\frac{2 A\,\text{Cos}[c+d x]^{5/2}\left(a+a\,\text{Cos}[c+d x]\right)^3\text{Sin}[c+d x]}{13 d}+\frac{12 A\,\text{Cos}[c+d x]^{5/2}\left(a^2+a^2\,\text{Cos}[c+d x]\right)^2\text{Sin}[c+d x]}{143 a d}+\frac{2 (145 A+143 C)\,\text{Cos}[c+d x]^{5/2}\left(a^3+a^3\,\text{Cos}[c+d x]\right)\text{Sin}[c+d x]}{1287 d}$$

Result (type 5, 1022 leaves):

$$a^3 \Bigg(\sqrt{\text{Cos}[c+d x]}\,\left(1+\text{Cos}[c+d x]\right)^3\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \Bigg(-\frac{(175 A+221 C)\,\text{Cot}[c]}{390 d}+\frac{(1811 A+2134 C)\,\text{Cos}[d x]\,\text{Sin}[c]}{7392 d}+\frac{(7825 A+7592 C)\,\text{Cos}[2 d x]\,\text{Sin}[2 c]}{74880 d}+\frac{(215 A+132 C)\,\text{Cos}[3 d x]\,\text{Sin}[3 c]}{4928 d}+\frac{(59 A+13 C)\,\text{Cos}[4 d x]\,\text{Sin}[4 c]}{3744 d}+\frac{3 A\,\text{Cos}[5 d x]\,\text{Sin}[5 c]}{704 d}+\frac{A\,\text{Cos}[6 d x]\,\text{Sin}[6 c]}{1664 d}+\frac{(1811 A+2134 C)\,\text{Cos}[c]\,\text{Sin}[d x]}{7392 d}+\frac{(7825 A+7592 C)\,\text{Cos}[2 c]\,\text{Sin}[2 d x]}{74880 d}+\frac{(215 A+132 C)\,\text{Cos}[3 c]\,\text{Sin}[3 d x]}{4928 d}+\frac{(59 A+13 C)\,\text{Cos}[4 c]\,\text{Sin}[4 d x]}{3744 d}+\frac{3 A\,\text{Cos}[5 c]\,\text{Sin}[5 d x]}{704 d}+\frac{A\,\text{Cos}[6 c]\,\text{Sin}[6 d x]}{1664 d}\Bigg)-$$

$$\Bigg(95 A \left(1+\text{Cos}[c+d x]\right)^3\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\,\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(462\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(11\,C\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(42\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{156\,d}35\,A\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-$$

$$\frac{1}{60\,d}17\,C\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\left.\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\right)-$$
$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 1099: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{11/2}\ (a+a\,\text{Sec}[c+d\,x])^3\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 246 leaves, 10 steps):

$$\frac{4\,a^3\,(5\,A+7\,C)\ \text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{4\,a^3\,(105\,A+143\,C)\ \text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{231\,d}+$$
$$\frac{4\,a^3\,(105\,A+143\,C)\ \sqrt{\text{Cos}[c+d\,x]}\ \text{Sin}[c+d\,x]}{231\,d}+\frac{8\,a^3\,(35\,A+44\,C)\ \text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{385\,d}+$$
$$\frac{2\,A\,\text{Cos}[c+d\,x]^{3/2}\ (a+a\,\text{Cos}[c+d\,x])^3\ \text{Sin}[c+d\,x]}{11\,d}+$$
$$\frac{4\,A\,\text{Cos}[c+d\,x]^{3/2}\ \left(a^2+a^2\,\text{Cos}[c+d\,x]\right)^2\ \text{Sin}[c+d\,x]}{33\,a\,d}+$$
$$\frac{2\,(35\,A+33\,C)\ \text{Cos}[c+d\,x]^{3/2}\ \left(a^3+a^3\,\text{Cos}[c+d\,x]\right)\ \text{Sin}[c+d\,x]}{231\,d}$$

Result (type 5, 976 leaves):

$$a^3\left(\sqrt{\text{Cos}[c+d\,x]}\ (1+\text{Cos}[c+d\,x])^3\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\right.$$
$$\left(-\frac{(5\,A+7\,C)\ \text{Cot}[c]}{10\,d}+\frac{(1953\,A+2354\,C)\ \text{Cos}[d\,x]\ \text{Sin}[c]}{7392\,d}+\frac{(25\,A+18\,C)\ \text{Cos}[2\,d\,x]\ \text{Sin}[2\,c]}{240\,d}+\right.$$
$$\frac{(189\,A+44\,C)\ \text{Cos}[3\,d\,x]\ \text{Sin}[3\,c]}{4928\,d}+\frac{A\,\text{Cos}[4\,d\,x]\ \text{Sin}[4\,c]}{96\,d}+\frac{A\,\text{Cos}[5\,d\,x]\ \text{Sin}[5\,c]}{704\,d}+$$
$$\frac{(1953\,A+2354\,C)\ \text{Cos}[c]\ \text{Sin}[d\,x]}{7392\,d}+\frac{(25\,A+18\,C)\ \text{Cos}[2\,c]\ \text{Sin}[2\,d\,x]}{240\,d}+$$
$$\left.\frac{(189\,A+44\,C)\ \text{Cos}[3\,c]\ \text{Sin}[3\,d\,x]}{4928\,d}+\frac{A\,\text{Cos}[4\,c]\ \text{Sin}[4\,d\,x]}{96\,d}+\frac{A\,\text{Cos}[5\,c]\ \text{Sin}[5\,d\,x]}{704\,d}\right)-$$

$$\left(5\,A\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(22\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(13\,C\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(42\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{4\,d}A\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$
$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$
$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-\frac{1}{20\,d}$$
$$7\,C\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left\{\frac{3}{4}\right\},\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\Bigg)-$$

$$\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)$$

Problem 1100: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{9/2}\ (a+a\,\text{Sec}[c+d\,x])^3\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 213 leaves, 9 steps):

$$\frac{4\,a^3\,(17\,A+27\,C)\ \text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{15\,d}+\frac{4\,a^3\,(11\,A+21\,C)\ \text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{21\,d}+$$

$$\frac{8\,a^3\,(16\,A+21\,C)\ \sqrt{\text{Cos}[c+d\,x]}\ \text{Sin}[c+d\,x]}{105\,d}+\frac{2\,A\,\sqrt{\text{Cos}[c+d\,x]}\ (a+a\,\text{Cos}[c+d\,x])^3\ \text{Sin}[c+d\,x]}{9\,d}+$$

$$\frac{4\,A\,\sqrt{\text{Cos}[c+d\,x]}\ \left(a^2+a^2\,\text{Cos}[c+d\,x]\right)^2\ \text{Sin}[c+d\,x]}{21\,a\,d}+$$

$$\frac{2\,(73\,A+63\,C)\ \sqrt{\text{Cos}[c+d\,x]}\ \left(a^3+a^3\,\text{Cos}[c+d\,x]\right)\ \text{Sin}[c+d\,x]}{315\,d}$$

Result (type 5, 1116 leaves):

$$\Bigg(\text{Cos}[c+d\,x]^{11/2}\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\ (a+a\,\text{Sec}[c+d\,x])^3\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\frac{(17\,A+27\,C)\ \text{Cot}[c]}{15\,d}+\frac{(97\,A+84\,C)\ \text{Cos}[d\,x]\ \text{Sin}[c]}{168\,d}+\frac{(73\,A+18\,C)\ \text{Cos}[2\,d\,x]\ \text{Sin}[2\,c]}{360\,d}+$$

$$\frac{3\,A\,\text{Cos}[3\,d\,x]\ \text{Sin}[3\,c]}{56\,d}+\frac{A\,\text{Cos}[4\,d\,x]\ \text{Sin}[4\,c]}{144\,d}+\frac{(97\,A+84\,C)\ \text{Cos}[c]\ \text{Sin}[d\,x]}{168\,d}+$$

$$\frac{(73\,A+18\,C)\ \text{Cos}[2\,c]\ \text{Sin}[2\,d\,x]}{360\,d}+\frac{3\,A\,\text{Cos}[3\,c]\ \text{Sin}[3\,d\,x]}{56\,d}+\frac{A\,\text{Cos}[4\,c]\ \text{Sin}[4\,d\,x]}{144\,d}\Bigg)\Bigg)\Bigg/$$

$$(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])-\frac{1}{21\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\ \sqrt{1+\text{Cot}[c]^2}}$$

$$11\,A\,\text{Cos}[c+d\,x]^5\ \text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6 \left(a+a\,\text{Sec}[c+d\,x]\right)^3 \left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$

$$\frac{1}{d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$
$$C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6 \left(a+a\,\text{Sec}[c+d\,x]\right)^3 \left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$

$$\Bigg(17\,A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6 \left(a+a\,\text{Sec}[c+d\,x]\right)^3 \left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$
$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$
$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$
$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$\left(30\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-\Bigg(9\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$

$$\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Big/\left(10\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1101: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{7/2}\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 215 leaves, 9 steps):

$$\frac{4\,a^3\,(7\,A+5\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{4\,a^3\,(13\,A+35\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{21\,d}+\frac{4\,a^3\,(41\,A-35\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{105\,d}+\frac{2\,C\,\left(a+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,(A-7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{7\,a\,d}+\frac{2\,(11\,A-35\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\left(a^3+a^3\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{35\,d}$$

Result (type 5, 1108 leaves):

$$\left(\text{Cos}[c+d\,x]^{11/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{(14\,A+5\,C+14\,A\,\text{Cos}[2\,c]+15\,C\,\text{Cos}[2\,c])\,\text{Csc}[c]\,\text{Sec}[c]}{20\,d}+\frac{(107\,A+28\,C)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{168\,d}+\right.$$
$$\frac{3\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{20\,d}+\frac{A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{56\,d}+\frac{(107\,A+28\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{168\,d}+$$

$$\left.\left.\frac{C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}[d\,x]}{2\,d}+\frac{3\,A\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{20\,d}+\frac{A\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{56\,d}\right)\right)\Big/$$

$$\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)-\frac{1}{21\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}}$$

$$13\,A\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}-$$

$$\frac{1}{3\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}}$$

$$5\,C\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}-$$

$$\left(7\,A\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(10\,d\,\left(A+2\,C+A\,Cos[2\,c+2\,d\,x]\right)\right)-\left(C\,Cos[c+d\,x]^5\,Csc[c]\,Sec\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,Sec[c+d\,x]\right)^3\right.$$

$$\left(A+C\,Sec[c+d\,x]^2\right)\left(\left(HypergeometricPFQ\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},Cos[d\,x+ArcTan[Tan[c]]]^2\right]\right.\right.$$

$$\left.Sin[d\,x+ArcTan[Tan[c]]]\,Tan[c]\right)\Big/$$

$$\left(\sqrt{1-Cos[d\,x+ArcTan[Tan[c]]]}\,\sqrt{1+Cos[d\,x+ArcTan[Tan[c]]]}\right.$$

$$\left.\sqrt{Cos[c]\,Cos[d\,x+ArcTan[Tan[c]]]\,\sqrt{1+Tan[c]^2}}\,\sqrt{1+Tan[c]^2}\right)-$$

$$\left.\left.\frac{\frac{Sin[d\,x+ArcTan[Tan[c]]]\,Tan[c]}{\sqrt{1+Tan[c]^2}}+\frac{2\,Cos[c]^2\,Cos[d\,x+ArcTan[Tan[c]]]\,\sqrt{1+Tan[c]^2}}{Cos[c]^2+Sin[c]^2}}{\sqrt{Cos[c]\,Cos[d\,x+ArcTan[Tan[c]]]\,\sqrt{1+Tan[c]^2}}}\right)\right)\Big/\left(2\,d\,\left(A+\right.\right.$$

$$\left.\left.2\,C+A\,Cos[2\,c+2\,d\,x]\right)\right)$$

Problem 1102: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int Cos[c+d\,x]^{5/2}\,\left(a+a\,Sec[c+d\,x]\right)^3\,\left(A+C\,Sec[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 211 leaves, 9 steps):

$$\frac{4\,a^3\,\left(9\,A-5\,C\right)\,EllipticE\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{5\,d}+$$

$$\frac{4\,a^3\,\left(3\,A+5\,C\right)\,EllipticF\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{3\,d}+\frac{8\,a^3\,\left(3\,A-10\,C\right)\,\sqrt{Cos[c+d\,x]}\,Sin[c+d\,x]}{15\,d}+$$

$$\frac{2\,C\,\left(a+a\,Cos[c+d\,x]\right)^3\,Sin[c+d\,x]}{3\,d\,Cos[c+d\,x]^{3/2}}+\frac{4\,C\,\left(a^2+a^2\,Cos[c+d\,x]\right)^2\,Sin[c+d\,x]}{a\,d\,\sqrt{Cos[c+d\,x]}}+$$

$$\frac{2\,\left(3\,A-35\,C\right)\,\sqrt{Cos[c+d\,x]}\,\left(a^3+a^3\,Cos[c+d\,x]\right)\,Sin[c+d\,x]}{15\,d}$$

Result (type 5, 1089 leaves):

$$\left(\text{Cos}[c+d x]^{11/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\,(a+a\,\text{Sec}[c+d x])^3\,\left(A+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(-\frac{(18 A-25 C+18 A\,\text{Cos}[2 c]+5 C\,\text{Cos}[2 c])\,\text{Csc}[c]\,\text{Sec}[c]}{20 d}+\frac{A\,\text{Cos}[d x]\,\text{Sin}[c]}{2 d}+\right.$$
$$\frac{A\,\text{Cos}[2 d x]\,\text{Sin}[2 c]}{20 d}+\frac{A\,\text{Cos}[c]\,\text{Sin}[d x]}{2 d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d x]^2\,\text{Sin}[d x]}{6 d}+$$
$$\left.\left.\frac{\text{Sec}[c]\,\text{Sec}[c+d x]\,(C\,\text{Sin}[c]+9 C\,\text{Sin}[d x])}{6 d}+\frac{A\,\text{Cos}[2 c]\,\text{Sin}[2 d x]}{20 d}\right)\right)\Big/$$
$$(A+2 C+A\,\text{Cos}[2 c+2 d x])-\frac{1}{d\,(A+2 C+A\,\text{Cos}[2 c+2 d x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$A\,\text{Cos}[c+d x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\,(a+a\,\text{Sec}[c+d x])^3\,\left(A+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\frac{1}{3 d\,(A+2 C+A\,\text{Cos}[2 c+2 d x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$5 C\,\text{Cos}[c+d x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\,(a+a\,\text{Sec}[c+d x])^3\,\left(A+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\left(9 A\,\text{Cos}[c+d x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\,(a+a\,\text{Sec}[c+d x])^3\,\left(A+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\sqrt{1+\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(10\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+\left(C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right.$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\left(2\,d\,\left(A+\right.\right.$$

$$\left.\left.2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1103: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 213 leaves, 9 steps):

$$\frac{4\,a^3\,\left(5\,A-9\,C\right)\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{5\,d}+\frac{4\,a^3\,\left(5\,A+3\,C\right)\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{3\,d}-$$

$$\frac{4\,a^3\,\left(5\,A+21\,C\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d}+\frac{2\,C\,\left(a+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{5/2}}+$$

$$\frac{4\,C\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{5\,a\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,\left(5\,A+11\,C\right)\,\left(a^3+a^3\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{5\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 1085 leaves):

$$\left(\text{Cos}[c+d x]^{11/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\,(a+a\,\text{Sec}[c+d x])^3\,\left(A+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(-\frac{(5 A-36 C+15 A\,\text{Cos}[2 c])\,\text{Csc}[c]\,\text{Sec}[c]}{20 d}+\frac{A\,\text{Cos}[d x]\,\text{Sin}[c]}{6 d}+\frac{A\,\text{Cos}[c]\,\text{Sin}[d x]}{6 d}+\right.$$
$$\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d x]^3\,\text{Sin}[d x]}{10 d}+\frac{\text{Sec}[c]\,\text{Sec}[c+d x]^2\,(C\,\text{Sin}[c]+5 C\,\text{Sin}[d x])}{10 d}+$$
$$\left.\left.\frac{\text{Sec}[c]\,\text{Sec}[c+d x]\,(5 C\,\text{Sin}[c]+5 A\,\text{Sin}[d x]+18 C\,\text{Sin}[d x])}{10 d}\right)\right)\Big/$$
$$(A+2 C+A\,\text{Cos}[2 c+2 d x])-\frac{1}{3 d\,(A+2 C+A\,\text{Cos}[2 c+2 d x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$5 A\,\text{Cos}[c+d x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\,(a+a\,\text{Sec}[c+d x])^3\,\left(A+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\frac{1}{d\,(A+2 C+A\,\text{Cos}[2 c+2 d x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$C\,\text{Cos}[c+d x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\,(a+a\,\text{Sec}[c+d x])^3\,\left(A+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\left(A\,\text{Cos}[c+d x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\,(a+a\,\text{Sec}[c+d x])^3\,\left(A+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\;\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$(2\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]))+\Bigg(9\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\;\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\;\sqrt{1+\text{Tan}[c]^2}\Bigg)-$$

$$\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/\,(10\,d\,(A+$$

$$2\,C+A\,\text{Cos}[2\,c+2\,d\,x]))$$

Problem 1104: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Cos}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 213 leaves, 9 steps):

$$-\frac{4 a^3 (5 A+7 C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{5 d}+\frac{4 a^3 (35 A+13 C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{21 d}+$$
$$\frac{8 a^3 (70 A+53 C) \text{Sin}[c+d x]}{105 d \sqrt{\text{Cos}[c+d x]}}+\frac{2 C (a+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{7 d \text{Cos}[c+d x]^{7/2}}+$$
$$\frac{12 C \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]}{35 a d \text{Cos}[c+d x]^{5/2}}+\frac{2 (5 A+7 C) \left(a^3+a^3 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{15 d \text{Cos}[c+d x]^{3/2}}$$

Result (type 5, 1102 leaves):

$$\Bigg(\text{Cos}[c+d x]^{11/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right) \Bigg(-\frac{(-25 A-28 C+5 A \text{Cos}[2 c]) \text{Csc}[c] \text{Sec}[c]}{20 d}+$$
$$\frac{C \text{Sec}[c] \text{Sec}[c+d x]^4 \text{Sin}[d x]}{14 d}+\frac{\text{Sec}[c] \text{Sec}[c+d x]^3 (5 C \text{Sin}[c]+21 C \text{Sin}[d x])}{70 d}+$$
$$\frac{1}{210 d}\text{Sec}[c] \text{Sec}[c+d x]^2 (63 C \text{Sin}[c]+35 A \text{Sin}[d x]+130 C \text{Sin}[d x])+\frac{1}{210 d}$$
$$\text{Sec}[c] \text{Sec}[c+d x] (35 A \text{Sin}[c]+130 C \text{Sin}[c]+315 A \text{Sin}[d x]+294 C \text{Sin}[d x])\Bigg)\Bigg)\Big/$$
$$(A+2 C+A \text{Cos}[2 c+2 d x])-\frac{1}{3 d (A+2 C+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}}$$
$$5 A \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\frac{1}{21 d (A+2 C+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}}$$
$$13 C \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}+$$
$$\Bigg(A \text{Cos}[c+d x]^5 \text{Csc}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+C \text{Sec}[c+d x]^2\right)$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Big/$$

$$\left(2\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\right)+\left(7\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\right.$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\left(10\,d\,(A+\right.$$

$$\left.2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\right)$$

Problem 1105: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a \operatorname{Sec}[c + d x])^3 \left(A + C \operatorname{Sec}[c + d x]^2\right)}{\sqrt{\operatorname{Cos}[c + d x]}} \, dx$$

Optimal (type 4, 246 leaves, 10 steps):

$$-\frac{4 a^3 (27 A + 17 C) \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), 2\right]}{15 d} + \frac{4 a^3 (21 A + 11 C) \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), 2\right]}{21 d} + \frac{8 a^3 (21 A + 16 C) \operatorname{Sin}[c + d x]}{105 d \operatorname{Cos}[c + d x]^{3/2}} + \frac{4 a^3 (27 A + 17 C) \operatorname{Sin}[c + d x]}{15 d \sqrt{\operatorname{Cos}[c + d x]}} + \frac{2 C (a + a \operatorname{Cos}[c + d x])^3 \operatorname{Sin}[c + d x]}{9 d \operatorname{Cos}[c + d x]^{9/2}} + \frac{4 C \left(a^2 + a^2 \operatorname{Cos}[c + d x]\right)^2 \operatorname{Sin}[c + d x]}{21 a d \operatorname{Cos}[c + d x]^{7/2}} + \frac{2 (63 A + 73 C) \left(a^3 + a^3 \operatorname{Cos}[c + d x]\right) \operatorname{Sin}[c + d x]}{315 d \operatorname{Cos}[c + d x]^{5/2}}$$

Result (type 5, 1135 leaves):

$$\frac{1}{A + 2 C + A \operatorname{Cos}[2 c + 2 d x]} \operatorname{Cos}[c + d x]^{11/2} \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^6 (a + a \operatorname{Sec}[c + d x])^3 \left(A + C \operatorname{Sec}[c + d x]^2\right) \left(\frac{(27 A + 17 C) \operatorname{Csc}[c] \operatorname{Sec}[c]}{15 d} + \frac{C \operatorname{Sec}[c] \operatorname{Sec}[c + d x]^5 \operatorname{Sin}[d x]}{18 d} + \frac{\operatorname{Sec}[c] \operatorname{Sec}[c + d x]^4 (7 C \operatorname{Sin}[c] + 27 C \operatorname{Sin}[d x])}{126 d} + \frac{1}{630 d} \operatorname{Sec}[c] \operatorname{Sec}[c + d x]^3 (135 C \operatorname{Sin}[c] + 63 A \operatorname{Sin}[d x] + 238 C \operatorname{Sin}[d x]) + \frac{1}{210 d} \operatorname{Sec}[c] \operatorname{Sec}[c + d x] (105 A \operatorname{Sin}[c] + 110 C \operatorname{Sin}[c] + 378 A \operatorname{Sin}[d x] + 238 C \operatorname{Sin}[d x]) + \frac{1}{630 d} \operatorname{Sec}[c] \operatorname{Sec}[c + d x]^2 (63 A \operatorname{Sin}[c] + 238 C \operatorname{Sin}[c] + 315 A \operatorname{Sin}[d x] + 330 C \operatorname{Sin}[d x])\right) -$$

$$\frac{1}{d (A + 2 C + A \operatorname{Cos}[2 c + 2 d x]) \sqrt{1 + \operatorname{Cot}[c]^2}} A \operatorname{Cos}[c + d x]^5 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^6 (a + a \operatorname{Sec}[c + d x])^3 \left(A + C \operatorname{Sec}[c + d x]^2\right) \operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} -$$

$$\frac{1}{21 d (A + 2 C + A \operatorname{Cos}[2 c + 2 d x]) \sqrt{1 + \operatorname{Cot}[c]^2}} 11 C \operatorname{Cos}[c + d x]^5 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^6 (a + a \operatorname{Sec}[c + d x])^3 \left(A + C \operatorname{Sec}[c + d x]^2\right) \operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ +$$

$$\left(9\,A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\ (a+a\,\text{Sec}[c+d\,x])^3\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(10\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\right)+\left(17\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\right.$$

$$(a+a\,\text{Sec}[c+d\,x])^3\ \left(A+C\,\text{Sec}[c+d\,x]^2\right)\ \left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\left(30\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1106: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 279 leaves, 11 steps):

$$-\frac{4\,a^3\,(7\,A+5\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,d}+\frac{4\,a^3\,(143\,A+105\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{231\,d}+$$
$$\frac{8\,a^3\,(44\,A+35\,C)\,\text{Sin}[c+d\,x]}{385\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{4\,a^3\,(143\,A+105\,C)\,\text{Sin}[c+d\,x]}{231\,d\,\text{Cos}[c+d\,x]^{3/2}}+$$
$$\frac{4\,a^3\,(7\,A+5\,C)\,\text{Sin}[c+d\,x]}{5\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,C\,(a+a\,\text{Cos}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{11\,d\,\text{Cos}[c+d\,x]^{11/2}}+$$
$$\frac{4\,C\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{33\,a\,d\,\text{Cos}[c+d\,x]^{9/2}}+\frac{2\,(33\,A+35\,C)\,\left(a^3+a^3\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{231\,d\,\text{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 1179 leaves):

$$\frac{1}{A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]}\,\text{Cos}[c+d\,x]^{11/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\left(\frac{(7\,A+5\,C)\,\text{Csc}[c]\,\text{Sec}[c]}{5\,d}+\right.$$
$$\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^6\,\text{Sin}[d\,x]}{22\,d}+\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]^5\,(3\,C\,\text{Sin}[c]+11\,C\,\text{Sin}[d\,x])}{66\,d}+$$
$$\frac{1}{462\,d}\text{Sec}[c]\,\text{Sec}[c+d\,x]^4\,(77\,C\,\text{Sin}[c]+33\,A\,\text{Sin}[d\,x]+126\,C\,\text{Sin}[d\,x])+\frac{1}{2310\,d}$$
$$\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,(165\,A\,\text{Sin}[c]+630\,C\,\text{Sin}[c]+693\,A\,\text{Sin}[d\,x]+770\,C\,\text{Sin}[d\,x])+\frac{1}{2310\,d}$$
$$\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,(693\,A\,\text{Sin}[c]+770\,C\,\text{Sin}[c]+1430\,A\,\text{Sin}[d\,x]+1050\,C\,\text{Sin}[d\,x])+$$
$$\left.\frac{1}{1155\,d}\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(715\,A\,\text{Sin}[c]+525\,C\,\text{Sin}[c]+1617\,A\,\text{Sin}[d\,x]+1155\,C\,\text{Sin}[d\,x])\right)-$$
$$\frac{1}{21\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}\,13\,A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]$$
$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\frac{1}{11\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}}$$

$$5\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ +$$

$$\Bigg(7\,A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$

$$\left(10\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+\Bigg(C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\ \Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big)\Big/\Big(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Big)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/\Big(2\,d\,\big(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\big)\Big)$$

Problem 1107: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]^{7/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 192 leaves, 8 steps):

$$-\frac{3\,(7\,A+5\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,a\,d}+\frac{5\,(9\,A+7\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{21\,a\,d}+\frac{5\,(9\,A+7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{21\,a\,d}-\frac{(7\,A+5\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{5\,a\,d}+\frac{(9\,A+7\,C)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{7\,a\,d}-\frac{(A+C)\,\text{Cos}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Cos}[c+d\,x])}$$

Result (type 5, 1393 leaves):

$$-\frac{1}{10\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)}\,21\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$

$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$

$$\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{2\,(A+2 C+A \operatorname{Cos}[2 c+2 d x])\,(a+a \operatorname{Sec}[c+d x])}$$

$$3\, i\, C \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \operatorname{Cos}[c+d x] \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right] \left(A+C \operatorname{Sec}[c+d x]^2\right)$$

$$\Bigg(\Bigg(2 e^{2 i d x} \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$

$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$

$$\Bigg(2 \operatorname{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$

$$\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)+$$

$$\Bigg(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \operatorname{Cos}[c+d x]^{3/2}\left(A+C \operatorname{Sec}[c+d x]^2\right)$$

$$\Bigg(\frac{4\,(5 A+5 C+16 A \operatorname{Cos}[c]+10 C \operatorname{Cos}[c]) \operatorname{Csc}[c]}{5 d}+$$

$$\frac{2\,(51 A+28 C) \operatorname{Cos}[d x] \operatorname{Sin}[c]}{21 d}-\frac{4 A \operatorname{Cos}[2 d x] \operatorname{Sin}[2 c]}{5 d}+$$

$$\frac{2 A \operatorname{Cos}[3 d x] \operatorname{Sin}[3 c]}{7 d}+\frac{4 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(A \operatorname{Sin}\left[\frac{d x}{2}\right]+C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{d}+$$

$$\frac{2\,(51 A+28 C) \operatorname{Cos}[c] \operatorname{Sin}[d x]}{21 d}-\frac{4 A \operatorname{Cos}[2 c] \operatorname{Sin}[2 d x]}{5 d}+\frac{2 A \operatorname{Cos}[3 c] \operatorname{Sin}[3 d x]}{7 d}\Bigg)\Bigg) \Big/$$

$$((A+2 C+A \operatorname{Cos}[2 c+2 d x])\,(a+a \operatorname{Sec}[c+d x]))-$$

$$\left(30\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(7\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$
$$\left(10\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 1108: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]^{5/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 159 leaves, 7 steps):

$$\frac{3\,(7\,A+5\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,a\,d}-$$
$$\frac{(5\,A+3\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,a\,d}-\frac{(5\,A+3\,C)\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,a\,d}+$$
$$\frac{(7\,A+5\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{5\,a\,d}-\frac{(A+C)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Cos}[c+d\,x])}$$

Result (type 5, 1345 leaves):

$$\frac{1}{10\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)}\,21\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]$$

$$\left(A + C\,\text{Sec}[c + d\,x]^2\right) \left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2\,i\,d\,x}\,(\text{Cos}[c] + i\,\text{Sin}[c])^2\right]\right.\right.$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1 + e^{2\,i\,d\,x}\right)\text{Cos}[c] + 2\,i\left(-1 + e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right) \Big/$$

$$\left(3\,i\,d\left(1 + e^{2\,i\,d\,x}\right)\text{Cos}[c] - 3\,d\left(-1 + e^{2\,i\,d\,x}\right)\text{Sin}[c]\right) -$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2\,i\,d\,x}\,(\text{Cos}[c] + i\,\text{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1 + e^{2\,i\,d\,x}\right)\text{Cos}[c] + 2\,i\left(-1 + e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right) \Big/$$

$$\left.\left(-i\,d\left(1 + e^{2\,i\,d\,x}\right)\text{Cos}[c] + d\left(-1 + e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right) +$$

$$\frac{1}{2\,(A + 2\,C + A\,\text{Cos}[2\,c + 2\,d\,x])\,(a + a\,\text{Sec}[c + d\,x])}$$

$$3$$

$$i$$

$$C$$

$$\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2$$

$$\text{Cos}[c + d\,x]$$

$$\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]$$

$$\left(A + C\,\text{Sec}[c + d\,x]^2\right)$$

$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2\,i\,d\,x}\,(\text{Cos}[c] + i\,\text{Sin}[c])^2\right]\right.\right.$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1 + e^{2\,i\,d\,x}\right)\text{Cos}[c] + 2\,i\left(-1 + e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right) \Big/$$

$$\left(3\,i\,d\left(1 + e^{2\,i\,d\,x}\right)\text{Cos}[c] - 3\,d\left(-1 + e^{2\,i\,d\,x}\right)\text{Sin}[c]\right) -$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2\,i\,d\,x}\,(\text{Cos}[c] + i\,\text{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1 + e^{2\,i\,d\,x}\right)\text{Cos}[c] + 2\,i\left(-1 + e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right) \Big/$$

$$\left.\left(-i\,d\left(1 + e^{2\,i\,d\,x}\right)\text{Cos}[c] + d\left(-1 + e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right) +$$

$$\left(\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2 \text{Cos}[c + d\,x]^{3/2} \left(A + C\,\text{Sec}[c + d\,x]^2\right)\right.$$

$$\left(-\frac{4\,(5\,A + 5\,C + 16\,A\,\text{Cos}[c] + 10\,C\,\text{Cos}[c])\,\text{Csc}[c]}{5\,d} - \frac{8\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d} +\right.$$

$$\frac{4\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,d} - \frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right] + C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d} -$$

$$\left.\left.\frac{8\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+\frac{4\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,d}\right)\right)\Big/$$

$$\left(\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$

$$\left(10\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$

$$\left(2\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\,\text{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 1109: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 122 leaves, 6 steps):

$$-\frac{(3\,A+C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{a\,d}+\frac{(5\,A+3\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,a\,d}+$$
$$\frac{(5\,A+3\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,a\,d}-\frac{(A+C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Cos}[c+d\,x])}$$

Result (type 5, 1300 leaves):

$$-\frac{1}{2\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)}3\,\mathrm{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+dx]^2\right)\left(\left(2\,e^{2\mathrm{i}dx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\mathrm{i}dx}\left(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,\mathrm{i}\,d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\mathrm{i}dx}\left(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-\mathrm{i}\,d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)\right)-$$
$$\frac{1}{2\left(A+2C+A\,\text{Cos}[2c+2dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)}$$
$$\mathrm{i}$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2$$
$$\text{Cos}[c+dx]$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\left(2\,e^{2\mathrm{i}dx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\mathrm{i}dx}\left(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,\mathrm{i}\,d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\mathrm{i}dx}\left(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-\mathrm{i}\,d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]^{3/2}\left(A+C\,\text{Sec}[c+dx]^2\right)\right.$$
$$\left(\frac{4\left(A+C+2A\,\text{Cos}[c]\right)\text{Csc}[c]}{d}+\frac{8A\,\text{Cos}[dx]\,\text{Sin}[c]}{3d}+\right.$$

$$\left.\left.\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\frac{8\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{3\,d}\right)\right)\Big/$$

$$\left(\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)-$$

$$\left(10\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)-$$

$$\left(2\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)$$

Problem 1110: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{a+a\,\mathrm{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 84 leaves, 5 steps) :

$$\frac{(3A+C)\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]}{a\,d}-\frac{(A-C)\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{a\,d}-\frac{(A+C)\sqrt{\text{Cos}[c+dx]}\,\text{Sin}[c+dx]}{d\,(a+a\,\text{Cos}[c+dx])}$$

Result (type 5, 1270 leaves):

$$\frac{1}{2\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])}\,3\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+dx]^2\right)\left(\left(2\,e^{2idx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2idx}\right)\text{Cos}[c]-3\,d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2idx}\right)\text{Cos}[c]+d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{2\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])}$$
$$i$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2$$
$$\text{Cos}[c+dx]$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\left(2\,e^{2idx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2idx}\right)\text{Cos}[c]-3\,d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$

$$\left(-i\, d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)+$$

$$\Bigg(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \operatorname{Cos}[c+d x]^{3/2} \left(A+C \operatorname{Sec}[c+d x]^2\right)$$

$$\left(-\frac{4 \left(A+C+2 A \operatorname{Cos}[c]\right) \operatorname{Csc}[c]}{d}-\frac{4 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(A \operatorname{Sin}\left[\frac{d x}{2}\right]+C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{d}\right)\Bigg)\Bigg/$$

$$\left(\left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right) \left(a+a \operatorname{Sec}[c+d x]\right)\right)+$$

$$\Bigg(2 A \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \operatorname{Cos}[c+d x] \operatorname{Csc}\left[\frac{c}{2}\right]$$

$$\operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right] \operatorname{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\sqrt{1+\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right) \sqrt{1+\operatorname{Cot}[c]^2} \left(a+a \operatorname{Sec}[c+d x]\right)\right)-$$

$$\Bigg(2 C \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \operatorname{Cos}[c+d x] \operatorname{Csc}\left[\frac{c}{2}\right]$$

$$\operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right] \operatorname{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+C \operatorname{Sec}[c+d x]^2\right) \operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{1+\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d \left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right) \sqrt{1+\operatorname{Cot}[c]^2} \left(a+a \operatorname{Sec}[c+d x]\right)\right)$$

Problem 1111: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+C \operatorname{Sec}[c+d x]^2}{\sqrt{\operatorname{Cos}[c+d x]} \left(a+a \operatorname{Sec}[c+d x]\right)} \, dx$$

Optimal (type 4, 112 leaves, 6 steps):

$$-\frac{(A+3C)\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]}{a\,d}+\frac{(A-C)\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{a\,d}+\frac{(A+3C)\,\text{Sin}[c+dx]}{a\,d\,\sqrt{\text{Cos}[c+dx]}}-\frac{(A+C)\,\text{Sin}[c+dx]}{d\,\sqrt{\text{Cos}[c+dx]}\,(a+a\,\text{Cos}[c+dx])}$$

Result (type 5, 1304 leaves):

$$-\frac{1}{2\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])}\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+dx]^2\right)\left(\left(2\,e^{2idx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2idx}\right)\text{Cos}[c]-3\,d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2idx}\right)\text{Cos}[c]+d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)\right)-$$
$$\frac{1}{2\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])}$$
$$3$$
$$i$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2$$
$$\text{Cos}[c+dx]$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\left(2\,e^{2idx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2idx}\right)\text{Cos}[c]-3\,d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$

$$\left(-i\, d\left(1+e^{2\, i\, d\, x}\right) \mathrm{Cos}[c]+d\left(-1+e^{2\, i\, d\, x}\right) \mathrm{Sin}[c]\right)\Bigg)+$$

$$\Bigg(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \mathrm{Cos}[c+d\,x]^{3/2}\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\frac{2\left(2\,C+A\,\mathrm{Cos}[c]+C\,\mathrm{Cos}[c]\right)\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c]}{d}+$$

$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\frac{8\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}[d\,x]}{d}\Bigg)\Bigg)\Bigg/$$

$$\left(\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)-$$

$$\Bigg(2\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)+$$

$$\Bigg(2\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\mathrm{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)$$

Problem 1112: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\mathrm{Sec}[c+d\,x]^2}{\mathrm{Cos}[c+d\,x]^{3/2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}\,dx$$

Optimal (type 4, 150 leaves, 7 steps):

$$\frac{(A+3C)\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]}{a d}+\frac{(3A+5C)\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{3 a d}+\frac{(3A+5C)\,\text{Sin}[c+dx]}{3 a d\,\text{Cos}[c+dx]^{3/2}}-\frac{(A+3C)\,\text{Sin}[c+dx]}{a d\sqrt{\text{Cos}[c+dx]}}-\frac{(A+C)\,\text{Sin}[c+dx]}{d\,\text{Cos}[c+dx]^{3/2}\,(a+a\,\text{Cos}[c+dx])}$$

Result (type 5, 1337 leaves):

$$\frac{1}{2\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])}\,\text{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Cos}[c+dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]$$
$$(A+C\,\text{Sec}[c+dx]^2)\left(\left(2\,e^{2\,\text{i}\,dx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\text{i}\,dx}(\text{Cos}[c]+\text{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\text{i}\,dx}\left(2\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+2\,\text{i}\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\text{i}\,dx}\,\text{Cos}[2c]+\text{i}\,e^{2\,\text{i}\,dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,\text{i}\,d\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\text{i}\,dx}(\text{Cos}[c]+\text{i}\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-\text{i}\,dx}\left(2\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+2\,\text{i}\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\text{i}\,dx}\,\text{Cos}[2c]+\text{i}\,e^{2\,\text{i}\,dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-\text{i}\,d\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+d\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)\right)+$$
$$\frac{1}{2\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])}$$
$$3$$
$$\text{i}$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2$$
$$\text{Cos}[c+dx]$$
$$\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]$$
$$(A+C\,\text{Sec}[c+dx]^2)$$
$$\left(\left(2\,e^{2\,\text{i}\,dx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\text{i}\,dx}(\text{Cos}[c]+\text{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\text{i}\,dx}\left(2\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+2\,\text{i}\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\text{i}\,dx}\,\text{Cos}[2c]+\text{i}\,e^{2\,\text{i}\,dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,\text{i}\,d\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\text{i}\,dx}(\text{Cos}[c]+\text{i}\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-\text{i}\,dx}\left(2\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+2\,\text{i}\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\text{i}\,dx}\,\text{Cos}[2c]+\text{i}\,e^{2\,\text{i}\,dx}\,\text{Sin}[2c]}\right)\Big/$$

$$\left(-i\, d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Big) +$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Cos}[c+d x]^{3/2} \left(A+C\, \text{Sec}[c+d x]^2\right) \left(-\frac{2 \left(2 C+A\, \text{Cos}[c]+C\, \text{Cos}[c]\right) \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c]}{d} - \frac{4\, \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(A\, \text{Sin}\left[\frac{d x}{2}\right]+C\, \text{Sin}\left[\frac{d x}{2}\right]\right)}{d} + \frac{8 C\, \text{Sec}[c]\, \text{Sec}[c+d x]^2 \text{Sin}[d x]}{3 d} + \frac{8\, \text{Sec}[c]\, \text{Sec}[c+d x] \left(C\, \text{Sin}[c]-3 C\, \text{Sin}[d x]\right)}{3 d}\right)\right) \Big/ \left(\left(A+2 C+A\, \text{Cos}[2 c+2 d x]\right) \left(a+a\, \text{Sec}[c+d x]\right)\right) -$$

$$\left(2 A\, \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Cos}[c+d x]\, \text{Csc}\left[\frac{c}{2}\right] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}\right] \left(A+C\, \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2}\, \text{Sin}[c]\, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right) \Big/ \left(d \left(A+2 C+A\, \text{Cos}[2 c+2 d x]\right) \sqrt{1+\text{Cot}[c]^2} \left(a+a\, \text{Sec}[c+d x]\right)\right) -$$

$$\left(10 C\, \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Cos}[c+d x]\, \text{Csc}\left[\frac{c}{2}\right] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}\right] \left(A+C\, \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2}\, \text{Sin}[c]\, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right) \Big/ \left(3 d \left(A+2 C+A\, \text{Cos}[2 c+2 d x]\right) \sqrt{1+\text{Cot}[c]^2} \left(a+a\, \text{Sec}[c+d x]\right)\right)$$

Problem 1113: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + C\,\text{Sec}[c + d\,x]^2}{\text{Cos}[c + d\,x]^{5/2}\,(a + a\,\text{Sec}[c + d\,x])}\,dx$$

Optimal (type 4, 192 leaves, 8 steps):

$$-\frac{3\,(5\,A + 7\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{5\,a\,d} - \frac{(3\,A + 5\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{3\,a\,d} + \frac{(5\,A + 7\,C)\,\text{Sin}[c + d\,x]}{5\,a\,d\,\text{Cos}[c + d\,x]^{5/2}} - \frac{(3\,A + 5\,C)\,\text{Sin}[c + d\,x]}{3\,a\,d\,\text{Cos}[c + d\,x]^{3/2}} + \frac{3\,(5\,A + 7\,C)\,\text{Sin}[c + d\,x]}{5\,a\,d\,\sqrt{\text{Cos}[c + d\,x]}} - \frac{(A + C)\,\text{Sin}[c + d\,x]}{d\,\text{Cos}[c + d\,x]^{5/2}\,(a + a\,\text{Cos}[c + d\,x])}$$

Result (type 5, 1382 leaves):

$$-\frac{1}{2\,(A + 2\,C + A\,\text{Cos}[2\,c + 2\,d\,x])\,(a + a\,\text{Sec}[c + d\,x])}\,3\,i\,A\,\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2\,\text{Cos}[c + d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]$$
$$(A + C\,\text{Sec}[c + d\,x]^2)\,\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,(\text{Cos}[c] + i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1 + e^{2\,i\,d\,x})\,\text{Cos}[c] + 2\,i\,(-1 + e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(3\,i\,d\,(1 + e^{2\,i\,d\,x})\,\text{Cos}[c] - 3\,d\,(-1 + e^{2\,i\,d\,x})\,\text{Sin}[c]\right) -$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,(\text{Cos}[c] + i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1 + e^{2\,i\,d\,x})\,\text{Cos}[c] + 2\,i\,(-1 + e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(-i\,d\,(1 + e^{2\,i\,d\,x})\,\text{Cos}[c] + d\,(-1 + e^{2\,i\,d\,x})\,\text{Sin}[c]\right)\Bigg) -$$
$$\frac{1}{10\,(A + 2\,C + A\,\text{Cos}[2\,c + 2\,d\,x])\,(a + a\,\text{Sec}[c + d\,x])}$$
$$21$$
$$i$$
$$C$$
$$\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2$$
$$\text{Cos}[c + d\,x]$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$(A + C\,\text{Sec}[c + d\,x]^2)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,(\text{Cos}[c] + i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1 + e^{2\,i\,d\,x})\,\text{Cos}[c] + 2\,i\,(-1 + e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$

$$\left(3\,\mathrm{i}\,d\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)-$$

$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathrm{i}\,d\,x}\left(\mathrm{Cos}[c]+\mathrm{i}\,\mathrm{Sin}[c]\right)^2\right]\right.$$

$$\sqrt{e^{-\mathrm{i}\,d\,x}\left(2\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$

$$\left.\left(-\mathrm{i}\,d\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]^{3/2}\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\frac{2\left(10\,A+16\,C+5\,A\,\mathrm{Cos}[c]+5\,C\,\mathrm{Cos}[c]\right)\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c]}{5\,d}+\right.$$

$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\frac{8\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,\mathrm{Sin}[d\,x]}{5\,d}-$$

$$\frac{1}{15\,d}8\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\left(5\,C\,\mathrm{Sin}[c]-15\,A\,\mathrm{Sin}[d\,x]-24\,C\,\mathrm{Sin}[d\,x]\right)+$$

$$\left.\left.\frac{8\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\left(3\,C\,\mathrm{Sin}[c]-5\,C\,\mathrm{Sin}[d\,x]\right)}{15\,d}\right)\right)\Big/$$

$$\left(\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)+$$

$$\left(2\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)+$$

$$\left(10\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\mathrm{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/\left(3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])\right)$$

Problem 1114: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^{5/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 196 leaves, 8 steps):

$$\frac{4\,(14\,A+5\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,a^2\,d}-\frac{5\,(3\,A+C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,a^2\,d}-\frac{5\,(3\,A+C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,a^2\,d}+\frac{4\,(14\,A+5\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{15\,a^2\,d}-\frac{(3\,A+C)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{a^2\,d\,(1+\text{Cos}[c+d\,x])}-\frac{(A+C)\,\text{Cos}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Cos}[c+d\,x])^2}$$

Result (type 5, 1398 leaves):

$$\frac{1}{5\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2}\,56\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2}$$

4

i

C

$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$
$$\Bigg(20\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$
$$\left(d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$
$$\Bigg(20\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$
$$\left(3\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\text{Cos}[c+d\,x]}\;\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{16\,(10\,A+5\,C+18\,A\,\text{Cos}[c]+5\,C\,\text{Cos}[c])\,\text{Csc}[c]}{5\,d}-\frac{32\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\right.$$
$$\frac{8\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-$$
$$\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(2\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}-\frac{32\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+$$
$$\left.\left.\frac{8\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,d}+\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left((A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2\right)$$

Problem 1115: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 161 leaves, 7 steps):

$$-\frac{(7\,A+C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{a^2\,d}+$$
$$\frac{2\,(5\,A+C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,a^2\,d}+\frac{2\,(5\,A+C)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{Sin}[c+d\,x]}{3\,a^2\,d}-$$
$$\frac{(7\,A+C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,(1+\text{Cos}[c+d\,x])}-\frac{(A+C)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Cos}[c+d\,x])^2}$$

Result (type 5, 1355 leaves):

$$-\frac{1}{(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2}\,7\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \mathrm{Cos}[2 c]+i e^{2 i d x} \mathrm{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(-i d \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+d \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)\Bigg) -$$

$$\frac{1}{(A+2 C+A \mathrm{Cos}[2 c+2 d x]) (a+a \mathrm{Sec}[c+d x])^2}$$

$$i$$

$$C$$

$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4$$

$$\mathrm{Csc}\left[\frac{c}{2}\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+C \mathrm{Sec}[c+d x]^2\right)$$

$$\Bigg(\Bigg(2 e^{2 i d x} \mathrm{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\mathrm{Cos}[c]+i \mathrm{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \mathrm{Cos}[2 c]+i e^{2 i d x} \mathrm{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(3 i d \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right) -$$

$$\Bigg(2 \mathrm{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\mathrm{Cos}[c]+i \mathrm{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \mathrm{Cos}[2 c]+i e^{2 i d x} \mathrm{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(-i d \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+d \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)\Bigg) -$$

$$\Bigg(40 A \mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \mathrm{Csc}\left[\frac{c}{2}\right] \mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right] \left(A+C \mathrm{Sec}[c+d x]^2\right) \mathrm{Sec}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{1-\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2} \mathrm{Sin}[c] \mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{1+\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg) \Bigg/$$

$$\left(3 d (A+2 C+A \mathrm{Cos}[2 c+2 d x]) \sqrt{1+\mathrm{Cot}[c]^2} (a+a \mathrm{Sec}[c+d x])^2\right) -$$

$$\Bigg(8 C \mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \mathrm{Csc}\left[\frac{c}{2}\right] \mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right] \left(A+C \mathrm{Sec}[c+d x]^2\right) \mathrm{Sec}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^2\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\text{Cos}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{8\,(3\,A+C+4\,A\,\text{Cos}[c])\,\text{Csc}[c]}{d}+\right.\right.$$

$$\frac{16\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+$$

$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(3\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$

$$\left.\left.\frac{16\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}-\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Bigg/$$

$$\left((A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2\right)$$

Problem 1116: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Cos}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 130 leaves, 6 steps):

$$\frac{4\,A\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{a^2\,d}-\frac{(5\,A-C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,a^2\,d}-$$

$$\frac{(5\,A-C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,(1+\text{Cos}[c+d\,x])}-\frac{(A+C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Cos}[c+d\,x])^2}$$

Result (type 5, 934 leaves):

$$\frac{1}{(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2}\,4\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Bigg/$$

$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\left(20\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)-$$

$$\left(4\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\text{Cos}[c+d\,x]}\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{16\,A\,\text{Cot}\left[\frac{c}{2}\right]}{d}-\frac{16\,A\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\text{Sin}\left[\frac{d\,x}{2}\right]}{d}+\right.$$
$$\left.\left.\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+\frac{4\left(A+C\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left(\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)$$

Problem 1117: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + C\,\text{Sec}[c+d\,x]^2}{\sqrt{\text{Cos}[c+d\,x]}\,\left(a + a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 125 leaves, 6 steps):

$$-\frac{(A-C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{a^2\,d} + \frac{2\,(A+C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,a^2\,d} + \frac{(A-C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{a^2\,d\,(1+\text{Cos}[c+d\,x])} - \frac{(A+C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Cos}[c+d\,x])^2}$$

Result (type 5, 1322 leaves):

$$-\frac{1}{(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2}\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right) -$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\Bigg) +$$
$$\frac{1}{(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2}$$
$$i$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right) -$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\text{Cos}[2 c]+i e^{2 i d x}\text{Sin}[2 c]}\right)\Big/$$
$$\left(-i d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\bigg)-$$

$$\left(8 A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d x]^2\right)\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3 d\left(A+2 C+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d x]\right)^2\right)-$$

$$\left(8 C\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d x]^2\right)\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3 d\left(A+2 C+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d x]\right)^2\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\sqrt{\text{Cos}[c+d x]}\left(A+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(\frac{8(A-C)\,\text{Csc}[c]}{d}+\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(A\,\text{Sin}\left[\frac{d x}{2}\right]-C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{d}-\right.$$
$$\left.\left.\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(A\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}-\frac{4(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3 d}\right)\right)\Big/$$
$$\left(\left(A+2 C+A\,\text{Cos}[2 c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2\right)$$

Problem 1118: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{A + C\,\text{Sec}[c + d\,x]^2}{\text{Cos}[c + d\,x]^{3/2}\,\left(a + a\,\text{Sec}[c + d\,x]\right)^2}\,dx$$

Optimal (type 4, 151 leaves, 7 steps):

$$-\frac{4\,C\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{a^2\,d} + \frac{(A - 5\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{3\,a^2\,d} + \frac{4\,C\,\text{Sin}[c + d\,x]}{a^2\,d\,\sqrt{\text{Cos}[c + d\,x]}} + \frac{(A - 5\,C)\,\text{Sin}[c + d\,x]}{3\,a^2\,d\,\sqrt{\text{Cos}[c + d\,x]}\,\left(1 + \text{Cos}[c + d\,x]\right)} - \frac{(A + C)\,\text{Sin}[c + d\,x]}{3\,d\,\sqrt{\text{Cos}[c + d\,x]}\,\left(a + a\,\text{Cos}[c + d\,x]\right)^2}$$

Result (type 5, 954 leaves):

$$-\frac{1}{\left(A + 2\,C + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\left(a + a\,\text{Sec}[c + d\,x]\right)^2}\,4\,i\,C\,\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A + C\,\text{Sec}[c + d\,x]^2\right)\,\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] - 3\,d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right) -$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\right) -$$
$$\left(4\,A\,\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\left(A + C\,\text{Sec}[c + d\,x]^2\right)$$
$$\frac{\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}{\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}}$$
$$\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\left(A + 2\,C + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\sqrt{1 + \text{Cot}[c]^2}\,\left(a + a\,\text{Sec}[c + d\,x]\right)^2\right) +$$
$$\left(20\,C\,\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$
$$\left(3\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$
$$\Bigg(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\text{Cos}[c+d\,x]}\left(A+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\frac{16\,C\,\text{Cot}\left[\frac{c}{2}\right]\text{Sec}[c]}{d}+$$
$$\frac{16\,C\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\text{Sin}\left[\frac{d\,x}{2}\right]}{d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+$$
$$\frac{16\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{d}+\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\Bigg)\Bigg)\Big/$$
$$\left(\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)$$

Problem 1119: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{5/2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 189 leaves, 8 steps):

$$\frac{(A+7\,C)\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{a^2\,d}+\frac{2\,(A+5\,C)\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{3\,a^2\,d}+$$
$$\frac{2\,(A+5\,C)\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,\text{Cos}[c+d\,x]^{3/2}}-\frac{(A+7\,C)\,\text{Sin}[c+d\,x]}{a^2\,d\,\sqrt{\text{Cos}[c+d\,x]}}-$$
$$\frac{(A+7\,C)\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,\text{Cos}[c+d\,x]^{3/2}\left(1+\text{Cos}[c+d\,x]\right)}-\frac{(A+C)\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}\left(a+a\,\text{Cos}[c+d\,x]\right)^2}$$

Result (type 5, 1391 leaves):

$$\frac{1}{\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$

$$\left(3\,\mathrm{i}\,d\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)-$$

$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathrm{i}\,d\,x}\left(\mathrm{Cos}[c]+\mathrm{i}\,\mathrm{Sin}[c]\right)^2\right]\right.$$

$$\sqrt{e^{-\mathrm{i}\,d\,x}\left(2\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$

$$\left(-\mathrm{i}\,d\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2}$$

7

i

C

$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$

$$\mathrm{Csc}\left[\frac{c}{2}\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(\left(2\,e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\mathrm{i}\,d\,x}\left(\mathrm{Cos}[c]+\mathrm{i}\,\mathrm{Sin}[c]\right)^2\right]\right.\right.$$

$$\sqrt{e^{-\mathrm{i}\,d\,x}\left(2\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$

$$\left(3\,\mathrm{i}\,d\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)-$$

$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathrm{i}\,d\,x}\left(\mathrm{Cos}[c]+\mathrm{i}\,\mathrm{Sin}[c]\right)^2\right]\right.$$

$$\sqrt{e^{-\mathrm{i}\,d\,x}\left(2\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$

$$\left(-\mathrm{i}\,d\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)\Bigg)-$$

$$\left(8\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$

$$\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)-$$

$$\Bigg(40\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$
$$\left(3\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^2\right)+$$
$$\Bigg(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\text{Cos}[c+d\,x]}\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(-\frac{4\,(4\,C+A\,\text{Cos}[c]+3\,C\,\text{Cos}[c])\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c]}{d}-$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-$$
$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\frac{16\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{3\,d}+$$
$$\frac{16\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(C\,\text{Sin}[c]-6\,C\,\text{Sin}[d\,x])}{3\,d}-\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\Bigg)\Bigg)\Bigg/$$
$$\left((A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2\right)$$

Problem 1120: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^{5/2}\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 250 leaves, 9 steps):

$$\frac{7\,(33\,A+7\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{10\,a^3\,d}-\frac{(63\,A+13\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{6\,a^3\,d}-\frac{(63\,A+13\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{6\,a^3\,d}+\frac{7\,(33\,A+7\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{30\,a^3\,d}-\frac{(A+C)\,\text{Cos}[c+d\,x]^{9/2}\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Cos}[c+d\,x])^3}-\frac{2\,(6\,A+C)\,\text{Cos}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Cos}[c+d\,x])^2}-\frac{(63\,A+13\,C)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{10\,d\,(a^3+a^3\,\text{Cos}[c+d\,x])}$$

Result (type 5, 1507 leaves):

$$\frac{1}{5\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3}\,231\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,(A+C\,\text{Sec}[c+d\,x]^2)\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)\right)+$$

$$\frac{1}{5\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3}$$

$$49\,i\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,(A+C\,\text{Sec}[c+d\,x]^2)$$

$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-\right.$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^{2}\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\bigg/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$
$$\left(84\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^{6}\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^{2}\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^{2}\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^{2}}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\bigg/$$
$$\left(d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^{2}}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3}\right)+$$
$$\left(52\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^{6}\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^{2}\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^{2}\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^{2}}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\bigg/$$
$$\left(3\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^{2}}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3}\right)+$$
$$\frac{1}{\sqrt{\text{Cos}[c+d\,x]}\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^{3}}$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^{6}\left(A+C\,\text{Sec}[c+d\,x]^{2}\right)$$
$$\left(-\frac{8\left(99\,A+29\,C+132\,A\,\text{Cos}[c]+20\,C\,\text{Cos}[c]\right)\text{Csc}[c]}{5\,d}-\frac{32\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{d}+\right.$$
$$\frac{16\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^{5}\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$
$$\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^{3}\left(12\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+7\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}-$$

$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(99\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+29\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}-\frac{32\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{d}+\frac{16\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,d}+\frac{16\,(12\,A+7\,C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d}-\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\Bigg)$$

Problem 1121: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 209 leaves, 8 steps):

$$-\frac{(119\,A+9\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{10\,a^3\,d}+\frac{(11\,A+C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{2\,a^3\,d}+\frac{(11\,A+C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{2\,a^3\,d}-\frac{(A+C)\,\text{Cos}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Cos}[c+d\,x])^3}-\frac{2\,A\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{3\,a\,d\,(a+a\,\text{Cos}[c+d\,x])^2}-\frac{(119\,A+9\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{30\,d\,\left(a^3+a^3\,\text{Cos}[c+d\,x]\right)}$$

Result (type 5, 1470 leaves):

$$-\frac{1}{5\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3}\,119\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\Bigg)-$$
$$\frac{1}{5\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3}$$
$$9$$

$$\begin{aligned}
&\mathrm{i}\\
&C\\
&\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\\
&\text{Csc}\left[\frac{c}{2}\right]\\
&\text{Sec}\left[\frac{c}{2}\right]\\
&\text{Sec}[c+d\,x]\\
&\left(A+C\,\text{Sec}[c+d\,x]^2\right)\\
&\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\\
&\qquad\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\\
&\qquad\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\\
&\quad\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-\\
&\quad\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\\
&\qquad\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\\
&\qquad\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\\
&\quad\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)-\\
&\Bigg(44\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\\
&\quad\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\\
&\quad\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\\
&\quad\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\\
&\quad\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/\\
&\left(d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-\\
&\Bigg(4\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\\
&\quad\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right)\\
&\quad\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\\
&\quad\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}
\end{aligned}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^3\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6(A+C\,\text{Sec}[c+d\,x]^2)\left(\frac{8\,(59\,A+9\,C+60\,A\,\text{Cos}[c])\,\text{Csc}[c]}{5\,d}+\right.\right.$$

$$\frac{32\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}-$$

$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(19\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+9\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+$$

$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(59\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+9\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+\frac{32\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}-$$

$$\left.\left.\frac{8\,(19\,A+9\,C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$

$$\left(\sqrt{\text{Cos}[c+d\,x]}\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)$$

Problem 1122: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Cos}[c+d\,x]}\,(A+C\,\text{Sec}[c+d\,x]^2)}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 186 leaves, 7 steps):

$$\frac{(49\,A-C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{10\,a^3\,d}-$$

$$\frac{(13\,A-C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{6\,a^3\,d}-\frac{(A+C)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Cos}[c+d\,x])^3}-$$

$$\frac{2\,(4\,A-C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Cos}[c+d\,x])^2}-\frac{(13\,A-C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{6\,d\,(a^3+a^3\,\text{Cos}[c+d\,x])}$$

Result (type 5, 1446 leaves):

$$\frac{1}{5\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3}\,49\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]$$

$$(A+C\,\text{Sec}[c+d\,x]^2)\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)-$$

$$\frac{1}{5\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3}$$
$$i$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\text{Sec}[c+d\,x]$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)+$$

$$\left(52\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-$$

$$\left(4\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{8\left(29\,A-C+20\,A\,\text{Cos}[c]\right)\text{Csc}[c]}{5\,d}-\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(29\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}-\right.$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$
$$\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(7\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+2\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+$$
$$\left.\left.\frac{16\left(7\,A+2\,C\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15\,d}-\frac{4\left(A+C\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$
$$\left(\sqrt{\text{Cos}[c+d\,x]}\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 1123: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{\sqrt{\text{Cos}[c+d\,x]}\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 184 leaves, 7 steps):

$$-\frac{\left(9\,A-C\right)\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),2\right]}{10\,a^3\,d}+$$
$$\frac{\left(3\,A+C\right)\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]}{6\,a^3\,d}-\frac{\left(A+C\right)\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{5\,d\left(a+a\,\text{Cos}[c+d\,x]\right)^3}-$$
$$\frac{2\left(3\,A-2\,C\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,a\,d\left(a+a\,\text{Cos}[c+d\,x]\right)^2}+\frac{\left(9\,A-C\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{10\,d\left(a^3+a^3\,\text{Cos}[c+d\,x]\right)}$$

Result (type 5, 1439 leaves):

$$-\frac{1}{5\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3}\,9\,\mathrm{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]$$

$$(A+C\,\text{Sec}[c+d\,x]^2)\,\left(\left(2\,e^{2\,\mathrm{i}\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.\right.$$

$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+2\,\mathrm{i}\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left(3\,\mathrm{i}\,d\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+2\,\mathrm{i}\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left.\left(-\mathrm{i}\,d\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)\right)+$$

$$\frac{1}{5\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3}$$

$$\mathrm{i}$$

$$C$$

$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$

$$\text{Csc}\left[\frac{c}{2}\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]$$

$$\text{Sec}[c+d\,x]$$

$$(A+C\,\text{Sec}[c+d\,x]^2)$$

$$\left(\left(2\,e^{2\,\mathrm{i}\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.\right.$$

$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+2\,\mathrm{i}\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left(3\,\mathrm{i}\,d\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+2\,\mathrm{i}\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left.\left(-\mathrm{i}\,d\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)\right)-$$

$$\left(4\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,(A+C\,\text{Sec}[c+d\,x]^2)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\right)-$$

$$\left(4\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c+d\,x]\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\frac{8\,(9\,A-C)\,\mathrm{Csc}[c]}{5\,d}+\frac{8\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(9\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}-\right.$$

$$\frac{8\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(9\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+$$

$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}-$$

$$\left.\left.\frac{8\,(9\,A-C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{4\,(A+C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$

$$\left(\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\right)$$

Problem 1124: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\mathrm{Sec}[c+d\,x]^2}{\mathrm{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 180 leaves, 7 steps):

$$-\frac{(A-9C)\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]}{10a^3d}+\frac{(A+3C)\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{6a^3d}-\frac{(A+C)\sqrt{\text{Cos}[c+dx]}\,\text{Sin}[c+dx]}{5d(a+a\,\text{Cos}[c+dx])^3}+\frac{2(2A-3C)\sqrt{\text{Cos}[c+dx]}\,\text{Sin}[c+dx]}{15ad(a+a\,\text{Cos}[c+dx])^2}+\frac{(A-9C)\sqrt{\text{Cos}[c+dx]}\,\text{Sin}[c+dx]}{10d\left(a^3+a^3\,\text{Cos}[c+dx]\right)}$$

Result (type 5, 1436 leaves):

$$-\frac{1}{5(A+2C+A\,\text{Cos}[2c+2dx])(a+a\,\text{Sec}[c+dx])^3}\,\mathrm{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]$$
$$\left(A+C\,\text{Sec}[c+dx]^2\right)\left(\left(2\,e^{2\mathrm{i}dx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\mathrm{i}dx}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\mathrm{i}d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]-3d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\mathrm{i}dx}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-\mathrm{i}d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)\right)+$$
$$\frac{1}{5(A+2C+A\,\text{Cos}[2c+2dx])(a+a\,\text{Sec}[c+dx])^3}$$
$$9$$
$$\mathrm{i}$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\text{Sec}[c+dx]$$
$$\left(A+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\left(2\,e^{2\mathrm{i}dx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\mathrm{i}dx}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\mathrm{i}d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]-3d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\mathrm{i}dx}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\operatorname{Cos}[2 c]+i e^{2 i d x}\operatorname{Sin}[2 c]}\right)\Big/$$
$$\left(-i d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)\Big) -$$

$$\left(4 A \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$
$$\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}[c+d x]\left(A+C \operatorname{Sec}[c+d x]^2\right)$$
$$\operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{1+\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right)\Big/$$
$$\left(3 d\left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right)\sqrt{1+\operatorname{Cot}[c]^2}\left(a+a \operatorname{Sec}[c+d x]\right)^3\right) -$$

$$\left(4 C \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$
$$\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}[c+d x]\left(A+C \operatorname{Sec}[c+d x]^2\right)$$
$$\operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{1+\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(A+2 C+A \operatorname{Cos}[2 c+2 d x]\right)\sqrt{1+\operatorname{Cot}[c]^2}\left(a+a \operatorname{Sec}[c+d x]\right)^3\right) +$$

$$\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(A+C \operatorname{Sec}[c+d x]^2\right)\right.$$
$$\left(\frac{8(A-9 C)\operatorname{Csc}[c]}{5 d}+\frac{8 \operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(A \operatorname{Sin}\left[\frac{d x}{2}\right]-9 C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+\right.$$
$$\frac{16 \operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(2 A \operatorname{Sin}\left[\frac{d x}{2}\right]-3 C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{15 d}-$$
$$\frac{4 \operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5\left(A \operatorname{Sin}\left[\frac{d x}{2}\right]+C \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+$$
$$\left.\left.\frac{16(2 A-3 C)\operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \operatorname{Tan}\left[\frac{c}{2}\right]}{15 d}-\frac{4(A+C)\operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \operatorname{Tan}\left[\frac{c}{2}\right]}{5 d}\right)\right)\Big/$$

$$\left(\sqrt{\text{Cos}[c+d x]}\ (A+2C+A\,\text{Cos}[2c+2d x])\ (a+a\,\text{Sec}[c+d x])^3\right)$$

Problem 1125: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+C\,\text{Sec}[c+d x]^2}{\text{Cos}[c+d x]^{5/2}\ (a+a\,\text{Sec}[c+d x])^3}\,dx$$

Optimal (type 4, 209 leaves, 8 steps):

$$\frac{(A-49C)\ \text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{10 a^3 d}+\frac{(A-13C)\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{6 a^3 d}-\frac{(A-49C)\ \text{Sin}[c+d x]}{10 a^3 d\sqrt{\text{Cos}[c+d x]}}-\frac{(A+C)\ \text{Sin}[c+d x]}{5 d\sqrt{\text{Cos}[c+d x]}\ (a+a\,\text{Cos}[c+d x])^3}+\frac{2\,(A-4C)\ \text{Sin}[c+d x]}{15 a d\sqrt{\text{Cos}[c+d x]}\ (a+a\,\text{Cos}[c+d x])^2}+\frac{(A-13C)\ \text{Sin}[c+d x]}{6 d\sqrt{\text{Cos}[c+d x]}\ (a^3+a^3\,\text{Cos}[c+d x])}$$

Result (type 5, 1473 leaves):

$$\frac{1}{5\,(A+2C+A\,\text{Cos}[2c+2d x])\ (a+a\,\text{Sec}[c+d x])^3}\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]$$
$$(A+C\,\text{Sec}[c+d x]^2)\ \Bigg(\bigg(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\,e^{2 i d x}\,\text{Sin}[2c]}\bigg)\Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$
$$\bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\,e^{2 i d x}\,\text{Sin}[2c]}\bigg)\Big/$$
$$\left(-i d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Bigg)-$$
$$\frac{1}{5\,(A+2C+A\,\text{Cos}[2c+2d x])\ (a+a\,\text{Sec}[c+d x])^3}$$
$$49$$
$$i$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\text{Sec}[c+d x]$$

$$\left(A + C\,\text{Sec}[c + d\,x]^2\right)$$

$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$

$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$

$$\Bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$

$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\Bigg(4\,A\,\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,\text{Csc}\Big[\frac{c}{2}\Big]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$

$$\text{Sec}\Big[\frac{c}{2}\Big]\,\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\left(3\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\Bigg(52\,C\,\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,\text{Csc}\Big[\frac{c}{2}\Big]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$

$$\text{Sec}\Big[\frac{c}{2}\Big]\,\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\left(3\,d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\Bigg(\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\left(A+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(-\frac{4\left(-20\,C+A\,\text{Cos}[c]-29\,C\,\text{Cos}[c]\right)\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c]}{5\,d}-$$

$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-29\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$
$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+11\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+\frac{32\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{d}+$$
$$\left.\left.\frac{8\,(A+11\,C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{4\,(A+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$
$$\left(\sqrt{\text{Cos}[c+d\,x]}\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 1126: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{7/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 242 leaves, 9 steps):

$$\frac{(9\,A+119\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{10\,a^3\,d}+\frac{(A+11\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{2\,a^3\,d}+$$
$$\frac{(A+11\,C)\,\text{Sin}[c+d\,x]}{2\,a^3\,d\,\text{Cos}[c+d\,x]^{3/2}}-\frac{(9\,A+119\,C)\,\text{Sin}[c+d\,x]}{10\,a^3\,d\,\sqrt{\text{Cos}[c+d\,x]}}-\frac{(A+C)\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\text{Cos}[c+d\,x]\right)^3}-$$
$$\frac{2\,C\,\text{Sin}[c+d\,x]}{3\,a\,d\,\text{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\text{Cos}[c+d\,x]\right)^2}-\frac{(9\,A+119\,C)\,\text{Sin}[c+d\,x]}{30\,d\,\text{Cos}[c+d\,x]^{3/2}\,\left(a^3+a^3\,\text{Cos}[c+d\,x]\right)}$$

Result (type 5, 1505 leaves):

$$\frac{1}{5\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,9\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]$$
$$\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\right)+$$
$$\frac{1}{5\,\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}$$
$$119$$

$$\begin{aligned}
&i \\
&C \\
&\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6 \\
&\text{Csc}\left[\frac{c}{2}\right] \\
&\text{Sec}\left[\frac{c}{2}\right] \\
&\text{Sec}[c+d\,x] \\
&\left(A+C\,\text{Sec}[c+d\,x]^2\right) \\
&\left(\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.\right. \\
&\qquad\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)} \\
&\qquad\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/ \\
&\quad\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)- \\
&\quad\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right. \\
&\qquad\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)} \\
&\qquad\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/ \\
&\quad\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)- \\
&\left(4\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right. \\
&\quad\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right) \\
&\quad\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]} \\
&\quad\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]} \\
&\quad\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/ \\
&\left(d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)- \\
&\left(44\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right. \\
&\quad\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+C\,\text{Sec}[c+d\,x]^2\right) \\
&\quad\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]} \\
&\quad\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/
\end{aligned}$$

$$\left(d\,(A+2C+A\,\text{Cos}[2c+2dx])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+dx])^3\right)+\frac{1}{\sqrt{\text{Cos}[c+dx]}\,(A+2C+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^3}$$

$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\,(A+C\,\text{Sec}[c+dx]^2)$$

$$\left(-\frac{4\,(60C+9A\,\text{Cos}[c]+59C\,\text{Cos}[c])\,\text{Csc}[\frac{c}{2}]\,\text{Sec}[\frac{c}{2}]\,\text{Sec}[c]}{5d}-\right.$$

$$\frac{4\,\text{Sec}[\frac{c}{2}]\,\text{Sec}[\frac{c}{2}+\frac{dx}{2}]^5\,(A\,\text{Sin}[\frac{dx}{2}]+C\,\text{Sin}[\frac{dx}{2}])}{5d}-$$

$$\frac{16\,\text{Sec}[\frac{c}{2}]\,\text{Sec}[\frac{c}{2}+\frac{dx}{2}]^3\,(3A\,\text{Sin}[\frac{dx}{2}]+8C\,\text{Sin}[\frac{dx}{2}])}{15d}-$$

$$\frac{8\,\text{Sec}[\frac{c}{2}]\,\text{Sec}[\frac{c}{2}+\frac{dx}{2}]\,(9A\,\text{Sin}[\frac{dx}{2}]+59C\,\text{Sin}[\frac{dx}{2}])}{5d}+$$

$$\frac{32C\,\text{Sec}[c]\,\text{Sec}[c+dx]^2\,\text{Sin}[dx]}{3d}+\frac{32\,\text{Sec}[c]\,\text{Sec}[c+dx]\,(C\,\text{Sin}[c]-9C\,\text{Sin}[dx])}{3d}-$$

$$\left.\frac{16\,(3A+8C)\,\text{Sec}[\frac{c}{2}+\frac{dx}{2}]^2\,\text{Tan}[\frac{c}{2}]}{15d}-\frac{4\,(A+C)\,\text{Sec}[\frac{c}{2}+\frac{dx}{2}]^4\,\text{Tan}[\frac{c}{2}]}{5d}\right)$$

Problem 1130: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+dx]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+dx]}\,(A+C\,\text{Sec}[c+dx]^2)\,dx$$

Optimal (type 3, 136 leaves, 5 steps):

$$\frac{2\sqrt{a}\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}}{d}+$$

$$\frac{2aA\,\text{Sin}[c+dx]}{3d\sqrt{\text{Cos}[c+dx]}\,\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{2A\sqrt{\text{Cos}[c+dx]}\,\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{3d}$$

Result (type 5, 174 leaves):

$$\left(2\sqrt{\text{Cos}[c+dx]}\,(C+A\,\text{Cos}[c+dx]^2)\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\right.$$

$$\sqrt{a\,(1+\text{Sec}[c+dx])}\,\left(-6\,i\,C\,e^{\frac{1}{2}i(c+dx)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+dx)}\right]-\right.$$

$$2\,i\,C\,e^{\frac{3}{2}i(c+dx)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+dx)}\right]+$$

$$\left.\left.A\left(3\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{3}{2}(c+dx)\right]\right)\right)\right)\Big/\left(3d\,(A+2C+A\,\text{Cos}[2\,(c+dx)])\right)$$

Problem 1131: Result unnecessarily involves higher level functions.

$$\int \sqrt{\text{Cos}[c+d x]}\ \sqrt{a+a\,\text{Sec}[c+d x]}\ \left(A+C\,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 135 leaves, 5 steps):

$$\frac{\sqrt{a}\ C\,\text{ArcSinh}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]\sqrt{\text{Cos}[c+d x]}\ \sqrt{\text{Sec}[c+d x]}}{d}+\frac{a\left(2A-C\right)\text{Sin}[c+d x]}{d\sqrt{\text{Cos}[c+d x]}\ \sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{C\sqrt{a+a\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{d\sqrt{\text{Cos}[c+d x]}}$$

Result (type 5, 184 leaves):

$$\left(2\left(C+A\,\text{Cos}[c+d x]^2\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\left(1+\text{Sec}[c+d x]\right)}\left(-3\,i\,C\,e^{\frac{1}{2}i(c+d x)}\,\text{Cos}[c+d x]\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+d x)}\right]-i\,C\,e^{\frac{3}{2}i(c+d x)}\,\text{Cos}[c+d x]\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+d x)}\right]+3\left(C+2A\,\text{Cos}[c+d x]\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/\left(3\,d\sqrt{\text{Cos}[c+d x]}\ \left(A+2C+A\,\text{Cos}\left[2\left(c+d x\right)\right]\right)\right)$$

Problem 1132: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{a+a\,\text{Sec}[c+d x]}\ \left(A+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{\text{Cos}[c+d x]}} dx$$

Optimal (type 3, 144 leaves, 5 steps):

$$\frac{\sqrt{a}\ \left(8A+3C\right)\text{ArcSinh}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]\sqrt{\text{Cos}[c+d x]}\ \sqrt{\text{Sec}[c+d x]}}{4d}+\frac{a\,C\,\text{Sin}[c+d x]}{4d\,\text{Cos}[c+d x]^{3/2}\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{C\sqrt{a+a\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{2d\,\text{Cos}[c+d x]^{3/2}}$$

Result (type 5, 161 leaves):

$$\frac{1}{12d}\sqrt{\text{Cos}[c+d x]}\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\left(1+\text{Sec}[c+d x]\right)}\left(-3\,i\left(8A+3C\right)e^{\frac{1}{2}i(c+d x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+d x)}\right]-i\left(8A+3C\right)e^{\frac{3}{2}i(c+d x)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+d x)}\right]+3\,C\,\text{Sec}[c+d x]\left(3+2\,\text{Sec}[c+d x]\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)$$

Problem 1133: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 3, 189 leaves, 6 steps):

$$\frac{\sqrt{a}\,(8\,A+5\,C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{8\,d}+\frac{a\,C\,\text{Sin}[c+d\,x]}{12\,d\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,(8\,A+5\,C)\,\text{Sin}[c+d\,x]}{8\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{C\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{5/2}}$$

Result (type 5, 176 leaves):

$$\frac{1}{24\,d}\sqrt{\text{Cos}[c+d\,x]}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\sqrt{a\,(1+\text{Sec}[c+d\,x])}\,\left(-3\,i\,(8\,A+5\,C)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,(8\,A+5\,C)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\text{Sec}[c+d\,x]\,\left(24\,A+15\,C+10\,C\,\text{Sec}[c+d\,x]+8\,C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 1134: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Cos}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 3, 234 leaves, 7 steps):

$$\frac{\sqrt{a}\,(48\,A+35\,C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{64\,d}+\frac{a\,C\,\text{Sin}[c+d\,x]}{24\,d\,\text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,(48\,A+35\,C)\,\text{Sin}[c+d\,x]}{96\,d\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,(48\,A+35\,C)\,\text{Sin}[c+d\,x]}{64\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{C\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 195 leaves):

$$\frac{1}{192\,d}\sqrt{\text{Cos}[c+d\,x]}\;\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\sqrt{a\,(1+\text{Sec}[c+d\,x])}$$
$$\left(-3\,i\,(48\,A+35\,C)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-\right.$$
$$i\,(48\,A+35\,C)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+$$
$$\text{Sec}[c+d\,x]\,\left(3\,(48\,A+35\,C)+(96\,A+70\,C)\,\text{Sec}[c+d\,x]+56\,C\,\text{Sec}[c+d\,x]^2+48\,C\,\text{Sec}[c+d\,x]^3\right)$$
$$\left.\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 1138: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 183 leaves, 6 steps):

$$\frac{2\,a^{3/2}\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{d}+$$
$$\frac{2\,a^2\,(4\,A+5\,C)\,\text{Sin}[c+d\,x]}{5\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{2\,a\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{5\,d}+$$
$$\frac{2\,A\,\text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 5, 198 leaves):

$$\frac{1}{30\,d\,(A+2\,C+A\,\text{Cos}[2\,(c+d\,x)])}$$
$$a\,\sqrt{\text{Cos}[c+d\,x]}\,(1+\text{Cos}[c+d\,x])\,\left(C+A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$
$$\sqrt{a\,(1+\text{Sec}[c+d\,x])}\,\left(-60\,i\,C\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-\right.$$
$$20\,i\,C\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+$$
$$\left.6\,(13\,A+10\,C+6\,A\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)])\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 1139: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 189 leaves, 6 steps):

$$\frac{3 a^{3/2} C \operatorname{ArcSinh}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right] \sqrt{\operatorname{Cos}[c+d x]} \sqrt{\operatorname{Sec}[c+d x]}}{d}+$$
$$\frac{a^2 (8 A-3 C) \operatorname{Sin}[c+d x]}{3 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sec}[c+d x]}}-\frac{a (2 A-3 C) \sqrt{a+a \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{3 d \sqrt{\operatorname{Cos}[c+d x]}}+$$
$$\frac{2 A \sqrt{\operatorname{Cos}[c+d x]} (a+a \operatorname{Sec}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{3 d}$$

Result (type 5, 207 leaves):

$$\frac{1}{3 d \sqrt{\operatorname{Cos}[c+d x]} (A+2 C+A \operatorname{Cos}[2 (c+d x)])}$$
$$a (1+\operatorname{Cos}[c+d x]) \left(C+A \operatorname{Cos}[c+d x]^2\right) \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^3 \sqrt{a (1+\operatorname{Sec}[c+d x])}$$
$$\left(-9 \mathbb{i} C e^{\frac{1}{2} \mathbb{i} (c+d x)} \operatorname{Cos}[c+d x] \operatorname{Hypergeometric2F1}\left[\frac{1}{4}, 1, \frac{5}{4}, -e^{2 \mathbb{i} (c+d x)}\right]-\right.$$
$$3 \mathbb{i} C e^{\frac{3}{2} \mathbb{i} (c+d x)} \operatorname{Cos}[c+d x] \operatorname{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{7}{4}, -e^{2 \mathbb{i} (c+d x)}\right]+$$
$$\left.(A+3 C+10 A \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 (c+d x)]) \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)$$

Problem 1140: Result unnecessarily involves higher level functions.

$$\int \sqrt{\operatorname{Cos}[c+d x]} (a+a \operatorname{Sec}[c+d x])^{3/2} \left(A+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 191 leaves, 6 steps):

$$\frac{a^{3/2} (8 A+7 C) \operatorname{ArcSinh}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right] \sqrt{\operatorname{Cos}[c+d x]} \sqrt{\operatorname{Sec}[c+d x]}}{4 d}+$$
$$\frac{a^2 (8 A-5 C) \operatorname{Sin}[c+d x]}{4 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sec}[c+d x]}}+$$
$$\frac{3 a C \sqrt{a+a \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{4 d \sqrt{\operatorname{Cos}[c+d x]}}+\frac{C (a+a \operatorname{Sec}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{2 d \sqrt{\operatorname{Cos}[c+d x]}}$$

Result (type 5, 224 leaves):

$$\frac{1}{12\,d\,\text{Cos}[c+d\,x]^{3/2}\,\left(A+2\,C+A\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)}\,a\,\left(1+\text{Cos}[c+d\,x]\right)\,\left(C+A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^3\,\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\left(-3\,i\,\left(8\,A+7\,C\right)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^2\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,\left(8\,A+7\,C\right)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^2\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+3\,\left(2\,C+7\,C\,\text{Cos}[c+d\,x]+8\,A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)$$

Problem 1141: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 3, 191 leaves, 6 steps):

$$\frac{a^{3/2}\,\left(24\,A+11\,C\right)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{8\,d}+\frac{a^2\,\left(24\,A+19\,C\right)\,\text{Sin}[c+d\,x]}{24\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,C\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{C\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}$$

Result (type 5, 229 leaves):

$$\frac{1}{24\,d\,\text{Cos}[c+d\,x]^{5/2}\,\left(A+2\,C+A\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)}\,a\,\left(1+\text{Cos}[c+d\,x]\right)\,\left(C+A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^3\,\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\left(-3\,i\,\left(24\,A+11\,C\right)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^3\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,\left(24\,A+11\,C\right)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^3\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\left(8\,C+22\,C\,\text{Cos}[c+d\,x]+3\,\left(8\,A+11\,C\right)\,\text{Cos}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)$$

Problem 1142: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 3, 238 leaves, 7 steps):

$$\frac{1}{64\,d}a^{3/2}\left(112\,A+75\,C\right)\,\text{ArcSinh}\Big[\frac{\sqrt{a}\,\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\Big]\,\sqrt{\text{Cos}[c+d\,x]}\,\,\sqrt{\text{Sec}[c+d\,x]}\,+\frac{a^2\,\left(16\,A+13\,C\right)\,\text{Sin}[c+d\,x]}{32\,d\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,\left(112\,A+75\,C\right)\,\text{Sin}[c+d\,x]}{64\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,C\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\,\text{Sin}[c+d\,x]}{8\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{C\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{5/2}}$$

Result (type 5, 261 leaves):

$$\frac{1}{768\,d\,\text{Cos}[c+d\,x]^{7/2}\,\left(A+2\,C+A\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)}\,a\,\left(1+\text{Cos}[c+d\,x]\right)\,\left(C+A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sec}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]^3\,\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\Big(-12\,\mathrm{i}\,\left(112\,A+75\,C\right)\,e^{\frac{1}{2}\,\mathrm{i}\,(c+d\,x)}\,\text{Cos}[c+d\,x]^4\,\text{Hypergeometric2F1}\Big[\frac{1}{4},\,1,\,\frac{5}{4},\,-e^{2\,\mathrm{i}\,(c+d\,x)}\Big]-4\,\mathrm{i}\,\left(112\,A+75\,C\right)\,e^{\frac{3}{2}\,\mathrm{i}\,(c+d\,x)}\,\text{Cos}[c+d\,x]^4\,\text{Hypergeometric2F1}\Big[\frac{3}{4},\,1,\,\frac{7}{4},\,-e^{2\,\mathrm{i}\,(c+d\,x)}\Big]+3\,\Big(64\,A+164\,C+7\,\left(48\,A+55\,C\right)\,\text{Cos}[c+d\,x]+4\,\left(16\,A+25\,C\right)\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]+112\,A\,\text{Cos}\left[3\,\left(c+d\,x\right)\right]+75\,C\,\text{Cos}\left[3\,\left(c+d\,x\right)\right]\Big)\,\text{Sin}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\Big)$$

Problem 1143: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Cos}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 3, 285 leaves, 8 steps):

$$\frac{1}{128\,d}a^{3/2}\left(176\,A+133\,C\right)\,\text{ArcSinh}\Big[\frac{\sqrt{a}\,\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\Big]\,\sqrt{\text{Cos}[c+d\,x]}\,\,\sqrt{\text{Sec}[c+d\,x]}\,+\frac{a^2\,\left(80\,A+67\,C\right)\,\text{Sin}[c+d\,x]}{240\,d\,\text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,\left(176\,A+133\,C\right)\,\text{Sin}[c+d\,x]}{192\,d\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,\left(176\,A+133\,C\right)\,\text{Sin}[c+d\,x]}{128\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{3\,a\,C\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\,\text{Sin}[c+d\,x]}{40\,d\,\text{Cos}[c+d\,x]^{7/2}}+\frac{C\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 263 leaves):

$$\frac{1}{1920\,d\,\mathrm{Cos}[c+d\,x]^{9/2}\,\left(A+2\,C+A\,\mathrm{Cos}\left[2\,\left(c+d\,x\right)\right]\right)}$$
$$a\,\left(1+\mathrm{Cos}[c+d\,x]\right)\,\left(C+A\,\mathrm{Cos}[c+d\,x]^2\right)\,\mathrm{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^3\,\sqrt{a\,\left(1+\mathrm{Sec}[c+d\,x]\right)}$$
$$\left(-15\,i\,\left(176\,A+133\,C\right)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-\right.$$
$$5\,i\,\left(176\,A+133\,C\right)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+$$
$$\left(384\,C+912\,C\,\mathrm{Cos}[c+d\,x]+8\,\left(80\,A+133\,C\right)\,\mathrm{Cos}[c+d\,x]^2+\right.$$
$$\left.\left.10\,\left(176\,A+133\,C\right)\,\mathrm{Cos}[c+d\,x]^3+15\,\left(176\,A+133\,C\right)\,\mathrm{Cos}[c+d\,x]^4\right)\,\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)$$

Problem 1147: Result unnecessarily involves higher level functions.

$$\int \mathrm{Cos}[c+d\,x]^{7/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 230 leaves, 7 steps):

$$\frac{2\,a^{5/2}\,C\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{\mathrm{Sec}[c+d\,x]}}{d}+$$
$$\frac{2\,a^3\,\left(32\,A+49\,C\right)\,\mathrm{Sin}[c+d\,x]}{21\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+$$
$$\frac{2\,a^2\,\left(8\,A+7\,C\right)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{21\,d}+$$
$$\frac{2\,a\,A\,\mathrm{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\mathrm{Sin}[c+d\,x]}{7\,d}+$$
$$\frac{2\,A\,\mathrm{Cos}[c+d\,x]^{5/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\mathrm{Sin}[c+d\,x]}{7\,d}$$

Result (type 5, 297 leaves):

$$\left(C\,\mathrm{Cos}[c+d\,x]^{9/2}\,\left(-2\,i\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-\right.\right.$$
$$\left.\frac{2}{3}\,i\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\,\mathrm{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5$$
$$\left.\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/\,\left(2\,d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\left(\mathrm{Cos}[c+d\,x]^{9/2}\,\mathrm{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{5}{8}\,\left(3\,A+4\,C\right)\,\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\frac{1}{24}\,\left(11\,A+4\,C\right)\,\mathrm{Sin}\left[\frac{3}{2}\,\left(c+d\,x\right)\right]+\right.$$
$$\left.\left.\frac{1}{8}\,A\,\mathrm{Sin}\left[\frac{5}{2}\,\left(c+d\,x\right)\right]+\frac{1}{56}\,A\,\mathrm{Sin}\left[\frac{7}{2}\,\left(c+d\,x\right)\right]\right)\right)\Big/\,\left(d\,\left(A+2\,C+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1148: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d x]^{5/2} \left(a+a \,\text{Sec}[c+d x]\right)^{5/2} \left(A+C \,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 230 leaves, 7 steps):

$$\frac{5 a^{5/2} C \,\text{ArcSinh}\left[\frac{\sqrt{a} \,\text{Tan}[c+d x]}{\sqrt{a+a \,\text{Sec}[c+d x]}}\right] \sqrt{\text{Cos}[c+d x]} \sqrt{\text{Sec}[c+d x]}}{d}+\frac{a^3 (64 A+15 C) \,\text{Sin}[c+d x]}{15 d \sqrt{\text{Cos}[c+d x]} \sqrt{a+a \,\text{Sec}[c+d x]}}-\frac{a^2 (16 A-15 C) \sqrt{a+a \,\text{Sec}[c+d x]} \,\text{Sin}[c+d x]}{15 d \sqrt{\text{Cos}[c+d x]}}+\frac{2 a A \sqrt{\text{Cos}[c+d x]} \left(a+a \,\text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]}{3 d}+\frac{2 A \,\text{Cos}[c+d x]^{3/2} \left(a+a \,\text{Sec}[c+d x]\right)^{5/2} \text{Sin}[c+d x]}{5 d}$$

Result (type 5, 230 leaves):

$$\frac{1}{60 d \sqrt{\text{Cos}[c+d x]} \left(A+2 C+A \,\text{Cos}[2 (c+d x)]\right)} a^2 \left(1+\text{Cos}[c+d x]\right)^2 \left(C+A \,\text{Cos}[c+d x]^2\right) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \sqrt{a \left(1+\text{Sec}[c+d x]\right)} \left(-150 i C e^{\frac{1}{2} i (c+d x)} \text{Cos}[c+d x] \,\text{Hypergeometric2F1}\left[\frac{1}{4}, 1, \frac{5}{4}, -e^{2 i (c+d x)}\right] - 50 i C e^{\frac{3}{2} i (c+d x)} \text{Cos}[c+d x] \,\text{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{7}{4}, -e^{2 i (c+d x)}\right] + \left(28 A+30 C+(181 A+60 C) \,\text{Cos}[c+d x]+28 A \,\text{Cos}[2 (c+d x)]+3 A \,\text{Cos}[3 (c+d x)]\right) \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)$$

Problem 1149: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d x]^{3/2} \left(a+a \,\text{Sec}[c+d x]\right)^{5/2} \left(A+C \,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 244 leaves, 7 steps):

$$\frac{a^{5/2} (8 A+19 C) \,\text{ArcSinh}\left[\frac{\sqrt{a} \,\text{Tan}[c+d x]}{\sqrt{a+a \,\text{Sec}[c+d x]}}\right] \sqrt{\text{Cos}[c+d x]} \sqrt{\text{Sec}[c+d x]}}{4 d}+\frac{a^3 (56 A-27 C) \,\text{Sin}[c+d x]}{12 d \sqrt{\text{Cos}[c+d x]} \sqrt{a+a \,\text{Sec}[c+d x]}}-\frac{a^2 (8 A-21 C) \sqrt{a+a \,\text{Sec}[c+d x]} \,\text{Sin}[c+d x]}{12 d \sqrt{\text{Cos}[c+d x]}}-\frac{a (4 A-3 C) \left(a+a \,\text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]}{6 d \sqrt{\text{Cos}[c+d x]}}+\frac{2 A \sqrt{\text{Cos}[c+d x]} \left(a+a \,\text{Sec}[c+d x]\right)^{5/2} \text{Sin}[c+d x]}{3 d}$$

Result (type 5, 246 leaves):

$$\frac{1}{24\,d\,\mathrm{Cos}[c+d\,x]^{3/2}\,\left(A+2\,C+A\,\mathrm{Cos}\left[2\,\left(c+d\,x\right)\right]\right)}\,a^2\,\left(1+\mathrm{Cos}[c+d\,x]\right)^2\,\left(C+A\,\mathrm{Cos}[c+d\,x]^2\right)\,\mathrm{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{a\,\left(1+\mathrm{Sec}[c+d\,x]\right)}\,\left(-3\,i\,\left(8\,A+19\,C\right)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,\left(8\,A+19\,C\right)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\left(32\,A+6\,C+\left(6\,A+33\,C\right)\,\mathrm{Cos}[c+d\,x]+32\,A\,\mathrm{Cos}\left[2\,\left(c+d\,x\right)\right]+2\,A\,\mathrm{Cos}\left[3\,\left(c+d\,x\right)\right]\right)\,\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)$$

Problem 1150: Result unnecessarily involves higher level functions.

$$\int\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 238 leaves, 7 steps):

$$\frac{5\,a^{5/2}\,\left(8\,A+5\,C\right)\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{\mathrm{Sec}[c+d\,x]}}{8\,d}+\frac{a^3\,\left(24\,A-49\,C\right)\,\mathrm{Sin}[c+d\,x]}{24\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+\frac{a^2\,\left(24\,A+31\,C\right)\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{24\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{5\,a\,C\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\mathrm{Sin}[c+d\,x]}{12\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{C\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}$$

Result (type 5, 244 leaves):

$$\frac{1}{48\,d\,\mathrm{Cos}[c+d\,x]^{5/2}\,\left(A+2\,C+A\,\mathrm{Cos}\left[2\,\left(c+d\,x\right)\right]\right)}\,a^2\,\left(1+\mathrm{Cos}[c+d\,x]\right)^2\,\left(C+A\,\mathrm{Cos}[c+d\,x]^2\right)\,\mathrm{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{a\,\left(1+\mathrm{Sec}[c+d\,x]\right)}\,\left(-15\,i\,\left(8\,A+5\,C\right)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-5\,i\,\left(8\,A+5\,C\right)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\left(8\,C+34\,C\,\mathrm{Cos}[c+d\,x]+3\,\left(8\,A+25\,C\right)\,\mathrm{Cos}[c+d\,x]^2+48\,A\,\mathrm{Cos}[c+d\,x]^3\right)\,\mathrm{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)$$

Problem 1151: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{\mathrm{Cos}[c+d\,x]}}\,dx$$

Optimal (type 3, 238 leaves, 7 steps):

$$\frac{1}{64 d} a^{5/2} (304 A + 163 C) \text{ArcSinh}\left[\frac{\sqrt{a} \text{ Tan}[c + d x]}{\sqrt{a + a \text{Sec}[c + d x]}}\right] \sqrt{\text{Cos}[c + d x]} \sqrt{\text{Sec}[c + d x]} + \frac{a^3 (432 A + 299 C) \text{Sin}[c + d x]}{192 d \text{Cos}[c + d x]^{3/2} \sqrt{a + a \text{Sec}[c + d x]}} + \frac{a^2 (16 A + 17 C) \sqrt{a + a \text{Sec}[c + d x]} \text{ Sin}[c + d x]}{32 d \text{Cos}[c + d x]^{3/2}} + \frac{5 a C (a + a \text{Sec}[c + d x])^{3/2} \text{Sin}[c + d x]}{24 d \text{Cos}[c + d x]^{3/2}} + \frac{C (a + a \text{Sec}[c + d x])^{5/2} \text{Sin}[c + d x]}{4 d \text{Cos}[c + d x]^{3/2}}$$

Result (type 5, 248 leaves):

$$\frac{1}{384 d \text{Cos}[c + d x]^{7/2} (A + 2 C + A \text{Cos}[2 (c + d x)])} a^2 (1 + \text{Cos}[c + d x])^2 (C + A \text{Cos}[c + d x]^2) \text{Sec}\left[\frac{1}{2} (c + d x)\right]^5 \sqrt{a (1 + \text{Sec}[c + d x])} \left(-3 i (304 A + 163 C) e^{\frac{1}{2} i (c+d x)} \text{Cos}[c + d x]^4 \text{Hypergeometric2F1}\left[\frac{1}{4}, 1, \frac{5}{4}, -e^{2 i (c+d x)}\right] - i (304 A + 163 C) e^{\frac{3}{2} i (c+d x)} \text{Cos}[c + d x]^4 \text{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{7}{4}, -e^{2 i (c+d x)}\right] + (48 C + 184 C \text{Cos}[c + d x] + (96 A + 326 C) \text{Cos}[c + d x]^2 + (528 A + 489 C) \text{Cos}[c + d x]^3) \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)$$

Problem 1152: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a \text{Sec}[c + d x])^{5/2} (A + C \text{Sec}[c + d x]^2)}{\text{Cos}[c + d x]^{3/2}} \, dx$$

Optimal (type 3, 285 leaves, 8 steps):

$$\frac{1}{128 d} a^{5/2} (400 A + 283 C) \text{ArcSinh}\left[\frac{\sqrt{a} \text{ Tan}[c + d x]}{\sqrt{a + a \text{Sec}[c + d x]}}\right] \sqrt{\text{Cos}[c + d x]} \sqrt{\text{Sec}[c + d x]} + \frac{a^3 (1040 A + 787 C) \text{Sin}[c + d x]}{960 d \text{Cos}[c + d x]^{5/2} \sqrt{a + a \text{Sec}[c + d x]}} + \frac{a^3 (400 A + 283 C) \text{Sin}[c + d x]}{128 d \text{Cos}[c + d x]^{3/2} \sqrt{a + a \text{Sec}[c + d x]}} + \frac{a^2 (80 A + 79 C) \sqrt{a + a \text{Sec}[c + d x]} \text{ Sin}[c + d x]}{240 d \text{Cos}[c + d x]^{5/2}} + \frac{a C (a + a \text{Sec}[c + d x])^{3/2} \text{Sin}[c + d x]}{8 d \text{Cos}[c + d x]^{5/2}} + \frac{C (a + a \text{Sec}[c + d x])^{5/2} \text{Sin}[c + d x]}{5 d \text{Cos}[c + d x]^{5/2}}$$

Result (type 5, 267 leaves):

$$\frac{1}{3840\, d\, \text{Cos}[c+d\,x]^{9/2}\,\left(A+2\,C+A\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)}$$
$$a^2\,\left(1+\text{Cos}[c+d\,x]\right)^2\,\left(C+A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}$$
$$\left(-15\,\mathrm{i}\,\left(400\,A+283\,C\right)\,e^{\frac{1}{2}\,\mathrm{i}\,(c+d\,x)}\,\text{Cos}[c+d\,x]^5\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,\mathrm{i}\,(c+d\,x)}\right]-\right.$$
$$5\,\mathrm{i}\,\left(400\,A+283\,C\right)\,e^{\frac{3}{2}\,\mathrm{i}\,(c+d\,x)}\,\text{Cos}[c+d\,x]^5\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+$$
$$\left(384\,C+1392\,C\,\text{Cos}[c+d\,x]+8\,\left(80\,A+283\,C\right)\,\text{Cos}[c+d\,x]^2+\right.$$
$$\left.\left.10\,\left(272\,A+283\,C\right)\,\text{Cos}[c+d\,x]^3+15\,\left(400\,A+283\,C\right)\,\text{Cos}[c+d\,x]^4\right)\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)$$

Problem 1153: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Cos}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 3, 332 leaves, 9 steps):

$$\frac{1}{512\,d}a^{5/2}\,\left(1304\,A+1015\,C\right)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{a^3\,\left(136\,A+109\,C\right)\,\text{Sin}[c+d\,x]}{192\,d\,\text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,\left(1304\,A+1015\,C\right)\,\text{Sin}[c+d\,x]}{768\,d\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a^3\,\left(1304\,A+1015\,C\right)\,\text{Sin}[c+d\,x]}{512\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,\left(24\,A+23\,C\right)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{96\,d\,\text{Cos}[c+d\,x]^{7/2}}+$$
$$\frac{a\,C\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{12\,d\,\text{Cos}[c+d\,x]^{7/2}}+\frac{C\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\,\text{Sin}[c+d\,x]}{6\,d\,\text{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 282 leaves):

$$\frac{1}{3072\,d\,\text{Cos}[c+d\,x]^{11/2}\,\left(A+2\,C+A\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)}$$
$$a^2\,\left(1+\text{Cos}[c+d\,x]\right)^2\,\left(C+A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}$$
$$\left(-3\,\mathrm{i}\,\left(1304\,A+1015\,C\right)\,e^{\frac{1}{2}\,\mathrm{i}\,(c+d\,x)}\,\text{Cos}[c+d\,x]^6\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,\mathrm{i}\,(c+d\,x)}\right]-\right.$$
$$\mathrm{i}\,\left(1304\,A+1015\,C\right)\,e^{\frac{3}{2}\,\mathrm{i}\,(c+d\,x)}\,\text{Cos}[c+d\,x]^6\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,\mathrm{i}\,(c+d\,x)}\right]+$$
$$\left(256\,C+896\,C\,\text{Cos}[c+d\,x]+48\,\left(8\,A+29\,C\right)\,\text{Cos}[c+d\,x]^2+8\,\left(184\,A+203\,C\right)\,\text{Cos}[c+d\,x]^3+\right.$$
$$\left.\left.\left(2608\,A+2030\,C\right)\,\text{Cos}[c+d\,x]^4+\left(3912\,A+3045\,C\right)\,\text{Cos}[c+d\,x]^5\right)\,\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)$$

Problem 1164: Result more than twice size of optimal antiderivative.

$$\int \frac{A + C \operatorname{Sec}[c + d x]^2}{\sqrt{\operatorname{Cos}[c + d x]}\, (a + a \operatorname{Sec}[c + d x])^{3/2}} \, dx$$

Optimal (type 3, 185 leaves, 7 steps):

$$\frac{2 C \operatorname{ArcSinh}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right] \sqrt{\operatorname{Cos}[c + d x]} \sqrt{\operatorname{Sec}[c + d x]}}{a^{3/2} d} + \frac{1}{2 \sqrt{2}\, a^{3/2} d}$$
$$(3 A - 5 C) \operatorname{ArcTanh}\left[\frac{\sqrt{a} \sqrt{\operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{\sqrt{2} \sqrt{a + a \operatorname{Sec}[c + d x]}}\right] \sqrt{\operatorname{Cos}[c + d x]} \sqrt{\operatorname{Sec}[c + d x]} -$$
$$\frac{(A + C) \operatorname{Sin}[c + d x]}{2 d \operatorname{Cos}[c + d x]^{3/2} (a + a \operatorname{Sec}[c + d x])^{3/2}}$$

Result (type 3, 386 leaves):

$$-\Bigg(\Bigg(2 \operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] \left(C + A \operatorname{Cos}[c + d x]^2\right) \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]$$
$$\left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right]^2 \sqrt{1 + \operatorname{Cos}[c + d x]}\, \Big(\sqrt{2}\, (3 A - C) \operatorname{Log}[1 + \operatorname{Cos}[c + d x]] +\right.$$
$$8 C \operatorname{Log}\left[\sqrt{\operatorname{Cos}[c + d x]}\, (1 + \operatorname{Cos}[c + d x])\right] - 2 \sqrt{2}\, C \operatorname{Log}\left[(1 + \operatorname{Cos}[c + d x])^2\right] -$$
$$3 \sqrt{2}\, A \operatorname{Log}\left[2 \sqrt{1 + \operatorname{Cos}[c + d x]} + \sqrt{2 - 2 \operatorname{Cos}[c + d x]^2}\right] +$$
$$\sqrt{2}\, C \operatorname{Log}\left[2 \sqrt{1 + \operatorname{Cos}[c + d x]} + \sqrt{2 - 2 \operatorname{Cos}[c + d x]^2}\right] -$$
$$8 C \operatorname{Log}\left[1 + \operatorname{Cos}[c + d x] + \sqrt{1 + \operatorname{Cos}[c + d x]} \sqrt{\operatorname{Sin}[c + d x]^2}\right] + 2 \sqrt{2}\, C$$
$$\left.\operatorname{Log}\left[3 + 2 \operatorname{Cos}[c + d x] - \operatorname{Cos}[c + d x]^2 + 2 \sqrt{2} \sqrt{1 + \operatorname{Cos}[c + d x]} \sqrt{\operatorname{Sin}[c + d x]^2}\right]\Big) +\right.$$
$$\left.(A + C) \sqrt{\operatorname{Sin}[c + d x]^2}\right)\Bigg) \Big/ \Bigg(a d \sqrt{\operatorname{Cos}[c + d x]}\, (1 + \operatorname{Cos}[c + d x])$$
$$(A + 2 C + A \operatorname{Cos}[2 (c + d x)]) \sqrt{a (1 + \operatorname{Sec}[c + d x])}$$
$$\sqrt{\operatorname{Sin}[c + d x]^2}\Bigg)\Bigg)$$

Problem 1165: Result more than twice size of optimal antiderivative.

$$\int \frac{A + C \operatorname{Sec}[c + d x]^2}{\operatorname{Cos}[c + d x]^{3/2} (a + a \operatorname{Sec}[c + d x])^{3/2}} \, dx$$

Optimal (type 3, 228 leaves, 8 steps):

$$-\frac{3\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{a^{3/2}\,d}+\frac{1}{2\sqrt{2}\,a^{3/2}\,d}$$

$$\left(A+9\,C\right)\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}-$$

$$\frac{\left(A+C\right)\text{Sin}[c+d\,x]}{2\,d\,\text{Cos}[c+d\,x]^{5/2}\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}+\frac{\left(A+3\,C\right)\text{Sin}[c+d\,x]}{2\,a\,d\,\text{Cos}[c+d\,x]^{3/2}\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 540 leaves) :

$$\left(\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^3\sqrt{\text{Cos}[c+d\,x]}\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(8\,C\,\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\right.\right.$$

$$\left.\left.2\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\left(A\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+C\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\right)\right)\Big/$$

$$\left(d\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)-$$

$$\left(\sqrt{2}\left(A+3\,C\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}\right.$$

$$\left(\text{Log}[1+\text{Cos}[c+d\,x]]-\text{Log}\left[2\sqrt{1+\text{Cos}[c+d\,x]}+\sqrt{2-2\,\text{Cos}[c+d\,x]^2}\right]\right)$$

$$\left.\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c+d\,x]\right)\Big/$$

$$\left(d\sqrt{1-\text{Cos}[c+d\,x]^2}\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)+$$

$$\left(3\,C\,\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}\right.$$

$$\left(-\sqrt{2}\,\text{Log}\left[\left(1+\text{Cos}[c+d\,x]\right)^2\right]+4\,\text{Log}\left[\sqrt{\text{Cos}[c+d\,x]}+\text{Cos}[c+d\,x]^{3/2}\right]-\right.$$

$$4\,\text{Log}\left[1+\text{Cos}[c+d\,x]+\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right]+$$

$$\left.\sqrt{2}\,\text{Log}\left[3+2\,\text{Cos}[c+d\,x]-\text{Cos}[c+d\,x]^2+2\sqrt{2}\,\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right]\right)$$

$$\left.\left(A+C\,\text{Sec}[c+d\,x]^2\right)\text{Sin}[c+d\,x]\right)\Big/$$

$$\left(d\sqrt{1-\text{Cos}[c+d\,x]^2}\left(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)$$

Problem 1171: Result more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{3/2}\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 232 leaves, 8 steps) :

$$\frac{2\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{a^{5/2}\,d}+\frac{1}{16\,\sqrt{2}\,a^{5/2}\,d}$$

$$(5\,A-43\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,-$$

$$\frac{(A+C)\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^{5/2}}+\frac{(5\,A-11\,C)\,\text{Sin}[c+d\,x]}{16\,a\,d\,\text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}$$

Result (type 3, 563 leaves) :

$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\left(A+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{1}{2}\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(5\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-11\,C\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+\right.$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\left(-A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-C\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\Big/$$
$$\left(d\,\sqrt{\text{Cos}[c+d\,x]}\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)+$$
$$\frac{1}{4\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}}$$
$$\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\sqrt{\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-\left(\left(\sqrt{2}\,(5\,A-11\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}\right.\right.\right.$$
$$\left(\text{Log}[1+\text{Cos}[c+d\,x]]-\text{Log}\left[2\,\sqrt{1+\text{Cos}[c+d\,x]}+\sqrt{2-2\,\text{Cos}[c+d\,x]^2}\right]\right)$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right)-$$
$$\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}}16\,C\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}$$
$$\left(-\sqrt{2}\,\text{Log}\left[(1+\text{Cos}[c+d\,x])^2\right]+4\,\text{Log}\left[\sqrt{\text{Cos}[c+d\,x]}+\text{Cos}[c+d\,x]^{3/2}\right]-\right.$$
$$4\,\text{Log}\left[1+\text{Cos}[c+d\,x]+\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right]+$$
$$\left.\sqrt{2}\,\text{Log}\left[3+2\,\text{Cos}[c+d\,x]-\text{Cos}[c+d\,x]^2+2\,\sqrt{2}\,\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right]\right)$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]\right)$$

Problem 1172: Result more than twice size of optimal antiderivative.

$$\int\frac{A+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 277 leaves, 9 steps) :

$$-\frac{5\,C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{a^{5/2}\,d}+\frac{1}{16\,\sqrt{2}\,a^{5/2}\,d}$$

$$(3\,A+115\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}-$$

$$\frac{(A+C)\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{7/2}\,(a+a\,\text{Sec}[c+d\,x])^{5/2}}+$$

$$\frac{(A-15\,C)\,\text{Sin}[c+d\,x]}{16\,a\,d\,\text{Cos}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}+\frac{(3\,A+35\,C)\,\text{Sin}[c+d\,x]}{16\,a^2\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 580 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\left(A+C\,\text{Sec}[c+d\,x]^2\right)\left(16\,C\,\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\left(A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+C\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+$$

$$\left.\left.\frac{1}{2}\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(3\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+19\,C\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\Big/$$

$$\left(d\,\sqrt{\text{Cos}[c+d\,x]}\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)+$$

$$\frac{1}{4\,d\,(A+2\,C+A\,\text{Cos}[2\,c+2\,d\,x])\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}}$$

$$\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\sqrt{\text{Sec}[c+d\,x]}\,\left(A+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(-\left(\left(\sqrt{2}\,(3\,A+35\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}\right.\right.\right.$$

$$\left(\text{Log}[1+\text{Cos}[c+d\,x]]-\text{Log}\left[2\,\sqrt{1+\text{Cos}[c+d\,x]}+\sqrt{2-2\,\text{Cos}[c+d\,x]^2}\right]\right)$$

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right)+$$

$$\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}}40\,C\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}$$

$$\left(-\sqrt{2}\,\text{Log}\left[(1+\text{Cos}[c+d\,x])^2\right]+4\,\text{Log}\left[\sqrt{\text{Cos}[c+d\,x]}+\text{Cos}[c+d\,x]^{3/2}\right]-\right.$$

$$4\,\text{Log}\left[1+\text{Cos}[c+d\,x]+\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right]+$$

$$\left.\sqrt{2}\,\text{Log}\left[3+2\,\text{Cos}[c+d\,x]-\text{Cos}[c+d\,x]^2+2\,\sqrt{2}\,\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right]\right)$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]\right)$$

Problem 1182: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 65 leaves, 5 steps):

$$\frac{2\,B\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{d}+\frac{2\,(A+3\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+\frac{2\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 682 leaves):

$$\left(\text{Cos}[c+d\,x]^{5/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(-\frac{4\,B\,\text{Cot}[c]}{d}+\frac{4\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{4\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}\right)\right)\Big/$$
$$\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)-$$
$$\left(4\,A\,\text{Cos}[c+d\,x]^2\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,C\,\text{Cos}[c+d\,x]^2\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(2\,B\,\text{Cos}[c+d\,x]^2\,\text{Csc}[c]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1183: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Cos}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 61 leaves, 5 steps):

$$\frac{2\,(A-C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{d}+\frac{2\,B\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{d}+\frac{2\,C\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 759 leaves):

$$\left(\text{Cos}[c+d\,x]^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(-\frac{2\,\left(A-2\,C+A\,\text{Cos}[2\,c]\right)\,\text{Csc}[c]\,\text{Sec}[c]}{d}+\frac{4\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{d}\right)\right)\Big/\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)-$$

$$\left(4\,B\,\text{Cos}[c+d\,x]^2\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\Bigg(2\,A\,\text{Cos}[c+d\,x]^2\,\text{Csc}[c]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Bigg(2\,C\,\text{Cos}[c+d\,x]^2\,\text{Csc}[c]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right) - \frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right) \Big/$$
$$(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))$$

Problem 1187: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{9/2}\,(a+a\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 175 leaves, 8 steps):

$$\frac{2\,a\,(7\,A+9\,(B+C))\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{15\,d} + \frac{2\,a\,(5\,(A+B)+7\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{21\,d} +$$
$$\frac{2\,a\,(5\,(A+B)+7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{21\,d} + \frac{2\,a\,(7\,A+9\,(B+C))\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{45\,d} +$$
$$\frac{2\,a\,(A+B)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{7\,d} + \frac{2\,a\,A\,\text{Cos}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{9\,d}$$

Result (type 5, 1292 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,(1+\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\right.$$
$$\left(-\frac{(7\,A+9\,B+9\,C)\,\text{Cot}[c]}{15\,d} + \frac{(23\,A+23\,B+28\,C)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{84\,d} +\right.$$
$$\frac{(19\,A+18\,B+18\,C)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{180\,d} + \frac{(A+B)\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{28\,d} + \frac{A\,\text{Cos}[4\,d\,x]\,\text{Sin}[4\,c]}{72\,d} +$$
$$\frac{(23\,A+23\,B+28\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{84\,d} + \frac{(19\,A+18\,B+18\,C)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{180\,d} +$$
$$\left.\frac{(A+B)\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{28\,d} + \frac{A\,\text{Cos}[4\,c]\,\text{Sin}[4\,d\,x]}{72\,d}\right) -$$
$$\left(5\,A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(21\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(5\,B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(21\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(C\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{30\,d}7\,A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-\frac{1}{10\,d}$$

$$3\,B\,(1+\mathrm{Cos}[c+d\,x])\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\,\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}}\right)-$$

$$\frac{1}{10\,d}3\,C\,(1+\mathrm{Cos}[c+d\,x])\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}\,\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\Bigg)$$

Problem 1188: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^{7/2}\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 142 leaves, 7 steps):

$$\frac{2\,a\,\left(3\,(A+B)+5\,C\right)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,d}+\frac{2\,a\,\left(5\,A+7\,(B+C)\right)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{21\,d}+\frac{2\,a\,\left(5\,A+7\,(B+C)\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{21\,d}+\frac{2\,a\,(A+B)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{5\,d}+\frac{2\,a\,A\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{7\,d}$$

Result (type 5, 1240 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\right.$$
$$\left(-\frac{\left(3\,A+3\,B+5\,C\right)\,\text{Cot}[c]}{5\,d}+\frac{\left(23\,A+28\,B+28\,C\right)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{84\,d}+\frac{(A+B)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{10\,d}+\frac{A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{28\,d}+\frac{\left(23\,A+28\,B+28\,C\right)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{84\,d}+\frac{(A+B)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{10\,d}+\frac{A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{28\,d}\right)-$$
$$\left(5\,A\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(21\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(B\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(C\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[c]\;\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\;\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{10\,d}3\,A\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\;\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\;\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\;\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1+\text{Tan}[c]^2}}\;\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\;\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1+\text{Tan}[c]^2}}}\right)-\frac{1}{10\,d}$$

$$3\,B\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\;\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\;\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\;\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\;\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1+\text{Tan}[c]^2}}\;\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\;\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1+\text{Tan}[c]^2}}}\right)-\frac{1}{2\,d}$$

$$C\left(1+\text{Cos}[c+d\,x]\right)\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\right.\right.\right.$$

$$\left.\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 1189: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{5/2}\left(a+a\,\text{Sec}[c+d\,x]\right)\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 4, 106 leaves, 6 steps):

$$\frac{2\,a\left(3\,A+5\left(B+C\right)\right)\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),2\right]}{5\,d}+\frac{2\,a\left(A+B+3\,C\right)\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]}{3\,d}+$$

$$\frac{2\,a\left(A+B\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}+\frac{2\,a\,A\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 5, 1186 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\left(1+\text{Cos}[c+d\,x]\right)\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(-\frac{\left(3\,A+5\,B+5\,C\right)\text{Cot}[c]}{5\,d}+\frac{\left(A+B\right)\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\right.$$

$$\left.\frac{A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{10\,d}+\frac{\left(A+B\right)\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+\frac{A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{10\,d}\right)-$$

$$\left(A\left(1+\text{Cos}[c+d\,x]\right)\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(B\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{d\,\sqrt{1+\text{Cot}[c]^2}}C\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{10\,d}3\,A\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-$$

$$\frac{1}{2\,d}B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-\frac{1}{2\,d}$$

$$C\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Bigg)$$

Problem 1190: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 98 leaves, 6 steps):

$$\frac{2\,a\,(A+B-C)\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{d}+\frac{2\,a\,(A+3\,(B+C))\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{3\,d}+$$
$$\frac{2\,a\,C\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,a\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 1173 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,(1+\text{Cos}[c+d\,x])\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(-\frac{(A+B-2\,C+A\,\text{Cos}[2\,c]+B\,\text{Cos}[2\,c])\,\text{Csc}[c]\,\text{Sec}[c]}{2\,d}+\right.$$
$$\left.\frac{A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{d}\right)-$$
$$\left(A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{d\,\sqrt{1+\text{Cot}[c]^2}}B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]$$
$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-\frac{1}{d\,\sqrt{1+\text{Cot}[c]^2}}$$
$$C\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\frac{1}{2\,d}A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-$$

$$\frac{1}{2\,d}B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)+\frac{1}{2\,d}$$

$$C\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\right.\right.\right.$$

$$\left.\left.\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg)-$$

$$\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)$$

Problem 1191: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 103 leaves, 6 steps):

$$\frac{2\,a\,(A-B-C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{d}+$$

$$\frac{2\,a\,(3\,A+3\,B+C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+\frac{2\,a\,C\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,a\,(B+C)\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 1180 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\right.$$

$$\left(-\frac{\left(A-2\,B-2\,C+A\,\text{Cos}[2\,c]\right)\,\text{Csc}[c]\,\text{Sec}[c]}{2\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{3\,d}+\right.$$

$$\left.\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(C\,\text{Sin}[c]+3\,B\,\text{Sin}[d\,x]+3\,C\,\text{Sin}[d\,x]\right)}{3\,d}\right)-\frac{1}{d\,\sqrt{1+\text{Cot}[c]^2}}$$

$$A\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-\frac{1}{d\,\sqrt{1+\text{Cot}[c]^2}}$$

$$B\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$

$$\left(C\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{2\,d}A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)+$$

$$\frac{1}{2\,d}B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)+\frac{1}{2\,d}$$

$$C\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\right.\right.\right.$$

$$\left.\left.\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 1192: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 141 leaves, 7 steps):

$$-\frac{2\,a\,(5\,A+5\,B+3\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{2\,a\,(3\,A+B+C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+$$

$$\frac{2\,a\,C\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{2\,a\,(B+C)\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,a\,(5\,A+5\,B+3\,C)\,\text{Sin}[c+d\,x]}{5\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 1228 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,(1+\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\right.$$

$$\left(\frac{(5\,A+5\,B+3\,C)\,\text{Csc}[c]\,\text{Sec}[c]}{5\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\text{Sin}[d\,x]}{5\,d}+\right.$$

$$\frac{\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\left(3\,C\,\mathrm{Sin}[c]+5\,B\,\mathrm{Sin}[d\,x]+5\,C\,\mathrm{Sin}[d\,x]\right)}{15\,d}+\frac{1}{15\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]$$

$$\left.\left(5\,B\,\mathrm{Sin}[c]+5\,C\,\mathrm{Sin}[c]+15\,A\,\mathrm{Sin}[d\,x]+15\,B\,\mathrm{Sin}[d\,x]+9\,C\,\mathrm{Sin}[d\,x]\right)\right)-\frac{1}{d\,\sqrt{1+\mathrm{Cot}[c]^2}}$$

$$A\,\left(1+\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}-$$

$$\left(B\,\left(1+\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/\left(3\,d\,\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$

$$\left(C\,\left(1+\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\sqrt{1+\mathrm{Cot}[c]^2}\right)+\frac{1}{2\,d}A\,\left(1+\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\left.\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\,\sqrt{1+\mathrm{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)+\frac{1}{2\,d}$$

$$\mathrm{B}\,\left(1+\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\right.\right.\right.$$

$$\left.\left.\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\left.\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\,\sqrt{1+\mathrm{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)+\frac{1}{10\,d}$$

$$3\,\mathrm{C}\,\left(1+\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\,\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\left.\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\,\sqrt{1+\mathrm{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)$$

Problem 1193: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{(a + a \operatorname{Sec}[c + d x]) \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)}{\operatorname{Cos}[c + d x]^{3/2}} \, dx$$

Optimal (type 4, 177 leaves, 8 steps):

$$-\frac{2 a (5 A + 3 (B + C)) \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), 2\right]}{5 d} + \frac{2 a (7 A + 7 B + 5 C) \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), 2\right]}{21 d} + \frac{2 a C \operatorname{Sin}[c + d x]}{7 d \operatorname{Cos}[c + d x]^{7/2}} + \frac{2 a (B + C) \operatorname{Sin}[c + d x]}{5 d \operatorname{Cos}[c + d x]^{5/2}} + \frac{2 a (7 A + 7 B + 5 C) \operatorname{Sin}[c + d x]}{21 d \operatorname{Cos}[c + d x]^{3/2}} + \frac{2 a (5 A + 3 (B + C)) \operatorname{Sin}[c + d x]}{5 d \sqrt{\operatorname{Cos}[c + d x]}}$$

Result (type 5, 1284 leaves):

$$a \left(\sqrt{\operatorname{Cos}[c + d x]} \, (1 + \operatorname{Cos}[c + d x]) \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^2 \left(\frac{(5 A + 3 B + 3 C) \operatorname{Csc}[c] \operatorname{Sec}[c]}{5 d} + \frac{C \operatorname{Sec}[c] \operatorname{Sec}[c + d x]^4 \operatorname{Sin}[d x]}{7 d} + \frac{\operatorname{Sec}[c] \operatorname{Sec}[c + d x]^3 (5 C \operatorname{Sin}[c] + 7 B \operatorname{Sin}[d x] + 7 C \operatorname{Sin}[d x])}{35 d} + \frac{1}{105 d} \operatorname{Sec}[c] \operatorname{Sec}[c + d x]^2 (21 B \operatorname{Sin}[c] + 21 C \operatorname{Sin}[c] + 35 A \operatorname{Sin}[d x] + 35 B \operatorname{Sin}[d x] + 25 C \operatorname{Sin}[d x]) + \frac{1}{105 d} \operatorname{Sec}[c] \operatorname{Sec}[c + d x] (35 A \operatorname{Sin}[c] + 35 B \operatorname{Sin}[c] + 25 C \operatorname{Sin}[c] + 105 A \operatorname{Sin}[d x] + 63 B \operatorname{Sin}[d x] + 63 C \operatorname{Sin}[d x])\right) - \left(A (1 + \operatorname{Cos}[c + d x]) \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^2 \operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right) \Big/ \left(3 d \sqrt{1 + \operatorname{Cot}[c]^2}\right) - \left(B (1 + \operatorname{Cos}[c + d x]) \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^2 \operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right.\right.$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Bigg/\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(5\,C\,(1+\text{Cos}[c+d\,x])\ \text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Bigg/$$

$$\left(21\,d\,\sqrt{1+\text{Cot}[c]^2}\right)+\frac{1}{2\,d}A\,(1+\text{Cos}[c+d\,x])\ \text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Bigg/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)+\frac{1}{10\,d}$$

$$3\,B\,(1+\text{Cos}[c+d\,x])\ \text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\ \text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Bigg/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\right) -$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right) +$$

$$\frac{1}{10\,d}3\,C\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}\ \sqrt{1+\text{Tan}[c]^2}\right) -$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 1194: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{11/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 251 leaves, 10 steps) :

$$\frac{4 a^2 (7 A+8 B+9 C) \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{15 d}+\frac{4 a^2 (50 A+55 B+66 C) \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{231 d}+$$
$$\frac{4 a^2 (50 A+55 B+66 C) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{231 d}+$$
$$\frac{4 a^2 (7 A+8 B+9 C) \text{Cos}[c+d x]^{3/2} \text{Sin}[c+d x]}{45 d}+$$
$$\frac{2 a^2 (89 A+121 B+99 C) \text{Cos}[c+d x]^{5/2} \text{Sin}[c+d x]}{693 d}+$$
$$\frac{2 A \text{Cos}[c+d x]^{5/2} (a+a \text{Cos}[c+d x])^2 \text{Sin}[c+d x]}{11 d}+$$
$$\frac{2 (4 A+11 B) \text{Cos}[c+d x]^{5/2} \left(a^2+a^2 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{99 d}$$

Result (type 5, 1364 leaves):

$$a^2 \left(\sqrt{\text{Cos}[c+d x]} (1+\text{Cos}[c+d x])^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\right.$$
$$\left(-\frac{(7 A+8 B+9 C) \text{Cot}[c]}{15 d}+\frac{(941 A+1012 B+1122 C) \text{Cos}[d x] \text{Sin}[c]}{3696 d}+\right.$$
$$\frac{(38 A+37 B+36 C) \text{Cos}[2 d x] \text{Sin}[2 c]}{360 d}+\frac{(101 A+88 B+44 C) \text{Cos}[3 d x] \text{Sin}[3 c]}{2464 d}+$$
$$\frac{(2 A+B) \text{Cos}[4 d x] \text{Sin}[4 c]}{144 d}+\frac{A \text{Cos}[5 d x] \text{Sin}[5 c]}{352 d}+$$
$$\frac{(941 A+1012 B+1122 C) \text{Cos}[c] \text{Sin}[d x]}{3696 d}+\frac{(38 A+37 B+36 C) \text{Cos}[2 c] \text{Sin}[2 d x]}{360 d}+$$
$$\frac{(101 A+88 B+44 C) \text{Cos}[3 c] \text{Sin}[3 d x]}{2464 d}+$$
$$\left.\frac{(2 A+B) \text{Cos}[4 c] \text{Sin}[4 d x]}{144 d}+\frac{A \text{Cos}[5 c] \text{Sin}[5 d x]}{352 d}\right)-$$
$$\left(50 A (1+\text{Cos}[c+d x])^2 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right) \Big/ \left(231 d \sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(5\,B\,(1+\text{Cos}[c+d\,x])^2\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(21\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(2\,C\,(1+\text{Cos}[c+d\,x])^2\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(7\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{30\,d}7\,A\,(1+\text{Cos}[c+d\,x])^2\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$
$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$
$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-\frac{1}{15\,d}$$
$$4\,B\,(1+\text{Cos}[c+d\,x])^2\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left\{\frac{3}{4}\right\}, \operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]^2\Big]\operatorname{Sin}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\operatorname{Tan}[c]\Bigg)\Bigg/$$

$$\left(\sqrt{1-\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\,\sqrt{1+\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\right.$$

$$\left.\sqrt{\operatorname{Cos}[c]\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}\,\sqrt{1+\operatorname{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\operatorname{Sin}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\operatorname{Tan}[c]}{\sqrt{1+\operatorname{Tan}[c]^2}}+\frac{2\operatorname{Cos}[c]^2\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}{\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2}}{\sqrt{\operatorname{Cos}[c]\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}}\right)-$$

$$\frac{1}{10\,d}3\,C\,(1+\operatorname{Cos}[c+d\,x])^2\operatorname{Csc}[c]\operatorname{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$

$$\left(\left(\operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\operatorname{Sin}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\operatorname{Tan}[c]\right)\Bigg/$$

$$\left(\sqrt{1-\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\,\sqrt{1+\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\right.$$

$$\left.\sqrt{\operatorname{Cos}[c]\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}\,\sqrt{1+\operatorname{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\operatorname{Sin}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\operatorname{Tan}[c]}{\sqrt{1+\operatorname{Tan}[c]^2}}+\frac{2\operatorname{Cos}[c]^2\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}{\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2}}{\sqrt{\operatorname{Cos}[c]\operatorname{Cos}[d\,x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}}\right)\right)$$

Problem 1195: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\operatorname{Cos}[c+d\,x]^{9/2}\,(a+a\operatorname{Sec}[c+d\,x])^2\,\left(A+B\operatorname{Sec}[c+d\,x]+C\operatorname{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 215 leaves, 9 steps):

$$\frac{4 a^2 (8 A+9 B+12 C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{15 d}+\frac{4 a^2 (5 A+6 B+7 C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{21 d}+\frac{4 a^2 (5 A+6 B+7 C) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{21 d}+\frac{2 a^2 (19 A+27 B+21 C) \text{Cos}[c+d x]^{3/2} \text{Sin}[c+d x]}{105 d}+\frac{2 A \text{Cos}[c+d x]^{3/2} (a+a \text{Cos}[c+d x])^2 \text{Sin}[c+d x]}{9 d}+\frac{2 (4 A+9 B) \text{Cos}[c+d x]^{3/2} \left(a^2+a^2 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{63 d}$$

Result (type 5, 1699 leaves) :

$$\frac{1}{A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]} \text{Cos}[c+d x]^{9/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{2 (8 A+9 B+12 C) \text{Cot}[c]}{15 d}+\frac{(46 A+51 B+56 C) \text{Cos}[d x] \text{Sin}[c]}{84 d}+\frac{(37 A+36 B+18 C) \text{Cos}[2 d x] \text{Sin}[2 c]}{180 d}+\frac{(2 A+B) \text{Cos}[3 d x] \text{Sin}[3 c]}{28 d}+\frac{A \text{Cos}[4 d x] \text{Sin}[4 c]}{72 d}+\frac{(46 A+51 B+56 C) \text{Cos}[c] \text{Sin}[d x]}{84 d}+\frac{(37 A+36 B+18 C) \text{Cos}[2 c] \text{Sin}[2 d x]}{180 d}+\frac{(2 A+B) \text{Cos}[3 c] \text{Sin}[3 d x]}{28 d}+\frac{A \text{Cos}[4 c] \text{Sin}[4 d x]}{72 d}\right)-$$

$$\frac{1}{21 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} 10 A \text{Cos}[c+d x]^4 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{7 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} 4 B \text{Cos}[c+d x]^4 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$

$$2\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\left(8\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(15\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(3\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))-$$

$$\Bigg(4\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))$$

Problem 1196: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{7/2}\,(a+a\,\text{Sec}[c+d\,x])^2\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 4, 179 leaves, 8 steps):

$$\frac{4 a^2 (3 A+4 B+5 C) \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{5 d}+\frac{4 a^2 (6 A+7 B+14 C) \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{21 d}+$$
$$\frac{2 a^2 (33 A+49 B+35 C) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{105 d}+$$
$$\frac{2 A \sqrt{\text{Cos}[c+d x]} (a+a \text{Cos}[c+d x])^2 \text{Sin}[c+d x]}{7 d}+$$
$$\frac{2 (4 A+7 B) \sqrt{\text{Cos}[c+d x]} \left(a^2+a^2 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{35 d}$$

Result (type 5, 2001 leaves):

$$\frac{1}{10 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$
$$3 i A \text{Cos}[c+d x]^4 \text{Csc}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/$$
$$\left.\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right)+$$
$$\frac{1}{5 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$
$$2$$
$$i B \text{Cos}[c+d x]^4$$
$$\text{Csc}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4$$
$$(a+a \text{Sec}[c+d x])^2$$
$$\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$

$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$

$$i\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$

$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$

$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$

$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\Bigg)+$$

$$\Bigg(\text{Cos}[c+d\,x]^{9/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\frac{2\,\left(3\,A+4\,B+5\,C\right)\,\text{Cot}[c]}{5\,d}+\frac{\left(51\,A+56\,B+28\,C\right)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{84\,d}+$$

$$\frac{\left(2\,A+B\right)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{10\,d}+\frac{A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{28\,d}+\frac{\left(51\,A+56\,B+28\,C\right)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{84\,d}+$$

$$\frac{\left(2\,A+B\right)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{10\,d}+\frac{A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{28\,d}\Bigg)\Bigg)\Bigg/$$

$$\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)-$$

$$\frac{1}{7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}}$$

$$4\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$

$$2\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\text{Sec}[c+d\,x]\right)^2$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$

$$4\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\text{Sec}[c+d\,x]\right)^2$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

Problem 1197: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{5/2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 4, 170 leaves, 8 steps):

$$\frac{4\,a^2\,(4\,A+5\,B)\ \text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{4\,a^2\,\left(A+2\,B+3\,C\right)\ \text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+$$

$$\frac{2\,a^2\,\left(7\,A+5\,B-15\,C\right)\sqrt{\text{Cos}[c+d\,x]}\ \text{Sin}[c+d\,x]}{15\,d}+\frac{2\,C\,\left(a+a\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}+$$

$$\frac{2\,\left(A-5\,C\right)\sqrt{\text{Cos}[c+d\,x]}\ \left(a^2+a^2\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 5, 1356 leaves):

$$\left(\text{Cos}[c+d\,x]^{9/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{1}{10\,d}(8\,A+10\,B-5\,C+8\,A\,\text{Cos}[2\,c]+10\,B\,\text{Cos}[2\,c]+5\,C\,\text{Cos}[2\,c])\,\text{Csc}[c]\,\text{Sec}[c]+\right.$$
$$\frac{(2\,A+B)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{10\,d}+\frac{(2\,A+B)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+$$
$$\left.\left.\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{d}+\frac{A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{10\,d}\right)\right)\bigg/$$
$$(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])-$$

$$\frac{1}{3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$2\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$4\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$2\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\left(4\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1198: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 170 leaves, 8 steps):

$$\frac{4\,a^2\,(A-C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{d}+\frac{4\,a^2\,(2\,A+3\,B+2\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+\frac{2\,a^2\,(A-3\,B-5\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}+\frac{2\,C\,\left(a+a\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,(3\,B+4\,C)\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 1583 leaves):

$$\frac{1}{2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}\,\mathrm{i}\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,\mathrm{i}\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,\mathrm{i}\,d\,x}\,\left(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\,\text{Cos}[c]+2\,\mathrm{i}\,\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,\mathrm{i}\,d\,\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\,\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,\mathrm{i}\,d\,x}\,\left(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\,\text{Cos}[c]+2\,\mathrm{i}\,\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-\mathrm{i}\,d\,\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\,\text{Sin}[c]\right)\right)-$$
$$\frac{1}{2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$
$$\mathrm{i}$$
$$C\,\text{Cos}[c+d\,x]^4$$
$$\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$
$$\left(a+a\,\text{Sec}[c+d\,x]\right)^2$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,\mathrm{i}\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,\mathrm{i}\,d\,x}\,\left(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\,\text{Cos}[c]+2\,\mathrm{i}\,\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\,\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$

$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$

$$\Bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$

$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\Bigg(\text{Cos}[c+d\,x]^{9/2}\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^4\left(a+a\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\frac{\left(2\,A-B-4\,C+2\,A\,\text{Cos}[2\,c]+B\,\text{Cos}[2\,c]\right)\text{Csc}[c]\,\text{Sec}[c]}{2\,d}+$$

$$\frac{A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{3\,d}+$$

$$\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]\left(C\,\text{Sin}[c]+3\,B\,\text{Sin}[d\,x]+6\,C\,\text{Sin}[d\,x]\right)}{3\,d}\Bigg)\Bigg)\Bigg/$$

$$\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)-$$

$$\frac{1}{3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$

$$4\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]$$

$$\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$

$$\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^4\left(a+a\,\text{Sec}[c+d\,x]\right)^2$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$

$$2\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]$$

$$\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$

$$\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^4\left(a+a\,\text{Sec}[c+d\,x]\right)^2$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\;-$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}}\;4\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\;\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\;\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\;\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\;\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\;\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

Problem 1199: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 174 leaves, 8 steps):

$$-\frac{4\,a^2\,\left(5\,B+4\,C\right)\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{5\,d}+\frac{4\,a^2\,\left(3\,A+2\,B+C\right)\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{3\,d}+\frac{2\,a^2\,\left(15\,A+25\,B+17\,C\right)\,\text{Sin}[c+d\,x]}{15\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,C\,\left(a+a\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{2\,\left(5\,B+4\,C\right)\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{15\,d\,\text{Cos}[c+d\,x]^{3/2}}$$

Result (type 5, 1599 leaves):

$$-\frac{1}{2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}\;i\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\,\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$

$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$

$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\,\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$

$$\left(-i\, d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{5\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)}$$

$$2\, i\, C\, \text{Cos}[c+d x]^4\, \text{Csc}[c]\, \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a\,\text{Sec}[c+d x]\right)^2 \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$

$$\Bigg(\Bigg(2\, e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\, e^{2 i d x}\,\text{Sin}[2c]}\Bigg)\Big/$$

$$\left(3 i\, d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$

$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\, e^{2 i d x}\,\text{Sin}[2c]}\Bigg)\Big/$$

$$\left(-i\, d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\Bigg(\text{Cos}[c+d x]^{9/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\left(a+a\,\text{Sec}[c+d x]\right)^2\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$

$$\Bigg(-\frac{\left(-5A-20B-16C+5A\,\text{Cos}[2c]\right)\text{Csc}[c]\,\text{Sec}[c]}{10 d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d x]^3\,\text{Sin}[d x]}{5 d}+$$

$$\frac{\text{Sec}[c]\,\text{Sec}[c+d x]^2\left(3C\,\text{Sin}[c]+5B\,\text{Sin}[d x]+10C\,\text{Sin}[d x]\right)}{15 d}+\frac{1}{15 d}\text{Sec}[c]\,\text{Sec}[c+d x]$$

$$\left(5B\,\text{Sin}[c]+10C\,\text{Sin}[c]+15A\,\text{Sin}[d x]+30B\,\text{Sin}[d x]+24C\,\text{Sin}[d x]\right)\Bigg)\Bigg)\Big/$$

$$\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)-$$

$$\frac{1}{d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{1+\text{Cot}[c]^2}}$$

$$2A\,\text{Cos}[c+d x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\left(a+a\,\text{Sec}[c+d x]\right)^2\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\Bigg)-$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}\,4\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}\,2\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

Problem 1200: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(a+a\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 215 leaves, 9 steps):

$$-\frac{4 a^2 (5 A+4 B+3 C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{5 d}+\frac{4 a^2 (14 A+7 B+6 C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{21 d}+\frac{2 a^2 (35 A+49 B+33 C) \text{Sin}[c+d x]}{105 d \text{Cos}[c+d x]^{3/2}}+\frac{4 a^2 (5 A+4 B+3 C) \text{Sin}[c+d x]}{5 d \sqrt{\text{Cos}[c+d x]}}+\frac{2 C (a+a \text{Cos}[c+d x])^2 \text{Sin}[c+d x]}{7 d \text{Cos}[c+d x]^{7/2}}+\frac{2 (7 B+4 C) \left(a^2+a^2 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{35 d \text{Cos}[c+d x]^{5/2}}$$

Result (type 5, 2041 leaves):

$$-\frac{1}{2 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])} i A \text{Cos}[c+d x]^4 \text{Csc}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right)\Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right)\Big/$$
$$\left.\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right)-$$

$$\frac{1}{5 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$
$$2$$
$$i$$
$$B$$
$$\text{Cos}[c+d x]^4$$
$$\text{Csc}[c]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4$$
$$(a+a \text{Sec}[c+d x])^2$$
$$\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right)\Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\operatorname{Cos}[2 c]+i\, e^{2 i d x}\operatorname{Sin}[2 c]}\right)\Big/$$
$$\left.\left(-i\, d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)\right)-$$

$$\frac{1}{10\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)}$$
$$3\, i\, C \operatorname{Cos}[c+d x]^4 \operatorname{Csc}[c] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \operatorname{Sec}[c+d x]\right)^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\left(\left(2 e^{2 i d x}\operatorname{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\operatorname{Cos}[2 c]+i\, e^{2 i d x}\operatorname{Sin}[2 c]}\right)\Big/$$
$$\left(3 i\, d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)-$$
$$\left(2 \operatorname{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\operatorname{Cos}[2 c]+i\, e^{2 i d x}\operatorname{Sin}[2 c]}\right)\Big/$$
$$\left.\left(-i\, d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)\right)+$$

$$\frac{1}{A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]}$$
$$\operatorname{Cos}[c+d x]^{9/2} \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \operatorname{Sec}[c+d x]\right)^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\left(\frac{2\left(5 A+4 B+3 C\right)\operatorname{Csc}[c]\operatorname{Sec}[c]}{5 d}+\frac{C \operatorname{Sec}[c]\operatorname{Sec}[c+d x]^4 \operatorname{Sin}[d x]}{7 d}+\right.$$
$$\frac{\operatorname{Sec}[c]\operatorname{Sec}[c+d x]^3\left(5 C \operatorname{Sin}[c]+7 B \operatorname{Sin}[d x]+14 C \operatorname{Sin}[d x]\right)}{35 d}+\frac{1}{105 d}$$
$$\operatorname{Sec}[c]\operatorname{Sec}[c+d x]^2\left(21 B \operatorname{Sin}[c]+42 C \operatorname{Sin}[c]+35 A \operatorname{Sin}[d x]+70 B \operatorname{Sin}[d x]+60 C \operatorname{Sin}[d x]\right)+$$
$$\frac{1}{105 d}\operatorname{Sec}[c]\operatorname{Sec}[c+d x]$$
$$\left.\left(35 A \operatorname{Sin}[c]+70 B \operatorname{Sin}[c]+60 C \operatorname{Sin}[c]+210 A \operatorname{Sin}[d x]+168 B \operatorname{Sin}[d x]+126 C \operatorname{Sin}[d x]\right)\right)-$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}}$$
$$4\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$
$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}}$$
$$2\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$
$$\frac{1}{7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}}$$
$$4\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

Problem 1201: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\mathrm{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 251 leaves, 10 steps):

$$-\frac{4\,a^2\,(12\,A+9\,B+8\,C)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{15\,d}+\frac{4\,a^2\,(7\,A+6\,B+5\,C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{21\,d}+\frac{2\,a^2\,(21\,A+27\,B+19\,C)\,\mathrm{Sin}[c+d\,x]}{105\,d\,\mathrm{Cos}[c+d\,x]^{5/2}}+\frac{4\,a^2\,(7\,A+6\,B+5\,C)\,\mathrm{Sin}[c+d\,x]}{21\,d\,\mathrm{Cos}[c+d\,x]^{3/2}}+\frac{4\,a^2\,(12\,A+9\,B+8\,C)\,\mathrm{Sin}[c+d\,x]}{15\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{2\,C\,(a+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sin}[c+d\,x]}{9\,d\,\mathrm{Cos}[c+d\,x]^{9/2}}+\frac{2\,(9\,B+4\,C)\,\left(a^2+a^2\,\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Sin}[c+d\,x]}{63\,d\,\mathrm{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 1741 leaves):

$$\frac{1}{A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]}\,\mathrm{Cos}[c+d\,x]^{9/2}\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(\frac{2\,(12\,A+9\,B+8\,C)\,\mathrm{Csc}[c]\,\mathrm{Sec}[c]}{15\,d}+\frac{C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^5\,\mathrm{Sin}[d\,x]}{9\,d}+\frac{\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^4\,(7\,C\,\mathrm{Sin}[c]+9\,B\,\mathrm{Sin}[d\,x]+18\,C\,\mathrm{Sin}[d\,x])}{63\,d}+\frac{1}{105\,d}2\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,(35\,A\,\mathrm{Sin}[c]+30\,B\,\mathrm{Sin}[c]+25\,C\,\mathrm{Sin}[c]+84\,A\,\mathrm{Sin}[d\,x]+63\,B\,\mathrm{Sin}[d\,x]+56\,C\,\mathrm{Sin}[d\,x])+\frac{1}{315\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,(45\,B\,\mathrm{Sin}[c]+90\,C\,\mathrm{Sin}[c]+63\,A\,\mathrm{Sin}[d\,x]+126\,B\,\mathrm{Sin}[d\,x]+112\,C\,\mathrm{Sin}[d\,x])+\frac{1}{315\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,(63\,A\,\mathrm{Sin}[c]+126\,B\,\mathrm{Sin}[c]+112\,C\,\mathrm{Sin}[c]+210\,A\,\mathrm{Sin}[d\,x]+180\,B\,\mathrm{Sin}[d\,x]+150\,C\,\mathrm{Sin}[d\,x])\right)-$$

$$\frac{1}{3\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}}\,2\,A\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}-$$

$$\frac{1}{7\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}}$$

$$4\,B\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\;-$$
$$\frac{1}{21\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}}$$
$$10\,C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\;+$$
$$\Bigg(4\,A\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]$$
$$\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Bigg/\Bigg(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}$$
$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$
$$\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$
$$\left(5\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$
$$\Bigg(3\,B\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Big/$$

$$(5\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$

$$\left(8\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Big/$$

$$(15\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))$$

Problem 1202: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{11/2}\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 267 leaves, 10 steps):

$$\frac{4 a^3 (15 A+17 B+21 C) \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{15 d}+\frac{4 a^3 (105 A+121 B+143 C) \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{231 d}+\frac{4 a^3 (105 A+121 B+143 C) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{231 d}+\frac{4 a^3 (210 A+253 B+264 C) \text{Cos}[c+d x]^{3/2} \text{Sin}[c+d x]}{1155 d}+\frac{2 A \text{Cos}[c+d x]^{3/2} (a+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{11 d}+\frac{2 (6 A+11 B) \text{Cos}[c+d x]^{3/2} \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]}{99 a d}+\frac{1}{693 d} 2 (105 A+143 B+99 C) \text{Cos}[c+d x]^{3/2} \left(a^3+a^3 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]$$

Result (type 5, 1364 leaves):

$$a^3 \left(\sqrt{\text{Cos}[c+d x]} (1+\text{Cos}[c+d x])^3 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(-\frac{(15 A+17 B+21 C) \text{Cot}[c]}{30 d}+\frac{(1953 A+2134 B+2354 C) \text{Cos}[d x] \text{Sin}[c]}{7392 d}+\frac{(75 A+73 B+54 C) \text{Cos}[2 d x] \text{Sin}[2 c]}{720 d}+\frac{(189 A+132 B+44 C) \text{Cos}[3 d x] \text{Sin}[3 c]}{4928 d}+\frac{(3 A+B) \text{Cos}[4 d x] \text{Sin}[4 c]}{288 d}+\frac{A \text{Cos}[5 d x] \text{Sin}[5 c]}{704 d}+\frac{(1953 A+2134 B+2354 C) \text{Cos}[c] \text{Sin}[d x]}{7392 d}+\frac{(75 A+73 B+54 C) \text{Cos}[2 c] \text{Sin}[2 d x]}{720 d}+\frac{(189 A+132 B+44 C) \text{Cos}[3 c] \text{Sin}[3 d x]}{4928 d}+\frac{(3 A+B) \text{Cos}[4 c] \text{Sin}[4 d x]}{288 d}+\frac{A \text{Cos}[5 c] \text{Sin}[5 d x]}{704 d}\right)-\left(5 A (1+\text{Cos}[c+d x])^3 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right.$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(22\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(11\,B\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(42\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(13\,C\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(42\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{4\,d}A\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-$$

$$\frac{1}{60\,d}17\,B\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$
$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$
$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-$$
$$\frac{1}{20\,d}7\,C\,\left(1+\text{Cos}[c+d\,x]\right)^3\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$
$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$
$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 1203: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{9/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 231 leaves, 9 steps):

$$\frac{4 a^3 (17 A+21 B+27 C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{15 d}+\frac{4 a^3 (11 A+13 B+21 C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{21 d}+\frac{4 a^3 (32 A+41 B+42 C) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{105 d}+\frac{2 A \sqrt{\text{Cos}[c+d x]} (a+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{9 d}+\frac{2 (2 A+3 B) \sqrt{\text{Cos}[c+d x]} \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]}{21 a d}+\frac{2 (73 A+99 B+63 C) \sqrt{\text{Cos}[c+d x]} \left(a^3+a^3 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{315 d}$$

Result (type 5, 1697 leaves):

$$\frac{1}{A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]} \text{Cos}[c+d x]^{11/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{(17 A+21 B+27 C) \text{Cot}[c]}{15 d}+\frac{(97 A+107 B+84 C) \text{Cos}[d x] \text{Sin}[c]}{168 d}+\frac{(73 A+54 B+18 C) \text{Cos}[2 d x] \text{Sin}[2 c]}{360 d}+\frac{(3 A+B) \text{Cos}[3 d x] \text{Sin}[3 c]}{56 d}+\frac{A \text{Cos}[4 d x] \text{Sin}[4 c]}{144 d}+\frac{(97 A+107 B+84 C) \text{Cos}[c] \text{Sin}[d x]}{168 d}+\frac{(73 A+54 B+18 C) \text{Cos}[2 c] \text{Sin}[2 d x]}{360 d}+\frac{(3 A+B) \text{Cos}[3 c] \text{Sin}[3 d x]}{56 d}+\frac{A \text{Cos}[4 c] \text{Sin}[4 d x]}{144 d}\right)-\frac{1}{21 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} 11 A \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-\frac{1}{21 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}}$$

$$13\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$

$$\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\;-$$

$$\frac{1}{d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\sqrt{1+\text{Cot}[c]^2}}$$

$$C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$

$$\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\;-$$

$$\Bigg(17\,A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$\big(30\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\big)\;-$$

$$\Bigg(7\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Big/$$

$$\left(10\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(9\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Big/$$

$$\left(10\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1204: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{7/2}\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 227 leaves, 9 steps):

$$\frac{4 a^3 (7 A+9 B+5 C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{5 d}+\frac{4 a^3 (13 A+21 B+35 C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{21 d}+\frac{4 a^3 (41 A+42 B-35 C) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{105 d}+\frac{2 C (a+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{d \sqrt{\text{Cos}[c+d x]}}+\frac{2 (A-7 C) \sqrt{\text{Cos}[c+d x]} \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]}{7 a d}+\frac{2 (11 A+7 B-35 C) \sqrt{\text{Cos}[c+d x]} \left(a^3+a^3 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{35 d}$$

Result (type 5, 1688 leaves):

$$\frac{1}{A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]} \text{Cos}[c+d x]^{11/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{1}{20 d}(14 A+18 B+5 C+14 A \text{Cos}[2 c]+18 B \text{Cos}[2 c]+15 C \text{Cos}[2 c]) \text{Csc}[c] \text{Sec}[c]+\frac{(107 A+84 B+28 C) \text{Cos}[d x] \text{Sin}[c]}{168 d}+\frac{(3 A+B) \text{Cos}[2 d x] \text{Sin}[2 c]}{20 d}+\frac{A \text{Cos}[3 d x] \text{Sin}[3 c]}{56 d}+\frac{(107 A+84 B+28 C) \text{Cos}[c] \text{Sin}[d x]}{168 d}+\frac{C \text{Sec}[c] \text{Sec}[c+d x] \text{Sin}[d x]}{2 d}+\frac{(3 A+B) \text{Cos}[2 c] \text{Sin}[2 d x]}{20 d}+\frac{A \text{Cos}[3 c] \text{Sin}[3 d x]}{56 d}\right)-$$

$$\frac{1}{21 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} 13 A \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} B \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}}$$

$$5\,C\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,-$$

$$\left(7\,A\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\Bigg)\Big/$$

$$\left(10\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(9\,B\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$(10\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))-$$

$$\left(C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$(2\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))$$

Problem 1205: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\text{Cos}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 226 leaves, 9 steps):

$$\frac{4\,a^3\,(9\,A+5\,B-5\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,d}+\frac{4\,a^3\,(3\,A+5\,(B+C))\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+\frac{4\,a^3\,(6\,A-5\,B-20\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{Sin}[c+d\,x]}{15\,d}+\frac{2\,C\,(a+a\,\text{Cos}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,(B+2\,C)\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{a\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,(3\,A-15\,B-35\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\left(a^3+a^3\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{15\,d}$$

Result (type 5, 1672 leaves):

$$\Bigg(\text{Cos}[c+d\,x]^{11/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(-\frac{1}{20\,d}\,(18\,A+5\,B-25\,C+18\,A\,\text{Cos}[2\,c]+15\,B\,\text{Cos}[2\,c]+5\,C\,\text{Cos}[2\,c])\,\,\text{Csc}[c]\,\,\text{Sec}[c]+\frac{(3\,A+B)\,\,\text{Cos}[d\,x]\,\,\text{Sin}[c]}{6\,d}+\frac{A\,\text{Cos}[2\,d\,x]\,\,\text{Sin}[2\,c]}{20\,d}+\frac{(3\,A+B)\,\,\text{Cos}[c]\,\,\text{Sin}[d\,x]}{6\,d}+\frac{C\,\text{Sec}[c]\,\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{6\,d}+\frac{\text{Sec}[c]\,\,\text{Sec}[c+d\,x]\,\,(C\,\text{Sin}[c]+3\,B\,\text{Sin}[d\,x]+9\,C\,\text{Sin}[d\,x])}{6\,d}+\frac{A\,\text{Cos}[2\,c]\,\,\text{Sin}[2\,d\,x]}{20\,d}\Bigg)\Bigg)\Big/$$
$$(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,-$$
$$\frac{1}{d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\,\text{Sin}[c]\,\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$
$$\frac{1}{3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$5\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\,\text{Sin}[c]\,\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$
$$\frac{1}{3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$

$$5\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$
$$\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\;-$$

$$\Bigg(9\,A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$
$$\Bigg(\Bigg(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$
$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$
$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$
$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$
$$\big(10\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\big)\;-$$

$$\Bigg(B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$
$$\Bigg(\Bigg(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$
$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$
$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(2\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(C\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(2\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1206: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 231 leaves, 9 steps):

$$\frac{4 a^3 (5 A-5 B-9 C) \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{5 d}+\frac{4 a^3 (5 A+5 B+3 C) \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{3 d}-\frac{4 a^3 (5 A+20 B+21 C) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{15 d}+\frac{2 C (a+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{5 d \text{Cos}[c+d x]^{5/2}}+\frac{2 (5 B+6 C) \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]}{15 a d \text{Cos}[c+d x]^{3/2}}+\frac{2 (15 A+35 B+33 C) \left(a^3+a^3 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{15 d \sqrt{\text{Cos}[c+d x]}}$$

Result (type 5, 1673 leaves):

$$\frac{1}{A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]} \text{Cos}[c+d x]^{11/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{(5 A-25 B-36 C+15 A \text{Cos}[2 c]+5 B \text{Cos}[2 c]) \text{Csc}[c] \text{Sec}[c]}{20 d}+\frac{A \text{Cos}[d x] \text{Sin}[c]}{6 d}+\frac{A \text{Cos}[c] \text{Sin}[d x]}{6 d}+\frac{C \text{Sec}[c] \text{Sec}[c+d x]^3 \text{Sin}[d x]}{10 d}+\frac{\text{Sec}[c] \text{Sec}[c+d x]^2 (3 C \text{Sin}[c]+5 B \text{Sin}[d x]+15 C \text{Sin}[d x])}{30 d}+\frac{1}{30 d} \text{Sec}[c] \text{Sec}[c+d x] (5 B \text{Sin}[c]+15 C \text{Sin}[c]+15 A \text{Sin}[d x]+45 B \text{Sin}[d x]+54 C \text{Sin}[d x])\right)-$$

$$\frac{1}{3 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} 5 A \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{3 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} 5 B \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$

$$C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$

$$\left(A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$
$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$
$$\left(2\,d\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\right)+$$

$$\left(B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(a+a\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$(2\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$

$$\Bigg(9\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$(10\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))$$

Problem 1207: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Cos}[c+d\,x]}\ (a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 4, 231 leaves, 9 steps):

$$-\frac{4 a^3 (5 A+9 B+7 C) \text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{5 d}+\frac{4 a^3 (35 A+21 B+13 C) \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{21 d}+\frac{4 a^3 (140 A+147 B+106 C) \text{Sin}[c+d x]}{105 d \sqrt{\text{Cos}[c+d x]}}+\frac{2 C (a+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{7 d \text{Cos}[c+d x]^{7/2}}+\frac{2 (7 B+6 C) \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]}{35 a d \text{Cos}[c+d x]^{5/2}}+\frac{2 (5 A+9 B+7 C) \left(a^3+a^3 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{15 d \text{Cos}[c+d x]^{3/2}}$$

Result (type 5, 1692 leaves):

$$\frac{1}{A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]} \text{Cos}[c+d x]^{11/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\left(-\frac{(-25 A-36 B-28 C+5 A \text{Cos}[2 c]) \text{Csc}[c] \text{Sec}[c]}{20 d}+\frac{C \text{Sec}[c] \text{Sec}[c+d x]^4 \text{Sin}[d x]}{14 d}+\right.$$
$$\frac{\text{Sec}[c] \text{Sec}[c+d x]^3 (5 C \text{Sin}[c]+7 B \text{Sin}[d x]+21 C \text{Sin}[d x])}{70 d}+\frac{1}{210 d}\text{Sec}[c]$$
$$\text{Sec}[c+d x]^2 (21 B \text{Sin}[c]+63 C \text{Sin}[c]+35 A \text{Sin}[d x]+105 B \text{Sin}[d x]+130 C \text{Sin}[d x])+$$
$$\frac{1}{210 d}\text{Sec}[c] \text{Sec}[c+d x] (35 A \text{Sin}[c]+105 B \text{Sin}[c]+130 C \text{Sin}[c]+$$
$$\left.315 A \text{Sin}[d x]+378 B \text{Sin}[d x]+294 C \text{Sin}[d x])\right)-$$
$$\frac{1}{3 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}}$$
$$5 A \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\frac{1}{d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}}$$
$$B \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\frac{1}{21 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}}$$

$$13\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}+$$
$$\Bigg(A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$
$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$
$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$
$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$
$$(2\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$
$$\Bigg(9\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$
$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$
$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(10\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(7\,C\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(10\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1208: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{\mathrm{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 267 leaves, 10 steps):

$$-\frac{4 a^3 (27 A+21 B+17 C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{15 d}+\frac{4 a^3 (21 A+13 B+11 C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{21 d}+\frac{4 a^3 (42 A+41 B+32 C) \text{Sin}[c+d x]}{105 d \text{Cos}[c+d x]^{3/2}}+\frac{4 a^3 (27 A+21 B+17 C) \text{Sin}[c+d x]}{15 d \sqrt{\text{Cos}[c+d x]}}+\frac{2 C (a+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{9 d \text{Cos}[c+d x]^{9/2}}+\frac{2 (3 B+2 C) \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]}{21 a d \text{Cos}[c+d x]^{7/2}}+\frac{2 (63 A+99 B+73 C) \left(a^3+a^3 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{315 d \text{Cos}[c+d x]^{5/2}}$$

Result (type 5, 1739 leaves):

$$\frac{1}{A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]} \text{Cos}[c+d x]^{11/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(\frac{(27 A+21 B+17 C) \text{Csc}[c] \text{Sec}[c]}{15 d}+\frac{C \text{Sec}[c] \text{Sec}[c+d x]^5 \text{Sin}[d x]}{18 d}+\frac{\text{Sec}[c] \text{Sec}[c+d x]^4 (7 C \text{Sin}[c]+9 B \text{Sin}[d x]+27 C \text{Sin}[d x])}{126 d}+\frac{1}{630 d}\text{Sec}[c] \text{Sec}[c+d x]^3 (45 B \text{Sin}[c]+135 C \text{Sin}[c]+63 A \text{Sin}[d x]+189 B \text{Sin}[d x]+238 C \text{Sin}[d x])+\frac{1}{210 d} \text{Sec}[c] \text{Sec}[c+d x] (105 A \text{Sin}[c]+130 B \text{Sin}[c]+110 C \text{Sin}[c]+378 A \text{Sin}[d x]+294 B \text{Sin}[d x]+238 C \text{Sin}[d x])+\frac{1}{630 d}\text{Sec}[c] \text{Sec}[c+d x]^2 (63 A \text{Sin}[c]+189 B \text{Sin}[c]+238 C \text{Sin}[c]+315 A \text{Sin}[d x]+390 B \text{Sin}[d x]+330 C \text{Sin}[d x])\right)-$$

$$\frac{1}{d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} A \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{21 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} 13 B \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a\,\text{Sec}[c+d x])^3 \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{21 d \left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{1+\text{Cot}[c]^2}}$$
$$11 C\,\text{Cos}[c+d x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a\,\text{Sec}[c+d x])^3 \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}+$$

$$\Bigg(9 A\,\text{Cos}[c+d x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a\,\text{Sec}[c+d x])^3 \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$
$$\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}$$
$$\sqrt{1+\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\sqrt{\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}$$
$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$
$$\left(10 d \left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\right)+$$

$$\Bigg(7 B\,\text{Cos}[c+d x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a\,\text{Sec}[c+d x])^3 \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Big/$$

$$(10\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$

$$\left(17\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Big/$$

$$(30\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))$$

Problem 1209: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{13/2}\,(a+a\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 310 leaves, 11 steps):

$$\frac{8 a^4 (185 A+208 B+247 C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{195 d}+\frac{8 a^4 (100 A+113 B+132 C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{231 d}+\frac{8 a^4 (100 A+113 B+132 C) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{231 d}+\frac{4 a^4 (5255 A+6019 B+6721 C) \text{Cos}[c+d x]^{3/2} \text{Sin}[c+d x]}{15015 d}+\frac{2 a (8 A+13 B) \text{Cos}[c+d x]^{3/2} (a+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{143 d}+\frac{2 A \text{Cos}[c+d x]^{3/2} (a+a \text{Cos}[c+d x])^4 \text{Sin}[c+d x]}{13 d}+\frac{1}{99 d} 2 (13 A+17 B+11 C) \text{Cos}[c+d x]^{3/2} \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]+\frac{1}{9009 d} 4 (1355 A+1612 B+1573 C) \text{Cos}[c+d x]^{3/2} \left(a^4+a^4 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]$$

Result (type 5, 1416 leaves):

$$a^4 \left(\sqrt{\text{Cos}[c+d x]} (1+\text{Cos}[c+d x])^4 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8\right.$$
$$\left(-\frac{(185 A+208 B+247 C) \text{Cot}[c]}{390 d}+\frac{(3764 A+4087 B+4488 C) \text{Cos}[d x] \text{Sin}[c]}{14784 d}+\frac{(15625 A+15392 B+13208 C) \text{Cos}[2 d x] \text{Sin}[2 c]}{149760 d}+\frac{(404 A+321 B+176 C) \text{Cos}[3 d x] \text{Sin}[3 c]}{9856 d}+\frac{(98 A+52 B+13 C) \text{Cos}[4 d x] \text{Sin}[4 c]}{7488 d}+\frac{(4 A+B) \text{Cos}[5 d x] \text{Sin}[5 c]}{1408 d}+\frac{A \text{Cos}[6 d x] \text{Sin}[6 c]}{3328 d}+\frac{(3764 A+4087 B+4488 C) \text{Cos}[c] \text{Sin}[d x]}{14784 d}+\frac{(15625 A+15392 B+13208 C) \text{Cos}[2 c] \text{Sin}[2 d x]}{149760 d}+\frac{(404 A+321 B+176 C) \text{Cos}[3 c] \text{Sin}[3 d x]}{9856 d}+\frac{(98 A+52 B+13 C) \text{Cos}[4 c] \text{Sin}[4 d x]}{7488 d}+\frac{(4 A+B) \text{Cos}[5 c] \text{Sin}[5 d x]}{1408 d}+\frac{A \text{Cos}[6 c] \text{Sin}[6 d x]}{3328 d}\right)-$$
$$\left(50 A (1+\text{Cos}[c+d x])^4 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8 \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(231\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\left(113\,B\,(1+\text{Cos}[c+d\,x])^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\right.\right.$$

$$\left.\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8 \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$

$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(462\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(2\,C\,(1+\text{Cos}[c+d\,x])^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8 \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(7\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{156\,d}37\,A\,(1+\text{Cos}[c+d\,x])^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-\frac{1}{15\,d}$$

$$4\,B\,\left(1+\text{Cos}[c+d\,x]\right)^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.$$

$$\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg)-$$

$$\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)-$$

$$\frac{1}{60\,d}19\,C\,\left(1+\text{Cos}[c+d\,x]\right)^4\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg)-$$

$$\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)$$

Problem 1210: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{11/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 274 leaves, 10 steps):

$$\frac{8 a^4 (16 A+19 B+24 C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{15 d}+\frac{8 a^4 (113 A+132 B+187 C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{231 d}+\frac{4 a^4 (667 A+803 B+913 C) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{1155 d}+\frac{2 a (8 A+11 B) \sqrt{\text{Cos}[c+d x]} (a+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{99 d}+\frac{2 A \sqrt{\text{Cos}[c+d x]} (a+a \text{Cos}[c+d x])^4 \text{Sin}[c+d x]}{11 d}+\frac{1}{231 d}2 (43 A+55 B+33 C) \sqrt{\text{Cos}[c+d x]} \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]+\frac{1}{3465 d}4 (769 A+946 B+891 C) \sqrt{\text{Cos}[c+d x]} \left(a^4+a^4 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]$$

Result (type 5, 1751 leaves):

$$\frac{1}{A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]}\text{Cos}[c+d x]^{13/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{(16 A+19 B+24 C) \text{Cot}[c]}{15 d}+\frac{(4087 A+4488 B+4202 C) \text{Cos}[d x] \text{Sin}[c]}{7392 d}+\frac{(148 A+127 B+72 C) \text{Cos}[2 d x] \text{Sin}[2 c]}{720 d}+\frac{(321 A+176 B+44 C) \text{Cos}[3 d x] \text{Sin}[3 c]}{4928 d}+\frac{(4 A+B) \text{Cos}[4 d x] \text{Sin}[4 c]}{288 d}+\frac{A \text{Cos}[5 d x] \text{Sin}[5 c]}{704 d}+\frac{(4087 A+4488 B+4202 C) \text{Cos}[c] \text{Sin}[d x]}{7392 d}+\frac{(148 A+127 B+72 C) \text{Cos}[2 c] \text{Sin}[2 d x]}{720 d}+\frac{(321 A+176 B+44 C) \text{Cos}[3 c] \text{Sin}[3 d x]}{4928 d}+\frac{(4 A+B) \text{Cos}[4 c] \text{Sin}[4 d x]}{288 d}+\frac{A \text{Cos}[5 c] \text{Sin}[5 d x]}{704 d}\right)-\frac{1}{231 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}}113 A \text{Cos}[c+d x]^6 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{7\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}}$$
$$4\,B\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,-$$
$$\frac{1}{21\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}}$$
$$17\,C\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,-$$
$$\left(8\,A\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$
$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$
$$\left.\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/$$
$$\left(15\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\Bigg(19\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,\big(a+a\,\text{Sec}[c+d\,x]\big)^4\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\Big(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big)\Big/\Big(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$

$$\big(30\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\big)-$$

$$\Bigg(4\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,\big(a+a\,\text{Sec}[c+d\,x]\big)^4\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\Big(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big)\Big/\Big(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Big)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$

$$\big(5\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\big)$$

Problem 1211: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^{9/2} \left(a+a \text{Sec}[c+d x]\right)^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 270 leaves, 10 steps):

$$\frac{8 a^4 (19 A+24 B+21 C) \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{15 d}+\frac{8 a^4 (12 A+17 B+28 C) \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{21 d}+\frac{4 a^4 (73 A+83 B+7 C) \sqrt{\text{Cos}[c+d x]}\, \text{Sin}[c+d x]}{105 d}+\frac{2 a (A-9 C) \sqrt{\text{Cos}[c+d x]} \left(a+a \text{Cos}[c+d x]\right)^3 \text{Sin}[c+d x]}{9 d}+\frac{2 C \left(a+a \text{Cos}[c+d x]\right)^4 \text{Sin}[c+d x]}{d \sqrt{\text{Cos}[c+d x]}}+\frac{2 (5 A+3 B-21 C) \sqrt{\text{Cos}[c+d x]} \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]}{21 d}+\frac{1}{315 d} 4 (86 A+81 B-126 C) \sqrt{\text{Cos}[c+d x]} \left(a^4+a^4 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]$$

Result (type 5, 1742 leaves):

$$\frac{1}{A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]} \text{Cos}[c+d x]^{13/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \left(a+a \text{Sec}[c+d x]\right)^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{1}{120 d} (76 A+96 B+69 C+76 A \text{Cos}[2 c]+96 B \text{Cos}[2 c]+99 C \text{Cos}[2 c]) \text{Csc}[c] \text{Sec}[c]+\frac{(204 A+191 B+112 C) \text{Cos}[d x] \text{Sin}[c]}{336 d}+\frac{(127 A+72 B+18 C) \text{Cos}[2 d x] \text{Sin}[2 c]}{720 d}+\frac{(4 A+B) \text{Cos}[3 d x] \text{Sin}[3 c]}{112 d}+\frac{A \text{Cos}[4 d x] \text{Sin}[4 c]}{288 d}+\frac{(204 A+191 B+112 C) \text{Cos}[c] \text{Sin}[d x]}{336 d}+\frac{C \text{Sec}[c] \text{Sec}[c+d x] \text{Sin}[d x]}{4 d}+\frac{(127 A+72 B+18 C) \text{Cos}[2 c] \text{Sin}[2 d x]}{720 d}+\frac{(4 A+B) \text{Cos}[3 c] \text{Sin}[3 d x]}{112 d}+\frac{A \text{Cos}[4 c] \text{Sin}[4 d x]}{288 d}\right)-\frac{1}{7 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \sqrt{1+\text{Cot}[c]^2}}$$

$$4 A \mathrm{Cos}[c+d x]^6 \mathrm{Csc}[c] \mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right] \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a + a \mathrm{Sec}[c+d x])^4 \left(A + B \mathrm{Sec}[c+d x] + C \mathrm{Sec}[c+d x]^2\right) \mathrm{Sec}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]] \sqrt{1-\mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]} \sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\, \mathrm{Sin}[c]\, \mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]} \sqrt{1+\mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]} -$$

$$\frac{1}{21 d \left(A + 2 C + 2 B \mathrm{Cos}[c+d x] + A \mathrm{Cos}[2 c + 2 d x]\right) \sqrt{1+\mathrm{Cot}[c]^2}}$$

$$17 B \mathrm{Cos}[c+d x]^6 \mathrm{Csc}[c] \mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right] \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a + a \mathrm{Sec}[c+d x])^4 \left(A + B \mathrm{Sec}[c+d x] + C \mathrm{Sec}[c+d x]^2\right) \mathrm{Sec}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]] \sqrt{1-\mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]} \sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\, \mathrm{Sin}[c]\, \mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]} \sqrt{1+\mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]} -$$

$$\frac{1}{3 d \left(A + 2 C + 2 B \mathrm{Cos}[c+d x] + A \mathrm{Cos}[2 c + 2 d x]\right) \sqrt{1+\mathrm{Cot}[c]^2}}$$

$$4 C \mathrm{Cos}[c+d x]^6 \mathrm{Csc}[c] \mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right] \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a + a \mathrm{Sec}[c+d x])^4 \left(A + B \mathrm{Sec}[c+d x] + C \mathrm{Sec}[c+d x]^2\right) \mathrm{Sec}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]] \sqrt{1-\mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]} \sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\, \mathrm{Sin}[c]\, \mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]} \sqrt{1+\mathrm{Sin}[d x - \mathrm{ArcTan}[\mathrm{Cot}[c]]]} -$$

$$\Bigg(19 A \mathrm{Cos}[c+d x]^6 \mathrm{Csc}[c] \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a + a \mathrm{Sec}[c+d x])^4 \left(A + B \mathrm{Sec}[c+d x] + C \mathrm{Sec}[c+d x]^2\right)$$

$$\Bigg(\Bigg(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2}, -\frac{1}{4}\right\}, \left\{\frac{3}{4}\right\}, \mathrm{Cos}[d x + \mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]$$

$$\mathrm{Sin}[d x + \mathrm{ArcTan}[\mathrm{Tan}[c]]]\, \mathrm{Tan}[c]\Bigg) \Bigg/ \Bigg(\sqrt{1-\mathrm{Cos}[d x + \mathrm{ArcTan}[\mathrm{Tan}[c]]]}$$

$$\sqrt{1+\mathrm{Cos}[d x + \mathrm{ArcTan}[\mathrm{Tan}[c]]]} \sqrt{\mathrm{Cos}[c]\, \mathrm{Cos}[d x + \mathrm{ArcTan}[\mathrm{Tan}[c]]] \sqrt{1+\mathrm{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(30\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(4\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(7\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$\left(10\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1212: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^{7/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 269 leaves, 10 steps):

$$\frac{8\,a^4\,(8\,A+7\,B)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,d}+\frac{8\,a^4\,(17\,A+28\,B+35\,C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{21\,d}+$$
$$\frac{4\,a^4\,(83\,A+7\,B-175\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{105\,d}+$$
$$\frac{2\,a\,(3\,B+8\,C)\,\left(a+a\,\mathrm{Cos}[c+d\,x]\right)^3\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{2\,C\,\left(a+a\,\mathrm{Cos}[c+d\,x]\right)^4\,\mathrm{Sin}[c+d\,x]}{3\,d\,\mathrm{Cos}[c+d\,x]^{3/2}}+$$
$$\frac{2\,(A-7\,B-21\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(a^2+a^2\,\mathrm{Cos}[c+d\,x]\right)^2\,\mathrm{Sin}[c+d\,x]}{7\,d}+\frac{1}{105\,d}$$
$$4\,(27\,A-42\,B-175\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(a^4+a^4\,\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Sin}[c+d\,x]$$

Result (type 5, 1451 leaves):

$$\frac{1}{A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]}$$
$$\mathrm{Cos}[c+d\,x]^{13/2}\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(-\frac{1}{40\,d}\left(32\,A+23\,B-20\,C+32\,A\,\mathrm{Cos}[2\,c]+33\,B\,\mathrm{Cos}[2\,c]+20\,C\,\mathrm{Cos}[2\,c]\right)\,\mathrm{Csc}[c]\,\mathrm{Sec}[c]+$$
$$\frac{(191\,A+112\,B+28\,C)\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{336\,d}+\frac{(4\,A+B)\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]}{40\,d}+\frac{A\,\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]}{112\,d}+$$
$$\frac{(191\,A+112\,B+28\,C)\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{336\,d}+\frac{C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Sin}[d\,x]}{12\,d}+$$
$$\frac{\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\left(C\,\mathrm{Sin}[c]+3\,B\,\mathrm{Sin}[d\,x]+12\,C\,\mathrm{Sin}[d\,x]\right)}{12\,d}+$$
$$\frac{(4\,A+B)\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{40\,d}+\frac{A\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{112\,d}\Bigg)-$$
$$\frac{1}{21\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}}$$
$$17\,A\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8 \left(a+a\,\text{Sec}[c+d\,x]\right)^4 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$
$$4\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8 \left(a+a\,\text{Sec}[c+d\,x]\right)^4 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$
$$5\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8 \left(a+a\,\text{Sec}[c+d\,x]\right)^4 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$

$$\left(4\,A\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8 \left(a+a\,\text{Sec}[c+d\,x]\right)^4 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg) - \frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$

$$\big(5\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\big) -$$

$$\Bigg(7\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,\big(a+a\,\text{Sec}[c+d\,x]\big)^4\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\Big(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg) - \frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$

$$\big(10\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\big)$$

Problem 1213: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{5/2}\,\big(a+a\,\text{Sec}[c+d\,x]\big)^4\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)\,dx$$

Optimal (type 4, 267 leaves, 10 steps):

$$\frac{56\,a^4\,(A-C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,d}+\frac{8\,a^4\,(4\,A+5\,B+4\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+$$
$$\frac{4\,a^4\,(A-25\,B-41\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{Sin}[c+d\,x]}{15\,d}+\frac{2\,a\,(5\,B+8\,C)\,(a+a\,\text{Cos}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{15\,d\,\text{Cos}[c+d\,x]^{3/2}}+$$
$$\frac{2\,C\,(a+a\,\text{Cos}[c+d\,x])^4\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{2\,(5\,A+15\,B+19\,C)\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{5\,d\,\sqrt{\text{Cos}[c+d\,x]}}-$$
$$\frac{4\,(6\,A+25\,B+34\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\left(a^4+a^4\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{15\,d}$$

Result (type 5, 1449 leaves):

$$\frac{1}{A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]}$$
$$\text{Cos}[c+d\,x]^{13/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-\frac{1}{40\,d}(23\,A-20\,B-61\,C+33\,A\,\text{Cos}[2\,c]+20\,B\,\text{Cos}[2\,c]+5\,C\,\text{Cos}[2\,c])\,\text{Csc}[c]\,\text{Sec}[c]+\right.$$
$$\frac{(4\,A+B)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{12\,d}+\frac{A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{40\,d}+$$
$$\frac{(4\,A+B)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{12\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\text{Sin}[d\,x]}{20\,d}+$$
$$\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,(3\,C\,\text{Sin}[c]+5\,B\,\text{Sin}[d\,x]+20\,C\,\text{Sin}[d\,x])}{60\,d}+\frac{1}{60\,d}$$
$$\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(5\,B\,\text{Sin}[c]+20\,C\,\text{Sin}[c]+15\,A\,\text{Sin}[d\,x]+60\,B\,\text{Sin}[d\,x]+99\,C\,\text{Sin}[d\,x])+$$
$$\left.\frac{A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{40\,d}\right)-$$
$$\frac{1}{3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$4\,A\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$
$$\frac{1}{3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$5\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\frac{1}{3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$

$$4\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(a+a\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\left(7\,A\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(a+a\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left.\left(10\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)\right)+$$

$$\left(7\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(a+a\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big)\Big/\Big(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$\big(10\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\big)$$

Problem 1214: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 4, 271 leaves, 10 steps):

$$-\frac{8\,a^4\,(7\,B+8\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{8\,a^4\,(35\,A+28\,B+17\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{21\,d}-$$

$$\frac{4\,a^4\,(175\,A+287\,B+253\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{105\,d}+$$

$$\frac{2\,a\,(7\,B+8\,C)\,(a+a\,\text{Cos}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{35\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{2\,C\,(a+a\,\text{Cos}[c+d\,x])^4\,\text{Sin}[c+d\,x]}{7\,d\,\text{Cos}[c+d\,x]^{7/2}}+$$

$$\frac{2\,(35\,A+77\,B+73\,C)\,(a^2+a^2\,\text{Cos}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{105\,d\,\text{Cos}[c+d\,x]^{3/2}}+$$

$$\frac{4\,(175\,A+238\,B+197\,C)\,(a^4+a^4\,\text{Cos}[c+d\,x])\,\text{Sin}[c+d\,x]}{105\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 1454 leaves):

$$\frac{1}{A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]}$$

$$\text{Cos}[c+d\,x]^{13/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)$$

$$\Bigg(-\frac{1}{40\,d}\,(-20\,A-61\,B-64\,C+20\,A\,\text{Cos}[2\,c]+5\,B\,\text{Cos}[2\,c])\,\text{Csc}[c]\,\text{Sec}[c]+$$

$$\frac{A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{12\,d}+\frac{A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{12\,d}+\frac{C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^4\,\text{Sin}[d\,x]}{28\,d}+$$

$$\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,(5\,C\,\text{Sin}[c]+7\,B\,\text{Sin}[d\,x]+28\,C\,\text{Sin}[d\,x])}{140\,d}+\frac{1}{420\,d}\text{Sec}[c]$$

$$\text{Sec}[c+d\,x]^2\,(21\,B\,\text{Sin}[c]+84\,C\,\text{Sin}[c]+35\,A\,\text{Sin}[d\,x]+140\,B\,\text{Sin}[d\,x]+235\,C\,\text{Sin}[d\,x])+$$

$$\frac{1}{420\,d}\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\big(35\,A\,\text{Sin}[c]+140\,B\,\text{Sin}[c]+235\,C\,\text{Sin}[c]+420\,A\,\text{Sin}[d\,x]+693\,B\,\text{Sin}[d\,x]+672\,C\,\text{Sin}[d\,x]\big)-$$

$$\frac{1}{3\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\sqrt{1+\text{Cot}[c]^2}}$$
$$5\,A\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$
$$\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{3\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\sqrt{1+\text{Cot}[c]^2}}$$
$$4\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$
$$\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{21\,d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\sqrt{1+\text{Cot}[c]^2}}$$
$$17\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$
$$\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}+$$

$$\Bigg(7\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\bigg(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\left.\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\right/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\;\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\right/$$

$$\left(10\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(4\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\right/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\;\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\right/$$

$$\left(5\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1215: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 274 leaves, 10 steps):

$$-\frac{8 a^4 (21 A+24 B+19 C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{15 d}+\frac{8 a^4 (28 A+17 B+12 C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{21 d}+\frac{4 a^4 (287 A+253 B+193 C) \text{Sin}[c+d x]}{105 d \sqrt{\text{Cos}[c+d x]}}+\frac{2 a (9 B+8 C) (a+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{63 d \text{Cos}[c+d x]^{7/2}}+\frac{2 C (a+a \text{Cos}[c+d x])^4 \text{Sin}[c+d x]}{9 d \text{Cos}[c+d x]^{9/2}}+\frac{2 (63 A+117 B+97 C) \left(a^2+a^2 \text{Cos}[c+d x]\right)^2 \text{Sin}[c+d x]}{315 d \text{Cos}[c+d x]^{5/2}}+\frac{4 (21 A+24 B+19 C) \left(a^4+a^4 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{45 d \text{Cos}[c+d x]^{3/2}}$$

Result (type 5, 1748 leaves):

$$\frac{1}{A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]} \text{Cos}[c+d x]^{13/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{(-183 A-192 B-152 C+15 A \text{Cos}[2 c]) \text{Csc}[c] \text{Sec}[c]}{120 d}+\frac{C \text{Sec}[c] \text{Sec}[c+d x]^5 \text{Sin}[d x]}{36 d}+\frac{\text{Sec}[c] \text{Sec}[c+d x]^4 (7 C \text{Sin}[c]+9 B \text{Sin}[d x]+36 C \text{Sin}[d x])}{252 d}+\frac{1}{1260 d}\text{Sec}[c] \text{Sec}[c+d x]^3 (45 B \text{Sin}[c]+180 C \text{Sin}[c]+63 A \text{Sin}[d x]+252 B \text{Sin}[d x]+427 C \text{Sin}[d x])+\frac{1}{420 d}\text{Sec}[c] \text{Sec}[c+d x] (140 A \text{Sin}[c]+235 B \text{Sin}[c]+240 C \text{Sin}[c]+693 A \text{Sin}[d x]+672 B \text{Sin}[d x]+532 C \text{Sin}[d x])+\frac{1}{1260 d}\text{Sec}[c] \text{Sec}[c+d x]^2 (63 A \text{Sin}[c]+252 B \text{Sin}[c]+427 C \text{Sin}[c]+420 A \text{Sin}[d x]+705 B \text{Sin}[d x]+720 C \text{Sin}[d x])\right)-$$

$$\frac{1}{3 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} 4 A \text{Cos}[c+d x]^6 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{21 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}} 17 B \text{Cos}[c+d x]^6 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a\,\text{Sec}[c+d x])^4 \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\;-$$
$$\frac{1}{7 d \left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\sqrt{1+\text{Cot}[c]^2}}$$
$$4 C\,\text{Cos}[c+d x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a\,\text{Sec}[c+d x])^4 \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\;+$$
$$\left(7 A\,\text{Cos}[c+d x]^6\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a\,\text{Sec}[c+d x])^4 \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\sqrt{1+\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$
$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$
$$\left(10 d \left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\right)+$$
$$\left(4 B\,\text{Cos}[c+d x]^6\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a\,\text{Sec}[c+d x])^4 \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Bigg/$$

$$\left(5\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(19\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Bigg/$$

$$\left(30\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1216: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sec}[c+d\,x])^4\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)}{\sqrt{\mathrm{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 310 leaves, 11 steps):

$$-\frac{8\,a^4\,(24\,A+19\,B+16\,C)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{15\,d}+\frac{8\,a^4\,(187\,A+132\,B+113\,C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{231\,d}+\frac{4\,a^4\,(913\,A+803\,B+667\,C)\,\mathrm{Sin}[c+d\,x]}{1155\,d\,\mathrm{Cos}[c+d\,x]^{3/2}}+\frac{8\,a^4\,(24\,A+19\,B+16\,C)\,\mathrm{Sin}[c+d\,x]}{15\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{2\,a\,(11\,B+8\,C)\,(a+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Sin}[c+d\,x]}{99\,d\,\mathrm{Cos}[c+d\,x]^{9/2}}+\frac{2\,C\,(a+a\,\mathrm{Cos}[c+d\,x])^4\,\mathrm{Sin}[c+d\,x]}{11\,d\,\mathrm{Cos}[c+d\,x]^{11/2}}+\frac{2\,(33\,A+55\,B+43\,C)\,(a^2+a^2\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sin}[c+d\,x]}{231\,d\,\mathrm{Cos}[c+d\,x]^{7/2}}+\frac{4\,(891\,A+946\,B+769\,C)\,(a^4+a^4\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sin}[c+d\,x]}{3465\,d\,\mathrm{Cos}[c+d\,x]^{5/2}}$$

Result (type 5, 1795 leaves):

$$\frac{1}{A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]}\,\mathrm{Cos}[c+d\,x]^{13/2}\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\left(\frac{(24\,A+19\,B+16\,C)\,\mathrm{Csc}[c]\,\mathrm{Sec}[c]}{15\,d}+\frac{C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^6\,\mathrm{Sin}[d\,x]}{44\,d}+\frac{\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^5\,(9\,C\,\mathrm{Sin}[c]+11\,B\,\mathrm{Sin}[d\,x]+44\,C\,\mathrm{Sin}[d\,x])}{396\,d}+\frac{1}{2772\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^4\,(77\,B\,\mathrm{Sin}[c]+308\,C\,\mathrm{Sin}[c]+99\,A\,\mathrm{Sin}[d\,x]+396\,B\,\mathrm{Sin}[d\,x]+675\,C\,\mathrm{Sin}[d\,x])+\frac{1}{13860\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,(495\,A\,\mathrm{Sin}[c]+1980\,B\,\mathrm{Sin}[c]+3375\,C\,\mathrm{Sin}[c]+2772\,A\,\mathrm{Sin}[d\,x]+4697\,B\,\mathrm{Sin}[d\,x]+4928\,C\,\mathrm{Sin}[d\,x])+\frac{1}{4620\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,(2585\,A\,\mathrm{Sin}[c]+2640\,B\,\mathrm{Sin}[c]+2260\,C\,\mathrm{Sin}[c]+7392\,A\,\mathrm{Sin}[d\,x]+5852\,B\,\mathrm{Sin}[d\,x]+4928\,C\,\mathrm{Sin}[d\,x])+\frac{1}{13860\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,(2772\,A\,\mathrm{Sin}[c]+4697\,B\,\mathrm{Sin}[c]+4928\,C\,\mathrm{Sin}[c]+7755\,A\,\mathrm{Sin}[d\,x]+7920\,B\,\mathrm{Sin}[d\,x]+6780\,C\,\mathrm{Sin}[d\,x])\right)-$$

$$\frac{1}{21\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}}\,17\,A\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\mathrm{Sec}[c+d\,x])^4\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\frac{1}{7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$

$$4\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(a+a\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ -$$

$$\frac{1}{231\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}}$$

$$113\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(a+a\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ +$$

$$\left(4\,A\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\ \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(a+a\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(19\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$(30\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))+$$

$$\left(8\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$(15\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]))$$

Problem 1217: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^{7/2}\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{a+a\,\text{Sec}[c+d x]}\,dx$$

Optimal (type 4, 210 leaves, 8 steps):

$$-\frac{3\,(7A-7B+5C)\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{5 a d}+\frac{5\,(9A-7B+7C)\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{21 a d}+\frac{5\,(9A-7B+7C)\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]}{21 a d}-\frac{(7A-7B+5C)\,\text{Cos}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{5 a d}+\frac{(9A-7B+7C)\,\text{Cos}[c+d x]^{5/2}\,\text{Sin}[c+d x]}{7 a d}-\frac{(A-B+C)\,\text{Cos}[c+d x]^{7/2}\,\text{Sin}[c+d x]}{d\,(a+a\,\text{Cos}[c+d x])}$$

Result (type 5, 2117 leaves):

$$-\frac{1}{10\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,(a+a\,\text{Sec}[c+d x])}\,21\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Cos}[c+d x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$

$$\left(\left(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\,e^{2 i d x}\,\text{Sin}[2c]}\right)\Big/$$

$$\left(3\,i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\,e^{2 i d x}\,\text{Sin}[2c]}\right)\Big/$$

$$\left.\left(-i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{10\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,(a+a\,\text{Sec}[c+d x])}$$

$$21$$

$$i$$

$$B$$

$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2$$

$$\text{Cos}[c+d x]$$

$$\text{Csc}\left[\frac{c}{2}\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-$$
$$\Bigg(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{2\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}$$
$$3\;i\;C\;\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-$$
$$\Bigg(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(\frac{4\,(5\,A-5\,B+5\,C+16\,A\,\mathrm{Cos}[c]-16\,B\,\mathrm{Cos}[c]+10\,C\,\mathrm{Cos}[c])\,\mathrm{Csc}[c]}{5\,d}+\right.$$

$$\frac{2\,(51\,A-28\,B+28\,C)\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{21\,d}-\frac{4\,(A-B)\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]}{5\,d}+$$

$$\frac{2\,A\,\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]}{7\,d}+\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$

$$\frac{2\,(51\,A-28\,B+28\,C)\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{21\,d}-$$

$$\left.\frac{4\,(A-B)\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{5\,d}+\frac{2\,A\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{7\,d}\right)-$$

$$\left(30\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\right.\right.$$

$$\left.\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(7\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)+$$

$$\left(10\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)-$$

$$\left(10\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 1218: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 174 leaves, 7 steps):

$$\frac{3\,(7\,A-5\,B+5\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,a\,d}-\frac{(5\,A-5\,B+3\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,a\,d}-\frac{(5\,A-5\,B+3\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,a\,d}+\frac{(7\,A-5\,B+5\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{5\,a\,d}-\frac{(A-B+C)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{d\,\left(a+a\,\text{Cos}[c+d\,x]\right)}$$

Result (type 5, 2063 leaves):

$$\frac{1}{10\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)}$$
$$21\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\Bigg)-$$
$$\frac{1}{2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)}$$
$$3\,i\,B$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]$$

$$\text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right) \left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right] \sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)} \sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right) \Big/ \left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right) - \left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right] \sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)} \sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right) \Big/ \left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right) +$$

$$\frac{1}{2\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)} 3\,i\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right) \left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right] \sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)} \sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right) \Big/ \left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right) - \left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right] \sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)} \sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right) \Big/ \left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right) +$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \text{Cos}[c+d\,x]^{3/2} \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right) \left(-\frac{1}{5\,d}4\left(5\,A-5\,B+5\,C+16\,A\,\text{Cos}[c]-10\,B\,\text{Cos}[c]+10\,C\,\text{Cos}[c]\right)\text{Csc}[c] - \frac{8\,(A-B)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d} + \frac{4\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,d} -\right.\right.$$

$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}-$$

$$\left.\left.\frac{8\,(A-B)\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{3\,d}+\frac{4\,A\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{5\,d}\right)\right)\Big/$$

$$\left(\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)+$$

$$\left(10\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)-$$

$$\left(10\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)+$$

$$\left(2\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+d\,x])\right)$$

Problem 1219: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[c+d\,x]^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{a+a\,\mathrm{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 134 leaves, 6 steps):

$$-\frac{(3\,A-3\,B+C)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{a\,d}+\frac{(5\,A-3\,B+3\,C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,a\,d}+\frac{(5\,A-3\,B+3\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{3\,a\,d}-\frac{(A-B+C)\,\mathrm{Cos}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{d\,(a+a\,\mathrm{Cos}[c+d\,x])}$$

Result (type 5, 2008 leaves):

$$-\frac{1}{2\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])}$$
$$3\,i\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)\right)+$$

$$\frac{1}{2\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])}$$
$$3$$
$$i$$
$$B$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$
$$\mathrm{Cos}[c+d\,x]$$
$$\mathrm{Csc}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{2\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)}$$
$$i$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$
$$\text{Cos}[c+d\,x]$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\Bigg(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\frac{4\left(A-B+C+2\,A\,\text{Cos}[c]-2\,B\,\text{Cos}[c]\right)\text{Csc}[c]}{d}+\frac{8\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+$$

$$\left.\left.\left.\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\frac{8\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}\right)\right)\right/$$

$$\left(\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$

$$\left(10\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$

$$\left(2\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$

$$\left(2\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 1220: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{\text{Cos}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{a+a\,\text{Sec}[c+d x]}\,dx$$

Optimal (type 4, 93 leaves, 5 steps):

$$\frac{(3 A-B+C)\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{a d}-\frac{(A-B-C)\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{a d}-\frac{(A-B+C)\,\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]}{d\,(a+a\,\text{Cos}[c+d x])}$$

Result (type 5, 1973 leaves):

$$\frac{1}{2\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,(a+a\,\text{Sec}[c+d x])}\,3\,\mathrm{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Cos}[c+d x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\left(2\,e^{2 \mathrm{i} d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 \mathrm{i} d x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\mathrm{i} d x}\left(2\left(1+e^{2 \mathrm{i} d x}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2 \mathrm{i} d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 \mathrm{i} d x}\,\text{Cos}[2 c]+\mathrm{i}\,e^{2 \mathrm{i} d x}\,\text{Sin}[2 c]}\right)\Big/$$
$$\left(3\,\mathrm{i}\,d\left(1+e^{2 \mathrm{i} d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2 \mathrm{i} d x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 \mathrm{i} d x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-\mathrm{i} d x}\left(2\left(1+e^{2 \mathrm{i} d x}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2 \mathrm{i} d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 \mathrm{i} d x}\,\text{Cos}[2 c]+\mathrm{i}\,e^{2 \mathrm{i} d x}\,\text{Sin}[2 c]}\right)\Big/$$
$$\left.\left(-\mathrm{i}\,d\left(1+e^{2 \mathrm{i} d x}\right)\text{Cos}[c]+d\left(-1+e^{2 \mathrm{i} d x}\right)\text{Sin}[c]\right)\right)-$$
$$\frac{1}{2\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,(a+a\,\text{Sec}[c+d x])}\,\mathrm{i}\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2$$
$$\text{Cos}[c+d x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\left(2\,e^{2 \mathrm{i} d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 \mathrm{i} d x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\mathrm{i} d x}\left(2\left(1+e^{2 \mathrm{i} d x}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2 \mathrm{i} d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 \mathrm{i} d x}\,\text{Cos}[2 c]+\mathrm{i}\,e^{2 \mathrm{i} d x}\,\text{Sin}[2 c]}\right)\Big/$$
$$\left(3\,\mathrm{i}\,d\left(1+e^{2 \mathrm{i} d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2 \mathrm{i} d x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])}$$
$$i\,C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$
$$\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{4\,(A-B+C+2\,A\,\text{Cos}[c])\,\text{Csc}[c]}{d}-\right.$$
$$\left.\left.\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}\right)\right)\Big/$$
$$\left((A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])\right)+$$
$$\left(2\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\ (A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\ \sqrt{1+\text{Cot}[c]^2}\ (a+a\,\text{Sec}[c+d\,x])\right)-$$

$$\left(2\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\ \text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\ (A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\ \sqrt{1+\text{Cot}[c]^2}\ (a+a\,\text{Sec}[c+d\,x])\right)-$$

$$\left(2\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\ \text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\ (A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\ \sqrt{1+\text{Cot}[c]^2}\ (a+a\,\text{Sec}[c+d\,x])\right)$$

Problem 1221: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\sqrt{\text{Cos}[c+d\,x]}\ (a+a\,\text{Sec}[c+d\,x])}\,dx$$

Optimal (type 4, 122 leaves, 6 steps):

$$-\frac{(A-B+3\,C)\ \text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{a\,d}+\frac{(A+B-C)\ \text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{a\,d}+$$
$$\frac{(A-B+3\,C)\ \text{Sin}[c+d\,x]}{a\,d\,\sqrt{\text{Cos}[c+d\,x]}}-\frac{(A-B+C)\ \text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}\ (a+a\,\text{Cos}[c+d\,x])}$$

Result (type 5, 2009 leaves):

$$-\frac{1}{2\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)}$$

$$\mathbb{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(2\,e^{2\,\mathbb{i}\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\mathbb{i}\,d\,x}\left(\text{Cos}[c]+\mathbb{i}\,\text{Sin}[c]\right)^2\right]\right.\right.$$

$$\sqrt{e^{-\mathbb{i}\,d\,x}\left(2\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]+2\,\mathbb{i}\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathbb{i}\,d\,x}\,\text{Cos}[2\,c]+\mathbb{i}\,e^{2\,\mathbb{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left(3\,\mathbb{i}\,d\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathbb{i}\,d\,x}\left(\text{Cos}[c]+\mathbb{i}\,\text{Sin}[c]\right)^2\right]\right.$$

$$\sqrt{e^{-\mathbb{i}\,d\,x}\left(2\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]+2\,\mathbb{i}\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathbb{i}\,d\,x}\,\text{Cos}[2\,c]+\mathbb{i}\,e^{2\,\mathbb{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left.\left(-\mathbb{i}\,d\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{2\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)}$$

$$\mathbb{i}$$

$$B$$

$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\text{Cos}[c+d\,x]$$

$$\text{Csc}\left[\frac{c}{2}\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(2\,e^{2\,\mathbb{i}\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\mathbb{i}\,d\,x}\left(\text{Cos}[c]+\mathbb{i}\,\text{Sin}[c]\right)^2\right]\right.\right.$$

$$\sqrt{e^{-\mathbb{i}\,d\,x}\left(2\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]+2\,\mathbb{i}\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathbb{i}\,d\,x}\,\text{Cos}[2\,c]+\mathbb{i}\,e^{2\,\mathbb{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left(3\,\mathbb{i}\,d\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathbb{i}\,d\,x}\left(\text{Cos}[c]+\mathbb{i}\,\text{Sin}[c]\right)^2\right]\right.$$

$$\sqrt{e^{-\mathbb{i}\,d\,x}\left(2\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]+2\,\mathbb{i}\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,\mathbb{i}\,d\,x}\,\text{Cos}[2\,c]+\mathbb{i}\,e^{2\,\mathbb{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left.\left(-\mathbb{i}\,d\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)\right)-$$

$$\frac{1}{2\left(A+2C+2B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2c+2d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)}$$

$$3$$

$$\mathbb{i}$$

$$C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(\frac{2\left(2\,C+A\,\mathrm{Cos}[c]-B\,\mathrm{Cos}[c]+C\,\mathrm{Cos}[c]\right)\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c]}{d}+\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\frac{8\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}[d\,x]}{d}\right)\right)\Big/$$

$$\left(\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)-$$

$$\left(2\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$

$$\Bigg(2\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$

$$\Bigg(2\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 1222: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{3/2}\left(a+a\,\text{Sec}[c+d\,x]\right)}\,dx$$

Optimal (type 4, 165 leaves, 7 steps):

$$\frac{(A-3\,B+3\,C)\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{a\,d}+\frac{(3\,A-3\,B+5\,C)\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{3\,a\,d}+\frac{(3\,A-3\,B+5\,C)\,\text{Sin}[c+d\,x]}{3\,a\,d\,\text{Cos}[c+d\,x]^{3/2}}-\frac{(A-3\,B+3\,C)\,\text{Sin}[c+d\,x]}{a\,d\,\sqrt{\text{Cos}[c+d\,x]}}-\frac{(A-B+C)\,\text{Sin}[c+d\,x]}{d\,\text{Cos}[c+d\,x]^{3/2}\left(a+a\,\text{Cos}[c+d\,x]\right)}$$

Result (type 5, 2052 leaves):

$$\frac{1}{2\left(A+2C+2B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2c+2d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}$$
$$i\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2 i d x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\,\mathrm{Cos}[2c]+i\,e^{2 i d x}\,\mathrm{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)-$$
$$\Bigg(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\,\mathrm{Cos}[2c]+i\,e^{2 i d x}\,\mathrm{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(-i\,d\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{2\left(A+2C+2B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2c+2d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}$$
$$3\,i\,B$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]$$
$$\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2 i d x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\,\mathrm{Cos}[2c]+i\,e^{2 i d x}\,\mathrm{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)-$$
$$\Bigg(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\,\mathrm{Cos}[2c]+i\,e^{2 i d x}\,\mathrm{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(-i\,d\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{2\left(A+2C+2B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2c+2d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}$$
$$3\,i\,C$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]$$
$$\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\,\big(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$

$$\big(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)-$$

$$\Bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\,\big(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$

$$\big(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)\Bigg)+$$

$$\Bigg(\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^2\,\text{Cos}[c+d\,x]^{3/2}\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Bigg(-\frac{1}{d}2\,(-2\,B+2\,C+A\,\text{Cos}[c]-B\,\text{Cos}[c]+C\,\text{Cos}[c])\,\text{Csc}\Big[\frac{c}{2}\Big]\,\text{Sec}\Big[\frac{c}{2}\Big]\,\text{Sec}[c]-$$

$$\frac{4\,\text{Sec}\big[\frac{c}{2}\big]\,\text{Sec}\big[\frac{c}{2}+\frac{d\,x}{2}\big]\,\big(A\,\text{Sin}\big[\frac{d\,x}{2}\big]-B\,\text{Sin}\big[\frac{d\,x}{2}\big]+C\,\text{Sin}\big[\frac{d\,x}{2}\big]\big)}{d}+$$

$$\frac{8\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{3\,d}+$$

$$\frac{8\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(C\,\text{Sin}[c]+3\,B\,\text{Sin}[d\,x]-3\,C\,\text{Sin}[d\,x])}{3\,d}\Bigg)\Bigg)\Big/$$

$$\Big(\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\big(a+a\,\text{Sec}[c+d\,x]\big)\Big)-$$

$$\Bigg(2\,A\,\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^2\,\text{Cos}[c+d\,x]\,\text{Csc}\Big[\frac{c}{2}\Big]$$

$$\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$

$$\text{Sec}\Big[\frac{c}{2}\Big]\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\Big(d\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\,\sqrt{1+\text{Cot}[c]^2}\,\big(a+a\,\text{Sec}[c+d\,x]\big)\Big)+$$

$$\Bigg(2\,B\,\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^2\,\text{Cos}[c+d\,x]\,\text{Csc}\Big[\frac{c}{2}\Big]$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$
$$\left(10\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 1223: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{5/2}\left(a+a\,\text{Sec}[c+d\,x]\right)}\,dx$$

Optimal (type 4, 210 leaves, 8 steps):

$$-\frac{3\left(5\,A-5\,B+7\,C\right)\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),2\right]}{5\,a\,d}-\frac{\left(3\,A-5\,B+5\,C\right)\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]}{3\,a\,d}+$$
$$\frac{\left(5\,A-5\,B+7\,C\right)\text{Sin}[c+d\,x]}{5\,a\,d\,\text{Cos}[c+d\,x]^{5/2}}-\frac{\left(3\,A-5\,B+5\,C\right)\text{Sin}[c+d\,x]}{3\,a\,d\,\text{Cos}[c+d\,x]^{3/2}}+$$
$$\frac{3\left(5\,A-5\,B+7\,C\right)\text{Sin}[c+d\,x]}{5\,a\,d\sqrt{\text{Cos}[c+d\,x]}}-\frac{\left(A-B+C\right)\text{Sin}[c+d\,x]}{d\,\text{Cos}[c+d\,x]^{5/2}\left(a+a\,\text{Cos}[c+d\,x]\right)}$$

Result (type 5, 2111 leaves):

$$-\frac{1}{2\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)}$$
$$3\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\text{Cos}[2 c]+i e^{2 i d x}\text{Sin}[2 c]}\Bigg)\Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\text{Cos}[2 c]+i e^{2 i d x}\text{Sin}[2 c]}\Bigg)\Big/$$
$$\left(-i d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{2\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)}$$

$$3$$
$$i$$
$$B$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2$$
$$\text{Cos}[c+d x]$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\text{Cos}[2 c]+i e^{2 i d x}\text{Sin}[2 c]}\Bigg)\Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\text{Cos}[2 c]+i e^{2 i d x}\text{Sin}[2 c]}\Bigg)\Big/$$
$$\left(-i d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{10\left(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)}$$

$$21$$
$$i$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2$$
$$\text{Cos}[c+d x]$$

$$\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)\right)+$$

$$\frac{1}{\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\frac{1}{5\,d}2\left(10\,A-10\,B+16\,C+5\,A\,\mathrm{Cos}[c]-5\,B\,\mathrm{Cos}[c]+5\,C\,\mathrm{Cos}[c]\right)\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c]+\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\frac{8\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,\mathrm{Sin}[d\,x]}{5\,d}-\frac{1}{15\,d}8\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\left(-5\,B\,\mathrm{Sin}[c]+5\,C\,\mathrm{Sin}[c]-15\,A\,\mathrm{Sin}[d\,x]+15\,B\,\mathrm{Sin}[d\,x]-24\,C\,\mathrm{Sin}[d\,x]\right)+\frac{8\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\left(3\,C\,\mathrm{Sin}[c]+5\,B\,\mathrm{Sin}[d\,x]-5\,C\,\mathrm{Sin}[d\,x]\right)}{15\,d}\right)+$$

$$\left(2\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Cos}[c+d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)-$$

$$\left(10\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\bigg/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)+$$

$$\left(10\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cos}[c+d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\bigg/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 1224: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^{7/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 258 leaves, 9 steps):

$$-\frac{7\,(11\,A-8\,B+5\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,a^2\,d}+\frac{5\,(30\,A-21\,B+14\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{21\,a^2\,d}+\frac{5\,(30\,A-21\,B+14\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{21\,a^2\,d}-\frac{7\,(11\,A-8\,B+5\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{15\,a^2\,d}+\frac{(30\,A-21\,B+14\,C)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{7\,a^2\,d}-\frac{(11\,A-8\,B+5\,C)\,\text{Cos}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,(1+\text{Cos}[c+d\,x])}-\frac{(A-B+C)\,\text{Cos}[c+d\,x]^{9/2}\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Cos}[c+d\,x])^2}$$

Result (type 5, 2174 leaves):

$$-\frac{1}{5\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2}77\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)\right)+$$

$$\frac{1}{5\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2}$$
$$56$$
$$i$$
$$B$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-$$

$$\Big(2\,\mathrm{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Big)\Big/$$

$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)\Big)-$$

$$\frac{1}{\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2}$$

7

i

C

$$\mathrm{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^4$$

$$\mathrm{Csc}\Big[\frac{c}{2}\Big]$$

$$\mathrm{Sec}\Big[\frac{c}{2}\Big]$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Big(\Big(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Big)\Big/$$

$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-$$

$$\Big(2\,\mathrm{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Big)\Big/$$

$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)\Big)-$$

$$\Big(200\,A\,\mathrm{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^4\mathrm{Csc}\Big[\frac{c}{2}\Big]\,\mathrm{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\Big]$$

$$\mathrm{Sec}\Big[\frac{c}{2}\Big]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Big)\Big/$$

$$\left(7\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)+$$

$$\left(20\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)-$$
$$\left(40\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)+$$
$$\frac{1}{\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2}$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\mathrm{Cos}[c+d\,x]}$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\frac{1}{5\,d}8\left(25\,A-20\,B+15\,C+52\,A\,\mathrm{Cos}[c]-36\,B\,\mathrm{Cos}[c]+20\,C\,\mathrm{Cos}[c]\right)\mathrm{Csc}[c]+\right.$$
$$\frac{4\left(107\,A-56\,B+28\,C\right)\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{21\,d}-\frac{8\left(2\,A-B\right)\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]}{5\,d}+$$
$$\frac{4\,A\,\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]}{7\,d}-\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+$$
$$\frac{8\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(5\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-4\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+3\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$
$$\frac{4\left(107\,A-56\,B+28\,C\right)\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{21\,d}-\frac{8\left(2\,A-B\right)\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{5\,d}+$$
$$\left.\frac{4\,A\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{7\,d}-\frac{4\left(A-B+C\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)$$

Problem 1225: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^{5/2} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)}{(a+a \,\text{Sec}[c+d x])^2} \, dx$$

Optimal (type 4, 214 leaves, 8 steps):

$$\frac{(56 A-35 B+20 C) \,\text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{5 a^2 d}-\frac{5 (3 A-2 B+C) \,\text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{3 a^2 d}-\frac{5 (3 A-2 B+C) \sqrt{\text{Cos}[c+d x]} \,\text{Sin}[c+d x]}{3 a^2 d}+\frac{(56 A-35 B+20 C) \,\text{Cos}[c+d x]^{3/2} \,\text{Sin}[c+d x]}{15 a^2 d}-\frac{(3 A-2 B+C) \,\text{Cos}[c+d x]^{5/2} \,\text{Sin}[c+d x]}{a^2 d (1+\text{Cos}[c+d x])}-\frac{(A-B+C) \,\text{Cos}[c+d x]^{7/2} \,\text{Sin}[c+d x]}{3 d (a+a \,\text{Cos}[c+d x])^2}$$

Result (type 5, 2120 leaves):

$$\frac{1}{5 (A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]) (a+a \,\text{Sec}[c+d x])^2} 56 \,i\, A \,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \,\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\text{Cos}[c]+i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \,\text{Cos}[2 c]+i\, e^{2 i d x} \,\text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-\left(2 \,\text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\text{Cos}[c]+i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \,\text{Cos}[2 c]+i\, e^{2 i d x} \,\text{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right)-$$

$$\frac{1}{(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]) (a+a \,\text{Sec}[c+d x])^2} 7 \,i\, B \,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \,\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\text{Cos}[c]+i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \,\text{Cos}[2 c]+i\, e^{2 i d x} \,\text{Sin}[2 c]}\right) \Big/\right.$$

```
      (3 ⅈ d (1 + ⅇ^(2 ⅈ d x)) Cos[c] - 3 d (-1 + ⅇ^(2 ⅈ d x)) Sin[c]) -
     (2 Hypergeometric2F1[-1/4, 1/2, 3/4, -ⅇ^(2 ⅈ d x) (Cos[c] + ⅈ Sin[c])^2]
        Sqrt[ⅇ^(-ⅈ d x) (2 (1 + ⅇ^(2 ⅈ d x)) Cos[c] + 2 ⅈ (-1 + ⅇ^(2 ⅈ d x)) Sin[c])]
        Sqrt[1 + ⅇ^(2 ⅈ d x) Cos[2 c] + ⅈ ⅇ^(2 ⅈ d x) Sin[2 c]]) /
      (-ⅈ d (1 + ⅇ^(2 ⅈ d x)) Cos[c] + d (-1 + ⅇ^(2 ⅈ d x)) Sin[c])) +
 1/((A + 2 C + 2 B Cos[c + d x] + A Cos[2 c + 2 d x]) (a + a Sec[c + d x])^2)
 4 ⅈ C
  Cos[c/2 + (d x)/2]^4
  Csc[c/2] Sec[c/2]
  (A + B Sec[c + d x] + C Sec[c + d x]^2)
  ((2 ⅇ^(2 ⅈ d x) Hypergeometric2F1[1/2, 3/4, 7/4, -ⅇ^(2 ⅈ d x) (Cos[c] + ⅈ Sin[c])^2]
        Sqrt[ⅇ^(-ⅈ d x) (2 (1 + ⅇ^(2 ⅈ d x)) Cos[c] + 2 ⅈ (-1 + ⅇ^(2 ⅈ d x)) Sin[c])]
        Sqrt[1 + ⅇ^(2 ⅈ d x) Cos[2 c] + ⅈ ⅇ^(2 ⅈ d x) Sin[2 c]]) /
      (3 ⅈ d (1 + ⅇ^(2 ⅈ d x)) Cos[c] - 3 d (-1 + ⅇ^(2 ⅈ d x)) Sin[c]) -
     (2 Hypergeometric2F1[-1/4, 1/2, 3/4, -ⅇ^(2 ⅈ d x) (Cos[c] + ⅈ Sin[c])^2]
        Sqrt[ⅇ^(-ⅈ d x) (2 (1 + ⅇ^(2 ⅈ d x)) Cos[c] + 2 ⅈ (-1 + ⅇ^(2 ⅈ d x)) Sin[c])]
        Sqrt[1 + ⅇ^(2 ⅈ d x) Cos[2 c] + ⅈ ⅇ^(2 ⅈ d x) Sin[2 c]]) /
      (-ⅈ d (1 + ⅇ^(2 ⅈ d x)) Cos[c] + d (-1 + ⅇ^(2 ⅈ d x)) Sin[c])) +
 (20 A Cos[c/2 + (d x)/2]^4 Csc[c/2] HypergeometricPFQ[{1/4, 1/2}, {5/4}, Sin[d x - ArcTan[Cot[c]]]^2]
    Sec[c/2] (A + B Sec[c + d x] + C Sec[c + d x]^2)
    Sec[d x - ArcTan[Cot[c]]] Sqrt[1 - Sin[d x - ArcTan[Cot[c]]]]
    Sqrt[-Sqrt[1 + Cot[c]^2] Sin[c] Sin[d x - ArcTan[Cot[c]]]]
    Sqrt[1 + Sin[d x - ArcTan[Cot[c]]]]) /
  (d (A + 2 C + 2 B Cos[c + d x] + A Cos[2 c + 2 d x]) Sqrt[1 + Cot[c]^2] (a + a Sec[c + d x])^2) -
 (40 B Cos[c/2 + (d x)/2]^4 Csc[c/2] HypergeometricPFQ[{1/4, 1/2}, {5/4}, Sin[d x - ArcTan[Cot[c]]]^2]
```

$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$
$$\left(20\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$
$$\frac{1}{\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^2}$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\text{Cos}[c+d\,x]}$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-\frac{1}{5\,d}8\left(20\,A-15\,B+10\,C+36\,A\,\text{Cos}[c]-20\,B\,\text{Cos}[c]+10\,C\,\text{Cos}[c]\right)\text{Csc}[c]-\right.$$
$$\frac{16\,(2\,A-B)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{8\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,d}+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-$$
$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(4\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-3\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+2\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}-$$
$$\left.\frac{16\,(2\,A-B)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+\frac{8\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,d}+\frac{4\,(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)$$

Problem 1226: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 180 leaves, 7 steps):

$$-\frac{(7A-4B+C)\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]}{a^2 d}+\frac{(10A-5B+2C)\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{3a^2 d}+\frac{(10A-5B+2C)\sqrt{\text{Cos}[c+dx]}\,\text{Sin}[c+dx]}{3a^2 d}-\frac{(7A-4B+C)\,\text{Cos}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{3a^2 d\,(1+\text{Cos}[c+dx])}-\frac{(A-B+C)\,\text{Cos}[c+dx]^{5/2}\,\text{Sin}[c+dx]}{3d\,(a+a\,\text{Cos}[c+dx])^2}$$

Result (type 5, 2064 leaves):

$$-\frac{1}{(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2}\,7\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\left(2\,e^{2idx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2idx}\right)\text{Cos}[c]-3d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2idx}\right)\text{Cos}[c]+d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2}$$
$$4$$
$$i$$
$$B$$
$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\left(2\,e^{2idx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2idx}\right)\text{Cos}[c]-3d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \mathrm{Cos}[2 c]+i e^{2 i d x} \mathrm{Sin}[2 c]}\right) \Big/$$
$$\left.\left(-i d \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+d \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)\right) -$$

$$\frac{1}{\left(A+2 C+2 B \mathrm{Cos}[c+d x]+A \mathrm{Cos}[2 c+2 d x]\right) \left(a+a \mathrm{Sec}[c+d x]\right)^2}$$

i

C

$\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4$

$\mathrm{Csc}\left[\frac{c}{2}\right]$

$\mathrm{Sec}\left[\frac{c}{2}\right]$

$\left(A+B \mathrm{Sec}[c+d x]+C \mathrm{Sec}[c+d x]^2\right)$

$$\left(\left(2 e^{2 i d x} \mathrm{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} \left(\mathrm{Cos}[c]+i \mathrm{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \mathrm{Cos}[2 c]+i e^{2 i d x} \mathrm{Sin}[2 c]}\right) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right) -$$
$$\left(2 \mathrm{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} \left(\mathrm{Cos}[c]+i \mathrm{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \mathrm{Cos}[2 c]+i e^{2 i d x} \mathrm{Sin}[2 c]}\right) \Big/$$
$$\left.\left(-i d \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+d \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)\right) -$$

$$\left(40 A \mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \mathrm{Csc}\left[\frac{c}{2}\right] \mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right] \left(A+B \mathrm{Sec}[c+d x]+C \mathrm{Sec}[c+d x]^2\right)$$
$$\mathrm{Sec}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]] \sqrt{1-\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2} \mathrm{Sin}[c] \mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{1+\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right) \Big/$$
$$\left(3 d \left(A+2 C+2 B \mathrm{Cos}[c+d x]+A \mathrm{Cos}[2 c+2 d x]\right) \sqrt{1+\mathrm{Cot}[c]^2} \left(a+a \mathrm{Sec}[c+d x]\right)^2\right) +$$

$$\left(20 B \mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \mathrm{Csc}\left[\frac{c}{2}\right] \mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right] \left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$
$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$
$$\left(3\,d\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])\,\sqrt{1 + \text{Cot}[c]^2}\,(a + a\,\text{Sec}[c + d\,x])^2\right) -$$
$$\left(8\,C\,\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4 \text{Csc}\left[\frac{c}{2}\right] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right] \left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$
$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$
$$\left(3\,d\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])\,\sqrt{1 + \text{Cot}[c]^2}\,(a + a\,\text{Sec}[c + d\,x])^2\right) +$$
$$\left(\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4 \sqrt{\text{Cos}[c + d\,x]}\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)\right.$$
$$\left(\frac{8\,(3\,A - 2\,B + C + 4\,A\,\text{Cos}[c] - 2\,B\,\text{Cos}[c])\,\text{Csc}[c]}{d} + \frac{16\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d} + \right.$$
$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right] \left(3\,A\,\text{Sin}\left[\frac{d\,x}{2}\right] - 2\,B\,\text{Sin}\left[\frac{d\,x}{2}\right] + C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d} -$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^3 \left(A\,\text{Sin}\left[\frac{d\,x}{2}\right] - B\,\text{Sin}\left[\frac{d\,x}{2}\right] + C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d} +$$
$$\left.\left.\frac{16\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d} - \frac{4\,(A - B + C)\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2 \text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right) \Big/$$
$$\left((A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])\,(a + a\,\text{Sec}[c + d\,x])^2\right)$$

Problem 1227: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{\text{Cos}[c + d\,x]}\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)}{(a + a\,\text{Sec}[c + d\,x])^2}\,dx$$

Optimal (type 4, 144 leaves, 6 steps):

$$\frac{(4A-B)\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]}{a^2 d}-\frac{(5A-2B-C)\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{3a^2 d}-\frac{(5A-2B-C)\sqrt{\text{Cos}[c+dx]}\,\text{Sin}[c+dx]}{3a^2 d\,(1+\text{Cos}[c+dx])}-\frac{(A-B+C)\,\text{Cos}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{3d\,(a+a\,\text{Cos}[c+dx])^2}$$

Result (type 5, 1628 leaves):

$$\frac{1}{(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2}\,4\,\text{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\left(2\,e^{2\,\text{i}\,dx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\text{i}\,dx}\,(\text{Cos}[c]+\text{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\text{i}\,dx}\left(2\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+2\,\text{i}\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\text{i}\,dx}\,\text{Cos}[2c]+\text{i}\,e^{2\,\text{i}\,dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,\text{i}\,d\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]-3d\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\text{i}\,dx}\,(\text{Cos}[c]+\text{i}\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-\text{i}\,dx}\left(2\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+2\,\text{i}\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\text{i}\,dx}\,\text{Cos}[2c]+\text{i}\,e^{2\,\text{i}\,dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-\text{i}\,d\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+d\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)\right)-$$
$$\frac{1}{(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2}$$
$$\text{i}\,B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4$$
$$\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\left(2\,e^{2\,\text{i}\,dx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\text{i}\,dx}\,(\text{Cos}[c]+\text{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\text{i}\,dx}\left(2\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+2\,\text{i}\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\text{i}\,dx}\,\text{Cos}[2c]+\text{i}\,e^{2\,\text{i}\,dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,\text{i}\,d\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]-3d\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\text{i}\,dx}\,(\text{Cos}[c]+\text{i}\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-\text{i}\,dx}\left(2\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+2\,\text{i}\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\text{i}\,dx}\,\text{Cos}[2c]+\text{i}\,e^{2\,\text{i}\,dx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-\text{i}\,d\left(1+e^{2\,\text{i}\,dx}\right)\text{Cos}[c]+d\left(-1+e^{2\,\text{i}\,dx}\right)\text{Sin}[c]\right)\right)+$$

$$\left(20\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)-$$
$$\left(8\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)-$$
$$\left(4\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)+$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\mathrm{Cos}[c+d\,x]}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{8\left(2\,A-B+2\,A\,\mathrm{Cos}[c]\right)\mathrm{Csc}[c]}{d}-\frac{8\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(2\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\right.$$
$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+$$

$$\left.\left.\frac{4\,(A-B+C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$

$$\left((A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)$$

Problem 1228: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\sqrt{\mathrm{Cos}[c+d\,x]}\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 133 leaves, 6 steps):

$$-\frac{(A-C)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{a^2\,d}+\frac{(2\,A+B+2\,C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,a^2\,d}+\frac{(A-C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{a^2\,d\,(1+\mathrm{Cos}[c+d\,x])}-\frac{(A-B+C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{3\,d\,(a+a\,\mathrm{Cos}[c+d\,x])^2}$$

Result (type 5, 1620 leaves):

$$-\frac{1}{(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2}$$

$$i\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.\right.\right.$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$

$$\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)-$$

$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$

$$\left.\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)\right)+$$

$$\frac{1}{(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2}$$

$$i$$

$$C$$

$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$

$$\mathrm{Csc}\left[\frac{c}{2}\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)-$$

$$\left(8\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)-$$

$$\left(4\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)-$$

$$\left(8\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Bigg/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)+$$
$$\Bigg(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\mathrm{Cos}[c+d\,x]}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\frac{8\,(A-C)\,\mathrm{Csc}[c]}{d}+\frac{8\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}-$$
$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-$$
$$\frac{4\,(A-B+C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}\Bigg)\Bigg)\Bigg/$$
$$\left(\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)$$

Problem 1229: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\mathrm{Cos}[c+d\,x]^{3/2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 167 leaves, 7 steps):

$$\frac{(B-4\,C)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{a^2\,d}+$$
$$\frac{(A+2\,B-5\,C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,a^2\,d}-\frac{(B-4\,C)\,\mathrm{Sin}[c+d\,x]}{a^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+$$
$$\frac{(A+2\,B-5\,C)\,\mathrm{Sin}[c+d\,x]}{3\,a^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,(1+\mathrm{Cos}[c+d\,x])}-\frac{(A-B+C)\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,(a+a\,\mathrm{Cos}[c+d\,x])^2}$$

Result (type 5, 1660 leaves):

$$\frac{1}{\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2}$$
$$i\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\right.\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\mathrm{Cos}[2 c]+i\,e^{2 i d x}\mathrm{Sin}[2 c]}\Bigg)\Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\mathrm{Cos}[2 c]+i\,e^{2 i d x}\mathrm{Sin}[2 c]}\Bigg)\Big/$$
$$\left.\left(-i d\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)\right)-$$
$$\frac{1}{\left(A+2 C+2 B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2 c+2 d x]\right)\left(a+a\,\mathrm{Sec}[c+d x]\right)^2}$$
$$4 i C$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)$$
$$\left(\left(2 e^{2 i d x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\mathrm{Cos}[2 c]+i\,e^{2 i d x}\mathrm{Sin}[2 c]}\Bigg)\Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\mathrm{Cos}[2 c]+i\,e^{2 i d x}\mathrm{Sin}[2 c]}\Bigg)\Big/$$
$$\left.\left(-i d\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)\right)-$$
$$\left(4 A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)$$
$$\mathrm{Sec}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{1+\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3 d\left(A+2 C+2 B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2 c+2 d x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d x]\right)^2\right)-$$

$$\left(8\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)+$$
$$\left(20\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)+$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\mathrm{Cos}[c+d\,x]}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{4\,(2\,C-B\,\mathrm{Cos}[c]+2\,C\,\mathrm{Cos}[c])\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c]}{d}+\right.$$
$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+$$
$$\frac{8\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+2\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$
$$\left.\left.\frac{16\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}[d\,x]}{d}+\frac{4\,(A-B+C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left((A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)$$

Problem 1230: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\mathrm{Cos}[c+d\,x]^{5/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 211 leaves, 8 steps):

$$\frac{(A-4B+7C)\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]}{a^2 d}+\frac{(2A-5B+10C)\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{3a^2 d}+$$
$$\frac{(2A-5B+10C)\,\text{Sin}[c+dx]}{3a^2 d\,\text{Cos}[c+dx]^{3/2}}-\frac{(A-4B+7C)\,\text{Sin}[c+dx]}{a^2 d\sqrt{\text{Cos}[c+dx]}}-$$
$$\frac{(A-4B+7C)\,\text{Sin}[c+dx]}{3a^2 d\,\text{Cos}[c+dx]^{3/2}(1+\text{Cos}[c+dx])}-\frac{(A-B+C)\,\text{Sin}[c+dx]}{3d\,\text{Cos}[c+dx]^{3/2}(a+a\,\text{Cos}[c+dx])^2}$$

Result (type 5, 2107 leaves):

$$\frac{1}{(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2}$$
$$\mathrm{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\mathrm{i}dx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\mathrm{i}dx}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(3\,\mathrm{i}\,d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]-3d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\mathrm{i}dx}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(-\mathrm{i}\,d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)\Bigg)-$$
$$\frac{1}{(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^2}$$
$$4\,\mathrm{i}\,B$$
$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\mathrm{i}dx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\mathrm{i}dx}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(3\,\mathrm{i}\,d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]-3d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\mathrm{i}dx}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-\mathrm{i}dx}\left(2\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\mathrm{i}dx}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i}dx}\,\text{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(-\mathrm{i}\,d\left(1+e^{2\mathrm{i}dx}\right)\text{Cos}[c]+d\left(-1+e^{2\mathrm{i}dx}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2}$$

$$7\,i\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)\right)-$$

$$\left(8\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)+$$

$$\left(20\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)-$$

$$\left(40\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)+$$
$$\frac{1}{\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\sqrt{\text{Cos}[c+d\,x]}$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-\frac{1}{d}4\,\left(-2\,B+4\,C+A\,\text{Cos}[c]-2\,B\,\text{Cos}[c]+3\,C\,\text{Cos}[c]\right)\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c]-\right.$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-$$
$$\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-2\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$
$$\frac{16\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{3\,d}+$$
$$\frac{16\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(C\,\text{Sin}[c]+3\,B\,\text{Sin}[d\,x]-6\,C\,\text{Sin}[d\,x]\right)}{3\,d}-$$
$$\left.\frac{4\,\left(A-B+C\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)$$

Problem 1231: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{7/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 250 leaves, 9 steps):

$$-\frac{(20 A-35 B+56 C)\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{5 a^2 d}-\frac{5 (A-2 B+3 C)\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{3 a^2 d}+\frac{(20 A-35 B+56 C)\,\text{Sin}[c+d x]}{15 a^2 d\,\text{Cos}[c+d x]^{5/2}}-\frac{5 (A-2 B+3 C)\,\text{Sin}[c+d x]}{3 a^2 d\,\text{Cos}[c+d x]^{3/2}}+\frac{(20 A-35 B+56 C)\,\text{Sin}[c+d x]}{5 a^2 d\sqrt{\text{Cos}[c+d x]}}-\frac{(A-2 B+3 C)\,\text{Sin}[c+d x]}{a^2 d\,\text{Cos}[c+d x]^{5/2}\,(1+\text{Cos}[c+d x])}-\frac{(A-B+C)\,\text{Sin}[c+d x]}{3 d\,\text{Cos}[c+d x]^{5/2}\,(a+a\,\text{Cos}[c+d x])^2}$$

Result (type 5, 2164 leaves):

$$-\frac{1}{(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,(a+a\,\text{Sec}[c+d x])^2}\,4\,\mathrm{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\left(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2 i d x}\,\text{Cos}[2 c]+\mathrm{i}\,e^{2 i d x}\,\text{Sin}[2 c]}\right)\Big/\right.$$
$$\left(3\,\mathrm{i}\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2 i d x}\,\text{Cos}[2 c]+\mathrm{i}\,e^{2 i d x}\,\text{Sin}[2 c]}\right)\Big/$$
$$\left.\left(-\mathrm{i}\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,(a+a\,\text{Sec}[c+d x])^2}$$
$$7\;\mathrm{i}\;B\;\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\;\text{Csc}\left[\frac{c}{2}\right]\;\text{Sec}\left[\frac{c}{2}\right]\;\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\left(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2 i d x}\,\text{Cos}[2 c]+\mathrm{i}\,e^{2 i d x}\,\text{Sin}[2 c]}\right)\Big/\right.$$
$$\left(3\,\mathrm{i}\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\text{Cos}[2 c]+i e^{2 i d x}\text{Sin}[2 c]}\right)\Big/$$
$$\left.\left(-i d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\right)-$$

$$\frac{1}{5\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^2}$$

56

i

C

$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4$$

$$\text{Csc}\left[\frac{c}{2}\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]$$

$$\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$

$$\left(\left(2 e^{2 i d x}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\text{Cos}[2 c]+i e^{2 i d x}\text{Sin}[2 c]}\right)\Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\text{Cos}[2 c]+i e^{2 i d x}\text{Sin}[2 c]}\right)\Big/$$
$$\left.\left(-i d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\right)+$$

$$\left(20\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3 d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d x]\right)^2\right)-$$

$$\left(40\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)+$$
$$\left(20\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\right)+$$
$$\frac{1}{\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2}$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\sqrt{\mathrm{Cos}[c+d\,x]}$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\frac{1}{5\,d}4\left(10\,A-20\,B+36\,C+10\,A\,\mathrm{Cos}[c]-15\,B\,\mathrm{Cos}[c]+20\,C\,\mathrm{Cos}[c]\right)\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c]+\right.$$
$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+$$
$$\frac{8\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(2\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-3\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+4\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$
$$\frac{16\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,\mathrm{Sin}[d\,x]}{5\,d}-\frac{1}{15\,d}16\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]$$
$$\left(-5\,B\,\mathrm{Sin}[c]+10\,C\,\mathrm{Sin}[c]-15\,A\,\mathrm{Sin}[d\,x]+30\,B\,\mathrm{Sin}[d\,x]-54\,C\,\mathrm{Sin}[d\,x]\right)+\frac{1}{15\,d}16\,\mathrm{Sec}[c]$$
$$\left.\mathrm{Sec}[c+d\,x]^2\left(3\,C\,\mathrm{Sin}[c]+5\,B\,\mathrm{Sin}[d\,x]-10\,C\,\mathrm{Sin}[d\,x]\right)+\frac{4\left(A-B+C\right)\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)$$

Problem 1232: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^{5/2} \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\left(a+a\,\text{Sec}[c+d x]\right)^3}\,dx$$

Optimal (type 4, 273 leaves, 9 steps):

$$\frac{7\,(33 A-17 B+7 C)\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{10 a^3 d}-\frac{(63 A-33 B+13 C)\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{6 a^3 d}-\frac{(63 A-33 B+13 C)\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]}{6 a^3 d}+\frac{7\,(33 A-17 B+7 C)\,\text{Cos}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{30 a^3 d}-\frac{(A-B+C)\,\text{Cos}[c+d x]^{9/2}\,\text{Sin}[c+d x]}{5 d\,(a+a\,\text{Cos}[c+d x])^3}-\frac{(12 A-7 B+2 C)\,\text{Cos}[c+d x]^{7/2}\,\text{Sin}[c+d x]}{15 a d\,(a+a\,\text{Cos}[c+d x])^2}-\frac{(63 A-33 B+13 C)\,\text{Cos}[c+d x]^{5/2}\,\text{Sin}[c+d x]}{10 d\,(a^3+a^3\,\text{Cos}[c+d x])}$$

Result (type 5, 2257 leaves):

$$\frac{1}{5\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,(a+a\,\text{Sec}[c+d x])^3}\,231\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\left(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2 i d x}\,\text{Cos}[2 c]+i\,e^{2 i d x}\,\text{Sin}[2 c]}\right)\Big/\left(3\,i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2 i d x}\,\text{Cos}[2 c]+i\,e^{2 i d x}\,\text{Sin}[2 c]}\right)\Big/\left(-i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\right)-$$

$$\frac{1}{5\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,(a+a\,\text{Sec}[c+d x])^3}\,119\,i\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$

$$\left(\left(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\,\text{Cos}[2\,c]+i\,e^{2 i d x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\,\text{Cos}[2\,c]+i\,e^{2 i d x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{5\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3}$$
$$49\,i\,C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\,\text{Cos}[2\,c]+i\,e^{2 i d x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\,\text{Cos}[2\,c]+i\,e^{2 i d x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\right)+$$

$$\left(84\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d x]\right)^3\right)-$$

$$\left(44 B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$

$$\left(52 C\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3 d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(-\frac{1}{5 d}8\left(99 A-59 B+29 C+132 A\,\text{Cos}[c]-60 B\,\text{Cos}[c]+20 C\,\text{Cos}[c]\right)\text{Csc}[c]-\right.$$
$$\frac{32(3A-B)\,\text{Cos}[d x]\,\text{Sin}[c]}{3 d}+\frac{16 A\,\text{Cos}[2 d x]\,\text{Sin}[2 c]}{5 d}-$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5\left(A\,\text{Sin}\left[\frac{d x}{2}\right]-B\,\text{Sin}\left[\frac{d x}{2}\right]+C\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+\frac{1}{15 d}$$
$$8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(24 A\,\text{Sin}\left[\frac{d x}{2}\right]-19 B\,\text{Sin}\left[\frac{d x}{2}\right]+14 C\,\text{Sin}\left[\frac{d x}{2}\right]\right)-$$
$$\frac{1}{5 d}8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(99 A\,\text{Sin}\left[\frac{d x}{2}\right]-59 B\,\text{Sin}\left[\frac{d x}{2}\right]+29 C\,\text{Sin}\left[\frac{d x}{2}\right]\right)-$$
$$\frac{32(3A-B)\,\text{Cos}[c]\,\text{Sin}[d x]}{3 d}+\frac{16 A\,\text{Cos}[2 c]\,\text{Sin}[2 d x]}{5 d}+$$
$$\left.\left.\frac{8(24 A-19 B+14 C)\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15 d}-\frac{4(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5 d}\right)\right)\Big/$$

$$\left(\sqrt{\text{Cos}[c+d x]}\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^3\right)$$

Problem 1233: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Cos}[c+d\,x]^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 234 leaves, 8 steps):

$$-\frac{(119\,A-49\,B+9\,C)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{10\,a^3\,d}+\frac{(33\,A-13\,B+3\,C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{6\,a^3\,d}+\frac{(33\,A-13\,B+3\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{6\,a^3\,d}-\frac{(A-B+C)\,\mathrm{Cos}[c+d\,x]^{7/2}\,\mathrm{Sin}[c+d\,x]}{5\,d\,(a+a\,\mathrm{Cos}[c+d\,x])^3}-\frac{(2\,A-B)\,\mathrm{Cos}[c+d\,x]^{5/2}\,\mathrm{Sin}[c+d\,x]}{3\,a\,d\,(a+a\,\mathrm{Cos}[c+d\,x])^2}-\frac{(119\,A-49\,B+9\,C)\,\mathrm{Cos}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{30\,d\,\left(a^3+a^3\,\mathrm{Cos}[c+d\,x]\right)}$$

Result (type 5, 2206 leaves):

$$-\frac{1}{5\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3}\,119\,i\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)-$$
$$\Bigg(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)\Bigg)+$$
$$\frac{1}{5\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3}$$
$$49$$
$$i$$
$$B$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\mathrm{Csc}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]$$

$$\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\Bigg(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2 i d x}\,\text{Cos}[2\,c]+i\,e^{2 i d x}\,\text{Sin}[2\,c]}\Bigg)\Big/\left(3\,i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2 i d x}\,\text{Cos}[2\,c]+i\,e^{2 i d x}\,\text{Sin}[2\,c]}\Bigg)\Big/\left(-i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{5\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3}$$

$$9\;i\;C\;\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\Bigg(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2 i d x}\,\text{Cos}[2\,c]+i\,e^{2 i d x}\,\text{Sin}[2\,c]}\Bigg)\Big/\left(3\,i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2 i d x}\,\text{Cos}[2\,c]+i\,e^{2 i d x}\,\text{Sin}[2\,c]}\Bigg)\Big/\left(-i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\Bigg(44\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^3\right)+$$
$$\left(52\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^3\right)-$$
$$\left(4\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{8\,(59\,A-29\,B+9\,C+60\,A\,\text{Cos}[c]-20\,B\,\text{Cos}[c])\,\text{Csc}[c]}{5\,d}+\frac{32\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\right.$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+\frac{1}{5\,d}$$
$$8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(59\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-29\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+9\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)-\frac{1}{15\,d}8\,\text{Sec}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(19\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-14\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+9\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+\frac{32\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}-$$

$$\left.\left.\frac{8\,(19\,A-14\,B+9\,C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{4\,(A-B+C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$
$$\left(\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\right)$$

Problem 1234: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 201 leaves, 7 steps):

$$\frac{(49\,A-9\,B-C)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{10\,a^3\,d}-\frac{(13\,A-3\,B-C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{6\,a^3\,d}-\frac{(A-B+C)\,\mathrm{Cos}[c+d\,x]^{5/2}\,\mathrm{Sin}[c+d\,x]}{5\,d\,\left(a+a\,\mathrm{Cos}[c+d\,x]\right)^3}-\frac{(8\,A-3\,B-2\,C)\,\mathrm{Cos}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{15\,a\,d\,\left(a+a\,\mathrm{Cos}[c+d\,x]\right)^2}-\frac{(13\,A-3\,B-C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{6\,d\,\left(a^3+a^3\,\mathrm{Cos}[c+d\,x]\right)}$$

Result (type 5, 2175 leaves):

$$\frac{1}{5\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3}$$
$$49\,i\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)\right)-$$
$$\frac{1}{5\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3}$$
$$9\,i\,B$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\mathrm{Csc}\left[\frac{c}{2}\right]$$

$$\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]$$
$$\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$
$$\left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/$$
$$\left.\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\right)-$$
$$\frac{1}{5\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\left(a+a \operatorname{Sec}[c+d x]\right)^3}$$
$$i C \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6$$
$$\operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]$$
$$\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$
$$\left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/$$
$$\left.\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\right)+$$
$$\left(52 A \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \operatorname{Csc}\left[\frac{c}{2}\right] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\},\left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$
$$\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-$$

$$\left(4\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-$$

$$\left(4\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\left(-\frac{8\,(29\,A-9\,B-C+20\,A\,\text{Cos}[c])\,\text{Csc}[c]}{5\,d}-\right.\right.$$

$$\frac{1}{5\,d}8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(29\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-9\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)-$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+\frac{1}{15\,d}$$

$$8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(14\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-9\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+4\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+$$

$$\left.\left.\frac{8\,(14\,A-9\,B+4\,C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d}-\frac{4\,(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$

$$\left(\sqrt{\text{Cos}[c+d\,x]}\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 1235: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B\,\mathrm{Sec}[c+d\,x] + C\,\mathrm{Sec}[c+d\,x]^2}{\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(a + a\,\mathrm{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 193 leaves, 7 steps):

$$-\frac{(9\,A+B-C)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{10\,a^3\,d} + \frac{(3\,A+B+C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{6\,a^3\,d} - \frac{(A-B+C)\,\mathrm{Cos}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{5\,d\,(a+a\,\mathrm{Cos}[c+d\,x])^3} - \frac{(6\,A-B-4\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{15\,a\,d\,(a+a\,\mathrm{Cos}[c+d\,x])^2} + \frac{(9\,A+B-C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{10\,d\,\left(a^3+a^3\,\mathrm{Cos}[c+d\,x]\right)}$$

Result (type 5, 2167 leaves):

$$-\frac{1}{5\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3}\,9\,i\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c+d\,x]\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)\right)-$$
$$\frac{1}{5\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3}$$
$$i$$
$$B$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\mathrm{Csc}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}[c+d\,x]$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$

$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$

$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \text{Sin}[c]\right)^2\right]$$

$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$

$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{5 \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(a+a \text{Sec}[c+d x]\right)^3}$$

$$i$$

$$C$$

$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6$$

$$\text{Csc}\left[\frac{c}{2}\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]$$

$$\text{Sec}[c+d x]$$

$$\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \text{Sin}[c]\right)^2\right]$$

$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$

$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$

$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \text{Sin}[c]\right)^2\right]$$

$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$

$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg)-$$

$$\Bigg(4 A \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Big/$$

$$\left(d\,(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx])\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+dx])^3\right)-$$

$$\left(4B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[dx-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+dx]\left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)$$
$$\mathrm{Sec}[dx-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[dx-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[dx-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{1+\mathrm{Sin}[dx-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3d\,(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx])\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+dx])^3\right)-$$

$$\left(4C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[dx-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+dx]\left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)$$
$$\mathrm{Sec}[dx-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[dx-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[dx-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[dx-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(3d\,(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx])\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+dx])^3\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\left(A+B\,\mathrm{Sec}[c+dx]+C\,\mathrm{Sec}[c+dx]^2\right)\left(\frac{8(9A+B-C)\,\mathrm{Csc}[c]}{5d}-\right.\right.$$
$$\frac{1}{15d}8\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(9A\,\mathrm{Sin}\left[\frac{dx}{2}\right]-4B\,\mathrm{Sin}\left[\frac{dx}{2}\right]-C\,\mathrm{Sin}\left[\frac{dx}{2}\right]\right)+$$
$$\frac{8\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(9A\,\mathrm{Sin}\left[\frac{dx}{2}\right]+B\,\mathrm{Sin}\left[\frac{dx}{2}\right]-C\,\mathrm{Sin}\left[\frac{dx}{2}\right]\right)}{5d}+$$
$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(A\,\mathrm{Sin}\left[\frac{dx}{2}\right]-B\,\mathrm{Sin}\left[\frac{dx}{2}\right]+C\,\mathrm{Sin}\left[\frac{dx}{2}\right]\right)}{5d}-$$
$$\left.\left.\frac{8(9A-4B-C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{15d}+\frac{4(A-B+C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\mathrm{Tan}\left[\frac{c}{2}\right]}{5d}\right)\right)\Big/$$

$$\left(\sqrt{\mathrm{Cos}[c+dx]}\,(A+2C+2B\,\mathrm{Cos}[c+dx]+A\,\mathrm{Cos}[2c+2dx])\,(a+a\,\mathrm{Sec}[c+dx])^3\right)$$

Problem 1236: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2}{\mathrm{Cos}[c + d\,x]^{3/2}\,\left(a + a\,\mathrm{Sec}[c + d\,x]\right)^3}\,dx$$

Optimal (type 4, 191 leaves, 7 steps):

$$-\frac{(A - B - 9\,C)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{10\,a^3\,d} + \frac{(A + B + 3\,C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{6\,a^3\,d} - \frac{(A - B + C)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{Sin}[c + d\,x]}{5\,d\,(a + a\,\mathrm{Cos}[c + d\,x])^3} + \frac{(4\,A + B - 6\,C)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{Sin}[c + d\,x]}{15\,a\,d\,(a + a\,\mathrm{Cos}[c + d\,x])^2} + \frac{(A - B - 9\,C)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{Sin}[c + d\,x]}{10\,d\,\left(a^3 + a^3\,\mathrm{Cos}[c + d\,x]\right)}$$

Result (type 5, 2164 leaves):

$$-\frac{1}{5\,(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x])\,(a + a\,\mathrm{Sec}[c + d\,x])^3}\,i\,A\,\mathrm{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^6\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c + d\,x]\,\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c] + i\,\mathrm{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right) \Big/$$
$$\left(3\,i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c] - 3\,d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right) -$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c] + i\,\mathrm{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right) \Big/$$
$$\left.\left(-i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c] + d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)\right) +$$

$$\frac{1}{5\,(A + 2\,C + 2\,B\,\mathrm{Cos}[c + d\,x] + A\,\mathrm{Cos}[2\,c + 2\,d\,x])\,(a + a\,\mathrm{Sec}[c + d\,x])^3}$$
$$i$$
$$B$$
$$\mathrm{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^6$$
$$\mathrm{Csc}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}[c + d\,x]$$
$$\left(A + B\,\mathrm{Sec}[c + d\,x] + C\,\mathrm{Sec}[c + d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c] + i\,\mathrm{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$

$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$

$$\left(2 \text{ Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4},-e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$

$$\left.\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\right)+$$

$$\frac{1}{5\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\left(a+a \operatorname{Sec}[c+d x]\right)^3}$$

9

i

C

$$\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6$$

$$\operatorname{Csc}\left[\frac{c}{2}\right]$$

$$\operatorname{Sec}\left[\frac{c}{2}\right]$$

$$\operatorname{Sec}[c+d x]$$

$$\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$

$$\left(\left(2 e^{2 i d x} \text{ Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4},-e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]\right.\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$

$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$

$$\left(2 \text{ Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4},-e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$

$$\left.\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\right)-$$

$$\left(4 A \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \operatorname{Csc}\left[\frac{c}{2}\right] \text{ HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\},\left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$

$$\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$

$$\operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-$$

$$\left(4\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-$$

$$\left(4\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\frac{8\,(A-B-9\,C)\,\text{Csc}[c]}{5\,d}+\frac{8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]-9\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+\right.$$

$$\frac{1}{15\,d}8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(4\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]-6\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)-$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$

$$\left.\left.\frac{8\,(4\,A+B-6\,C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15\,d}-\frac{4\,(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$

$$\left(\sqrt{\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 1237: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2}{\text{Cos}[c + d\,x]^{5/2}\,\left(a + a\,\text{Sec}[c + d\,x]\right)^3}\,dx$$

Optimal (type 4, 229 leaves, 8 steps):

$$\frac{(A + 9\,B - 49\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{10\,a^3\,d} + \frac{(A + 3\,B - 13\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{6\,a^3\,d} - \frac{(A + 9\,B - 49\,C)\,\text{Sin}[c + d\,x]}{10\,a^3\,d\,\sqrt{\text{Cos}[c + d\,x]}} - \frac{(A - B + C)\,\text{Sin}[c + d\,x]}{5\,d\,\sqrt{\text{Cos}[c + d\,x]}\,\left(a + a\,\text{Cos}[c + d\,x]\right)^3} + \frac{(2\,A + 3\,B - 8\,C)\,\text{Sin}[c + d\,x]}{15\,a\,d\,\sqrt{\text{Cos}[c + d\,x]}\,\left(a + a\,\text{Cos}[c + d\,x]\right)^2} + \frac{(A + 3\,B - 13\,C)\,\text{Sin}[c + d\,x]}{6\,d\,\sqrt{\text{Cos}[c + d\,x]}\,\left(a^3 + a^3\,\text{Cos}[c + d\,x]\right)}$$

Result (type 5, 2205 leaves):

$$\frac{1}{5\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\left(a + a\,\text{Sec}[c + d\,x]\right)^3}$$
$$i\,A\,\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c + d\,x]\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] - 3\,d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right) -$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\right) +$$
$$\frac{1}{5\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\left(a + a\,\text{Sec}[c + d\,x]\right)^3}$$
$$9\,i\,B$$
$$\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c + d\,x]$$
$$\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\Big]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{5\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3}$$
$$49\,i\,C$$
$$\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,\text{Csc}\Big[\frac{c}{2}\Big]$$
$$\text{Sec}\Big[\frac{c}{2}\Big]\,\text{Sec}[c+d\,x]$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\Big]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\Big]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\Bigg(4\,A\,\text{Cos}\Big[\frac{c}{2}+\frac{d\,x}{2}\Big]^6\,\text{Csc}\Big[\frac{c}{2}\Big]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\,\frac{1}{2}\Big\},\,\Big\{\frac{5}{4}\Big\},\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$
$$\text{Sec}\Big[\frac{c}{2}\Big]\,\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$
$$\left(3\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-$$

$$\left(4\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(52\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{1}{5\,d}4\,\left(20\,C-A\,\text{Cos}[c]-9\,B\,\text{Cos}[c]+29\,C\,\text{Cos}[c]\right)\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c]-\right.$$
$$\frac{1}{5\,d}8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+9\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-29\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+\frac{1}{15\,d}8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3$$
$$\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-6\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+11\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+\frac{32\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{d}+$$
$$\left.\left.\frac{8\,\left(A-6\,B+11\,C\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{4\,\left(A-B+C\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$
$$\left(\sqrt{\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 1238: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{7/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 268 leaves, 9 steps):

$$\frac{(9 A-49 B+119 C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{10 a^3 d}+\frac{(3 A-13 B+33 C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{6 a^3 d}+\frac{(3 A-13 B+33 C) \text{Sin}[c+d x]}{6 a^3 d \text{Cos}[c+d x]^{3/2}}-\frac{(9 A-49 B+119 C) \text{Sin}[c+d x]}{10 a^3 d \sqrt{\text{Cos}[c+d x]}}-\frac{(A-B+C) \text{Sin}[c+d x]}{5 d \text{Cos}[c+d x]^{3/2} (a+a \text{Cos}[c+d x])^3}+\frac{(B-2 C) \text{Sin}[c+d x]}{3 a d \text{Cos}[c+d x]^{3/2} (a+a \text{Cos}[c+d x])^2}-\frac{(9 A-49 B+119 C) \text{Sin}[c+d x]}{30 d \text{Cos}[c+d x]^{3/2} \left(a^3+a^3 \text{Cos}[c+d x]\right)}$$

Result (type 5, 2248 leaves):

$$\frac{1}{5 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^3} 9 i A \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-\left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right)-$$

$$\frac{1}{5 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^3} 49 i B \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-\right.$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\,e^{2 i d x}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(-i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{5\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)^3}$$
$$119\,i\,C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]$$
$$\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\left(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\,e^{2 i d x}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\,e^{2 i d x}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(-i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\left(4\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$
$$\left(52\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$
$$\left(3 d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \sqrt{1+\text{Cot}[c]^2} \left(a+a \text{Sec}[c+d x]\right)^3\right)-$$
$$\left(44 C \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$
$$\left(d \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \sqrt{1+\text{Cot}[c]^2} \left(a+a \text{Sec}[c+d x]\right)^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)\right.$$
$$\left(-\frac{1}{5 d}4 \left(-20 B+60 C+9 A \text{Cos}[c]-29 B \text{Cos}[c]+59 C \text{Cos}[c]\right) \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c]-\right.$$
$$\frac{4 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5 \left(A \text{Sin}\left[\frac{d x}{2}\right]-B \text{Sin}\left[\frac{d x}{2}\right]+C \text{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}-\frac{1}{15 d}8 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3$$
$$\left(6 A \text{Sin}\left[\frac{d x}{2}\right]-11 B \text{Sin}\left[\frac{d x}{2}\right]+16 C \text{Sin}\left[\frac{d x}{2}\right]\right)-\frac{1}{5 d}8 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]$$
$$\left(9 A \text{Sin}\left[\frac{d x}{2}\right]-29 B \text{Sin}\left[\frac{d x}{2}\right]+59 C \text{Sin}\left[\frac{d x}{2}\right]\right)+\frac{32 C \text{Sec}[c] \text{Sec}[c+d x]^2 \text{Sin}[d x]}{3 d}+$$
$$\frac{32 \text{Sec}[c] \text{Sec}[c+d x] \left(C \text{Sin}[c]+3 B \text{Sin}[d x]-9 C \text{Sin}[d x]\right)}{3 d}-$$
$$\left.\left.\frac{8 \left(6 A-11 B+16 C\right) \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Tan}\left[\frac{c}{2}\right]}{15 d}-\frac{4 \left(A-B+C\right) \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Tan}\left[\frac{c}{2}\right]}{5 d}\right)\right) \Big/$$
$$\left(\sqrt{\text{Cos}[c+d x]} \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right) \left(a+a \text{Sec}[c+d x]\right)^3\right)$$

Problem 1239: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{\left(a+a \text{Sec}[c+d x]\right)^4} \, dx$$

Optimal (type 4, 278 leaves, 9 steps):

$$-\frac{(176\,A-57\,B+8\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{10\,a^4\,d}+\frac{(339\,A-108\,B+17\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{42\,a^4\,d}+\frac{(339\,A-108\,B+17\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{42\,a^4\,d}-\frac{(43\,A-15\,B+C)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{42\,a^4\,d\,(1+\text{Cos}[c+d\,x])^2}-\frac{(176\,A-57\,B+8\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{30\,a^4\,d\,(1+\text{Cos}[c+d\,x])}-\frac{(A-B+C)\,\text{Cos}[c+d\,x]^{9/2}\,\text{Sin}[c+d\,x]}{7\,d\,(a+a\,\text{Cos}[c+d\,x])^4}-\frac{(13\,A-6\,B-C)\,\text{Cos}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{35\,a\,d\,(a+a\,\text{Cos}[c+d\,x])^3}$$

Result (type 5, 2319 leaves):

$$-\frac{1}{5\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^4}352\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\right)+$$
$$\frac{1}{5\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^4}$$
$$114$$
$$i$$
$$B$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\text{Sec}[c+d\,x]^2$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$
$$\Bigg(2 \text{ Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4},-e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$
$$\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{5\left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)(a+a \operatorname{Sec}[c+d x])^4}$$

$$16\, i\, C \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x} \text{ Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4},-e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$
$$\Bigg(2 \text{ Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4},-e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$
$$\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)-$$

$$\Bigg(904 A \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \operatorname{Csc}\left[\frac{c}{2}\right] \text{ HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\},\left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]$$
$$\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]^2\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\Bigg(288\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)-$$

$$\Bigg(136\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\Bigg(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\frac{16\left(96\,A-37\,B+8\,C+80\,A\,\text{Cos}[c]-20\,B\,\text{Cos}[c]\right)\text{Csc}[c]}{5\,d}+\frac{64\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}-$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^7\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{7\,d}+\frac{1}{5\,d}$$

$$16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(96\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-37\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+8\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+\frac{1}{35\,d}$$

$$8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(33\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-26\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+19\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)-\frac{1}{105\,d}$$

$$8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(629\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-363\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+167\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+$$

$$\frac{64\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}-\frac{8\,(629\,A-363\,B+167\,C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{105\,d}+\frac{8\,(33\,A-26\,B+19\,C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{35\,d}-\frac{4\,(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Tan}\left[\frac{c}{2}\right]}{7\,d}\Bigg)\Bigg)\Big/$$
$$\left(\text{Cos}[c+d\,x]^{3/2}\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^4\right)$$

Problem 1240: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Cos}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(a+a\,\text{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 4, 244 leaves, 8 steps):

$$\frac{(57\,A-8\,B-C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{10\,a^4\,d}-\frac{(108\,A-17\,B-4\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{42\,a^4\,d}-\frac{(141\,A-29\,B-13\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{210\,a^4\,d\,(1+\text{Cos}[c+d\,x])^2}-\frac{(108\,A-17\,B-4\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{42\,a^4\,d\,(1+\text{Cos}[c+d\,x])}-\frac{(A-B+C)\,\text{Cos}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{7\,d\,(a+a\,\text{Cos}[c+d\,x])^4}-\frac{(11\,A-4\,B-3\,C)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{35\,a\,d\,(a+a\,\text{Cos}[c+d\,x])^3}$$

Result (type 5, 2286 leaves):

$$\frac{1}{5\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^4}$$
$$114\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\Bigg)-$$
$$\frac{1}{5\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^4}$$
$$16\,i\,B$$

$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8 \mathrm{Csc}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\ \mathrm{Sec}[c+d\,x]^2$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)\right)-$$
$$\frac{1}{5\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4}$$
$$2\,i\,C$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8 \mathrm{Csc}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\ \mathrm{Sec}[c+d\,x]^2$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)\right)+$$
$$\left(288\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8 \mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\ \mathrm{Sec}[c+d\,x]^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\ \sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\ \left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)-$$

$$\left(136\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\ \left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)-$$

$$\left(32\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\ \left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(-\frac{16\,\left(37\,A-8\,B-C+20\,A\,\text{Cos}[c]\right)\text{Csc}[c]}{5\,d}-\right.\right.$$

$$\frac{1}{5\,d}16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(37\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-8\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^7\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{7\,d}-\frac{1}{35\,d}$$

$$8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(26\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-19\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+12\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+\frac{1}{105\,d}$$

$$8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(363\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-167\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+41\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+$$

$$\frac{8\,\left(363\,A-167\,B+41\,C\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{105\,d}-$$

$$\left.\left.\frac{8\,(26\,A-19\,B+12\,C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Tan}\left[\frac{c}{2}\right]}{35\,d}+\frac{4\,(A-B+C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\mathrm{Tan}\left[\frac{c}{2}\right]}{7\,d}\right)\right)\Big/$$

$$\left(\mathrm{Cos}[c+d\,x]^{3/2}\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^4\right)$$

Problem 1241: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\sqrt{\mathrm{Cos}[c+d\,x]}\,(a+a\,\mathrm{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 4, 232 leaves, 8 steps):

$$-\frac{(8\,A+B)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{10\,a^4\,d}+\frac{(17\,A+4\,B+3\,C)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{42\,a^4\,d}-$$
$$\frac{(83\,A+B-15\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{210\,a^4\,d\,(1+\mathrm{Cos}[c+d\,x])^2}+\frac{(8\,A+B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{10\,a^4\,d\,(1+\mathrm{Cos}[c+d\,x])}-$$
$$\frac{(A-B+C)\,\mathrm{Cos}[c+d\,x]^{5/2}\,\mathrm{Sin}[c+d\,x]}{7\,d\,(a+a\,\mathrm{Cos}[c+d\,x])^4}-\frac{(9\,A-2\,B-5\,C)\,\mathrm{Cos}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{35\,a\,d\,(a+a\,\mathrm{Cos}[c+d\,x])^3}$$

Result (type 5, 1862 leaves):

$$-\frac{1}{5\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^4}$$
$$16\,i\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)\right)-$$
$$\frac{1}{5\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^4}$$

2

i

B

$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\text{Sec}[c+d\,x]^2$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)-$$
$$\Bigg(136\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$
$$\left(21\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)-$$
$$\Bigg(32\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(21\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\right)-$$

$$\left(8\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c+d\,x]^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$

$$\left(7\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\mathrm{Cot}[c]^2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\frac{16\,(8\,A+B)\,\mathrm{Csc}[c]}{5\,d}+\frac{16\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(8\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}-\frac{1}{105\,d}\right.$$

$$8\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(167\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-41\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-15\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)-$$

$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^7\,\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{7\,d}+\frac{1}{35\,d}$$

$$8\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\left(19\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-12\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+5\,C\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)-$$

$$\frac{8\,(167\,A-41\,B-15\,C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Tan}\left[\frac{c}{2}\right]}{105\,d}+$$

$$\left.\left.\frac{8\,(19\,A-12\,B+5\,C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Tan}\left[\frac{c}{2}\right]}{35\,d}-\frac{4\,(A-B+C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\mathrm{Tan}\left[\frac{c}{2}\right]}{7\,d}\right)\right)\Big/$$

$$\left(\mathrm{Cos}[c+d\,x]^{3/2}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4\right)$$

Problem 1242: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\mathrm{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 4, 229 leaves, 8 steps):

$$-\frac{(A-C)\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{10 a^4 d}+\frac{(4A+3B+4C)\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{42 a^4 d}+\frac{(41A+15B-C)\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]}{210 a^4 d\,(1+\text{Cos}[c+d x])^2}+\frac{(A-C)\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]}{10 a^4 d\,(1+\text{Cos}[c+d x])}-\frac{(A-B+C)\,\text{Cos}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{7 d\,(a+a\,\text{Cos}[c+d x])^4}-\frac{(A-C)\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]}{5 a d\,(a+a\,\text{Cos}[c+d x])^3}$$

Result (type 5, 1862 leaves):

$$-\frac{1}{5\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,(a+a\,\text{Sec}[c+d x])^4}\,2\,\mathrm{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^2\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\left(2\,e^{2\mathrm{i} d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\mathrm{i} d x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\mathrm{i} d x}\left(2\left(1+e^{2\mathrm{i} d x}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i} d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\mathrm{i} d x}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i} d x}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,\mathrm{i}\,d\left(1+e^{2\mathrm{i} d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\mathrm{i} d x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\mathrm{i} d x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-\mathrm{i} d x}\left(2\left(1+e^{2\mathrm{i} d x}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i} d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\mathrm{i} d x}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i} d x}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-\mathrm{i}\,d\left(1+e^{2\mathrm{i} d x}\right)\text{Cos}[c]+d\left(-1+e^{2\mathrm{i} d x}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{5\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,(a+a\,\text{Sec}[c+d x])^4}$$
$$2$$
$$\mathrm{i}$$
$$C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\text{Sec}[c+d x]^2$$
$$\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)$$
$$\left(\left(2\,e^{2\mathrm{i} d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\mathrm{i} d x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\mathrm{i} d x}\left(2\left(1+e^{2\mathrm{i} d x}\right)\text{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\mathrm{i} d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\mathrm{i} d x}\,\text{Cos}[2c]+\mathrm{i}\,e^{2\mathrm{i} d x}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,\mathrm{i}\,d\left(1+e^{2\mathrm{i} d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\mathrm{i} d x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\Bigg)-$$
$$\left(32\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\,(a+a\,\text{Sec}[c+d\,x])^4\right)-$$
$$\left(8\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(7\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\,(a+a\,\text{Sec}[c+d\,x])^4\right)-$$
$$\left(32\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\,(a+a\,\text{Sec}[c+d\,x])^4\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\left(\frac{16\,(A-C)\,\text{Csc}[c]}{5\,d}-\frac{1}{35\,d}\right.\right.$$
$$8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(12\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-5\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-2\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+$$
$$\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+\frac{1}{105\,d}$$
$$8\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(41\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+15\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^7\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{7\,d}+$$
$$\frac{8\,(41\,A+15\,B-C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{105\,d}-$$
$$\left.\left.\frac{8\,(12\,A-5\,B-2\,C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{35\,d}+\frac{4\,(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Tan}\left[\frac{c}{2}\right]}{7\,d}\right)\right)\Big/$$
$$\left(\text{Cos}[c+d\,x]^{3/2}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)$$

Problem 1243: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{5/2}\left(a+a\,\text{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 4, 234 leaves, 8 steps):

$$\frac{(B+8\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{10\,a^4\,d}+\frac{(3\,A+4\,B+17\,C)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{42\,a^4\,d}+$$
$$\frac{(15\,A-B-83\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{210\,a^4\,d\,(1+\text{Cos}[c+d\,x])^2}-\frac{(B+8\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{10\,a^4\,d\,(1+\text{Cos}[c+d\,x])}-$$
$$\frac{(A-B+C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{7\,d\,(a+a\,\text{Cos}[c+d\,x])^4}+\frac{(5\,A+2\,B-9\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{35\,a\,d\,(a+a\,\text{Cos}[c+d\,x])^3}$$

Result (type 5, 1862 leaves):

$$\frac{1}{5\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^4}$$
$$2\,i\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Big) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\Big(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Big) \Big/$$
$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Big)+$$
$$\frac{1}{5 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) (a+a \text{Sec}[c+d x])^4}$$
$$16 i C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^2$$
$$\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\Big(\Big(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Big) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\Big(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Big) \Big/$$
$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Big)-$$
$$\Big(8 A \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \text{Csc}\left[\frac{c}{2}\right] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^2 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\Big) \Big/$$
$$\left(7 d (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2} (a+a \text{Sec}[c+d x])^4\right)-$$

$$\left(32\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)-$$
$$\left(136\,C\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(21\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\left(-\frac{16\,(B+8\,C)\,\text{Csc}[c]}{5\,d}+\frac{1}{105\,d}\right.\right.$$
$$8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(15\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]-83\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)+$$
$$\frac{1}{35\,d}8\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\left(5\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+2\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-9\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)-$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^7\,\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]-B\,\text{Sin}\left[\frac{d\,x}{2}\right]+C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{7\,d}-$$
$$\frac{16\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(B\,\text{Sin}\left[\frac{d\,x}{2}\right]+8\,C\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+\frac{8\,(15\,A-B-83\,C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{105\,d}+$$
$$\left.\left.\frac{8\,(5\,A+2\,B-9\,C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{35\,d}-\frac{4\,(A-B+C)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Tan}\left[\frac{c}{2}\right]}{7\,d}\right)\right)\Big/$$
$$\left(\text{Cos}[c+d\,x]^{3/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4\right)$$

Problem 1244: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{7/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 4, 276 leaves, 9 steps):

$$\frac{(A+8B-57C)\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]}{10a^4 d}+\frac{(4A+17B-108C)\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{42a^4 d}-\frac{(A+8B-57C)\,\text{Sin}[c+dx]}{10a^4 d\sqrt{\text{Cos}[c+dx]}}+\frac{(13A+29B-141C)\,\text{Sin}[c+dx]}{210a^4 d\sqrt{\text{Cos}[c+dx]}\,(1+\text{Cos}[c+dx])^2}+\frac{(4A+17B-108C)\,\text{Sin}[c+dx]}{42a^4 d\sqrt{\text{Cos}[c+dx]}\,(1+\text{Cos}[c+dx])}-\frac{(A-B+C)\,\text{Sin}[c+dx]}{7d\sqrt{\text{Cos}[c+dx]}\,(a+a\,\text{Cos}[c+dx])^4}+\frac{(3A+4B-11C)\,\text{Sin}[c+dx]}{35ad\sqrt{\text{Cos}[c+dx]}\,(a+a\,\text{Cos}[c+dx])^3}$$

Result (type 5, 2316 leaves):

$$\frac{1}{5\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^4}\,2\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\left(2\,e^{2idx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2idx}\right)\text{Cos}[c]-3d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2idx}\right)\text{Cos}[c]+d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{5\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2c+2dx])\,(a+a\,\text{Sec}[c+dx])^4}\,16\,i\,B$$
$$\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^2$$
$$\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)$$
$$\left(\left(2\,e^{2idx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2idx}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2idx}\right)\text{Cos}[c]-3d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)-$$

$$\frac{1}{5\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,(a+a\,\text{Sec}[c+d\,x])^4}$$
$$114\,i\,C$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)-$$

$$\left(32\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(21\,d\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^4\right)-$$
$$\left(136\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d x]^2\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)$$
$$\mathrm{Sec}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(21 d\left(A+2 C+2 B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2 c+2 d x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+d x])^4\right)+$$
$$\left(288\,C\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d x]^2\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)$$
$$\mathrm{Sec}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(7 d\left(A+2 C+2 B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2 c+2 d x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+d x])^4\right)+$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)\right.$$
$$\left(\frac{1}{5 d}8\left(20 C-A\,\mathrm{Cos}[c]-8 B\,\mathrm{Cos}[c]+37 C\,\mathrm{Cos}[c]\right)\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c]-\right.$$
$$\frac{1}{105 d}8\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(A\,\mathrm{Sin}\left[\frac{d x}{2}\right]+83 B\,\mathrm{Sin}\left[\frac{d x}{2}\right]-237 C\,\mathrm{Sin}\left[\frac{d x}{2}\right]\right)-$$
$$\frac{1}{5 d}16\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(A\,\mathrm{Sin}\left[\frac{d x}{2}\right]+8 B\,\mathrm{Sin}\left[\frac{d x}{2}\right]-37 C\,\mathrm{Sin}\left[\frac{d x}{2}\right]\right)+$$
$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^7\left(A\,\mathrm{Sin}\left[\frac{d x}{2}\right]-B\,\mathrm{Sin}\left[\frac{d x}{2}\right]+C\,\mathrm{Sin}\left[\frac{d x}{2}\right]\right)}{7 d}+\frac{1}{35 d}$$
$$8\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5\left(2 A\,\mathrm{Sin}\left[\frac{d x}{2}\right]-9 B\,\mathrm{Sin}\left[\frac{d x}{2}\right]+16 C\,\mathrm{Sin}\left[\frac{d x}{2}\right]\right)+$$
$$\frac{64\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d x]\,\mathrm{Sin}[d x]}{d}-\frac{8\,(A+83 B-237 C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{105 d}+$$
$$\left.\left.\frac{8\,(2 A-9 B+16 C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\mathrm{Tan}\left[\frac{c}{2}\right]}{35 d}+\frac{4\,(A-B+C)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6\mathrm{Tan}\left[\frac{c}{2}\right]}{7 d}\right)\right)\Big/$$
$$\left(\mathrm{Cos}[c+d x]^{3/2}\left(A+2 C+2 B\,\mathrm{Cos}[c+d x]+A\,\mathrm{Cos}[2 c+2 d x]\right)(a+a\,\mathrm{Sec}[c+d x])^4\right)$$

Problem 1248: Result unnecessarily involves higher level functions.

$$\int \mathrm{Cos}[c+d x]^{3/2}\sqrt{a+a\,\mathrm{Sec}[c+d x]}\left(A+B\,\mathrm{Sec}[c+d x]+C\,\mathrm{Sec}[c+d x]^2\right)dx$$

Optimal (type 3, 140 leaves, 5 steps):

$$\frac{2\sqrt{a}\ C\ \mathrm{ArcSinh}\left[\frac{\sqrt{a}\ \mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]\sqrt{\mathrm{Cos}[c+d\,x]}\ \sqrt{\mathrm{Sec}[c+d\,x]}}{d}+\frac{2\,a\,(A+3\,B)\,\mathrm{Sin}[c+d\,x]}{3\,d\sqrt{\mathrm{Cos}[c+d\,x]}\ \sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+\frac{2\,A\sqrt{\mathrm{Cos}[c+d\,x]}\ \sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\ \mathrm{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 192 leaves):

$$\left(4\sqrt{\mathrm{Cos}[c+d\,x]}\ \left(C+B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[c+d\,x]^2\right)\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}\left(-3\,i\,C\,e^{\frac{1}{2}i\,(c+d\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,C\,e^{\frac{3}{2}i\,(c+d\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+(2\,A+3\,B+A\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Big/\left(3\,d\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,(c+d\,x)])\right)$$

Problem 1249: Result unnecessarily involves higher level functions.

$$\int\sqrt{\mathrm{Cos}[c+d\,x]}\ \sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\ \left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 139 leaves, 5 steps):

$$\frac{\sqrt{a}\ (2\,B+C)\ \mathrm{ArcSinh}\left[\frac{\sqrt{a}\ \mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]\sqrt{\mathrm{Cos}[c+d\,x]}\ \sqrt{\mathrm{Sec}[c+d\,x]}}{d}+\frac{a\,(2\,A-C)\,\mathrm{Sin}[c+d\,x]}{d\sqrt{\mathrm{Cos}[c+d\,x]}\ \sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+\frac{C\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\ \mathrm{Sin}[c+d\,x]}{d\sqrt{\mathrm{Cos}[c+d\,x]}}$$

Result (type 5, 209 leaves):

$$\left(2\left(C+B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[c+d\,x]^2\right)\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}\left(-3\,i\,(2\,B+C)\,e^{\frac{1}{2}i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,(2\,B+C)\,e^{\frac{3}{2}i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+3\,(C+2\,A\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Big/\left(3\,d\sqrt{\mathrm{Cos}[c+d\,x]}\ (A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,(c+d\,x)])\right)$$

Problem 1250: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\ \left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{\mathrm{Cos}[c+d\,x]}}\,dx$$

Optimal (type 3, 151 leaves, 5 steps):

$$\frac{1}{4d}\sqrt{a}\,(8A+4B+3C)\,\text{ArcSinh}\Big[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\Big]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}+\frac{a\,(4B+C)\,\text{Sin}[c+dx]}{4d\,\text{Cos}[c+dx]^{3/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{C\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{2d\,\text{Cos}[c+dx]^{3/2}}$$

Result (type 5, 172 leaves):

$$\frac{1}{12d}\sqrt{\text{Cos}[c+dx]}\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]\sqrt{a\,(1+\text{Sec}[c+dx])}\,\Big(-3\,i\,(8A+4B+3C)\,e^{\frac{1}{2}i(c+dx)}\,\text{Hypergeometric2F1}\Big[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+dx)}\Big]-i\,(8A+4B+3C)\,e^{\frac{3}{2}i(c+dx)}\,\text{Hypergeometric2F1}\Big[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+dx)}\Big]+3\,\text{Sec}[c+dx]\,(4B+3C+2C\,\text{Sec}[c+dx])\,\text{Sin}\Big[\frac{1}{2}(c+dx)\Big]\Big)$$

Problem 1251: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{a+a\,\text{Sec}[c+dx]}\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)}{\text{Cos}[c+dx]^{3/2}}\,dx$$

Optimal (type 3, 199 leaves, 6 steps):

$$\frac{1}{8d}\sqrt{a}\,(8A+6B+5C)\,\text{ArcSinh}\Big[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\Big]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}+\frac{a\,(6B+C)\,\text{Sin}[c+dx]}{12d\,\text{Cos}[c+dx]^{5/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{a\,(8A+6B+5C)\,\text{Sin}[c+dx]}{8d\,\text{Cos}[c+dx]^{3/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{C\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{3d\,\text{Cos}[c+dx]^{5/2}}$$

Result (type 5, 194 leaves):

$$\frac{1}{24d}\sqrt{\text{Cos}[c+dx]}\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]\sqrt{a\,(1+\text{Sec}[c+dx])}\,\Big(-3\,i\,(8A+6B+5C)\,e^{\frac{1}{2}i(c+dx)}\,\text{Hypergeometric2F1}\Big[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+dx)}\Big]-i\,(8A+6B+5C)\,e^{\frac{3}{2}i(c+dx)}\,\text{Hypergeometric2F1}\Big[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+dx)}\Big]+\text{Sec}[c+dx]\,\left(3\,(8A+6B+5C)+2\,(6B+5C)\,\text{Sec}[c+dx]+8C\,\text{Sec}[c+dx]^2\right)\text{Sin}\Big[\frac{1}{2}(c+dx)\Big]\Big)$$

Problem 1252: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{a+a\,\text{Sec}[c+dx]}\,\left(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2\right)}{\text{Cos}[c+dx]^{5/2}}\,dx$$

Optimal (type 3, 247 leaves, 7 steps):

$$\frac{1}{64\,d}\sqrt{a}\;(48\,A+40\,B+35\,C)\,\text{ArcSinh}\Big[\frac{\sqrt{a}\;\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\Big]\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{\text{Sec}[c+d\,x]}\;+\frac{a\,(8\,B+C)\,\text{Sin}[c+d\,x]}{24\,d\,\text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,(48\,A+40\,B+35\,C)\,\text{Sin}[c+d\,x]}{96\,d\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,(48\,A+40\,B+35\,C)\,\text{Sin}[c+d\,x]}{64\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{C\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 334 leaves):

$$\frac{1}{128\,d}(48\,A+40\,B+35\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\Big(-2\,i\,e^{\frac{1}{2}i\,(c+d\,x)}\,\text{Hypergeometric2F1}\Big[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\Big]-\frac{2}{3}\,i\,e^{\frac{3}{2}i\,(c+d\,x)}\,\text{Hypergeometric2F1}\Big[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}\;+\frac{1}{d}\sqrt{\text{Cos}[c+d\,x]}\;\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}\;\Big(\frac{1}{4}\,C\,\text{Sec}[c+d\,x]^4\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{1}{24}\,\text{Sec}[c+d\,x]^3\,\Big(8\,B\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]+7\,C\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)+\frac{1}{64}\,\text{Sec}[c+d\,x]\,\Big(48\,A\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]+40\,B\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]+35\,C\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)+\frac{1}{96}\,\text{Sec}[c+d\,x]^2\,\Big(48\,A\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]+40\,B\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]+35\,C\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\Big)$$

Problem 1256: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 192 leaves, 6 steps):

$$\frac{2\,a^{3/2}\,C\,\text{ArcSinh}\Big[\frac{\sqrt{a}\;\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\Big]\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{\text{Sec}[c+d\,x]}}{d}+\frac{2\,a^2\,(12\,A+20\,B+15\,C)\,\text{Sin}[c+d\,x]}{15\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{2\,a\,(3\,A+5\,B)\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+a\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{15\,d}+\frac{2\,A\,\text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 5, 224 leaves):

$$\frac{1}{15\,d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)]\right)}a\,\sqrt{\text{Cos}[c+d\,x]}\,\left(1+\text{Cos}[c+d\,x]\right)\,\left(C+B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\left(-30\,i\,C\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-10\,i\,C\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\left(39\,A+50\,B+30\,C+2\,(9\,A+5\,B)\,\text{Cos}[c+d\,x]+3\,A\,\text{Cos}[2\,(c+d\,x)]\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 1257: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 197 leaves, 6 steps):

$$\frac{a^{3/2}\,(2\,B+3\,C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{d}+\frac{a^2\,(8\,A+6\,B-3\,C)\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{a\,(2\,A-3\,C)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 242 leaves):

$$\frac{1}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)]\right)}a\,\left(1+\text{Cos}[c+d\,x]\right)\,\left(C+B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\left(-3\,i\,(2\,B+3\,C)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,(2\,B+3\,C)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\left(A+3\,C+2\,(5\,A+3\,B)\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)]\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 1258: Result unnecessarily involves higher level functions.

$$\int \sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 203 leaves, 6 steps):

$$\frac{1}{4d}a^{3/2}(8A+12B+7C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}+\frac{a^2(8A-4B-5C)\,\text{Sin}[c+dx]}{4d\sqrt{\text{Cos}[c+dx]}\,\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{a(4B+3C)\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{4d\sqrt{\text{Cos}[c+dx]}}+\frac{C\,(a+a\,\text{Sec}[c+dx])^{3/2}\,\text{Sin}[c+dx]}{2d\sqrt{\text{Cos}[c+dx]}}$$

Result (type 5, 256 leaves):

$$\frac{1}{12d\,\text{Cos}[c+dx]^{3/2}\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2(c+dx)])}\,a\,(1+\text{Cos}[c+dx])\,(C+B\,\text{Cos}[c+dx]+A\,\text{Cos}[c+dx]^2)\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^3\sqrt{a(1+\text{Sec}[c+dx])}\left(-3\,i\,(8A+12B+7C)\,e^{\frac{1}{2}i(c+dx)}\,\text{Cos}[c+dx]^2\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+dx)}\right]-i\,(8A+12B+7C)\,e^{\frac{3}{2}i(c+dx)}\,\text{Cos}[c+dx]^2\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+dx)}\right]+3\,((4B+7C)\,\text{Cos}[c+dx]+2\,(2A+C+2A\,\text{Cos}[2(c+dx)]))\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)$$

Problem 1259: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\text{Sec}[c+dx])^{3/2}\,(A+B\,\text{Sec}[c+dx]+C\,\text{Sec}[c+dx]^2)}{\sqrt{\text{Cos}[c+dx]}}\,dx$$

Optimal (type 3, 201 leaves, 6 steps):

$$\frac{1}{8d}a^{3/2}(24A+14B+11C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}+\frac{a^2(24A+30B+19C)\,\text{Sin}[c+dx]}{24d\,\text{Cos}[c+dx]^{3/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{a(2B+C)\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{4d\,\text{Cos}[c+dx]^{3/2}}+\frac{C\,(a+a\,\text{Sec}[c+dx])^{3/2}\,\text{Sin}[c+dx]}{3d\,\text{Cos}[c+dx]^{3/2}}$$

Result (type 5, 261 leaves):

$$\frac{1}{24d\,\text{Cos}[c+dx]^{5/2}\,(A+2C+2B\,\text{Cos}[c+dx]+A\,\text{Cos}[2(c+dx)])}\,a\,(1+\text{Cos}[c+dx])\,(C+B\,\text{Cos}[c+dx]+A\,\text{Cos}[c+dx]^2)\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^3\sqrt{a(1+\text{Sec}[c+dx])}\left(-3\,i\,(24A+14B+11C)\,e^{\frac{1}{2}i(c+dx)}\,\text{Cos}[c+dx]^3\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+dx)}\right]-i\,(24A+14B+11C)\,e^{\frac{3}{2}i(c+dx)}\,\text{Cos}[c+dx]^3\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+dx)}\right]+(8C+2\,(6B+11C)\,\text{Cos}[c+dx]+3\,(8A+14B+11C)\,\text{Cos}[c+dx]^2)\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)$$

Problem 1260: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a \operatorname{Sec}[c + d x])^{3/2} \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)}{\operatorname{Cos}[c + d x]^{3/2}} \, dx$$

Optimal (type 3, 253 leaves, 7 steps):

$$\frac{1}{64 d} a^{3/2} (112 A + 88 B + 75 C) \operatorname{ArcSinh}\left[\frac{\sqrt{a} \operatorname{Tan}[c + d x]}{\sqrt{a + a \operatorname{Sec}[c + d x]}}\right] \sqrt{\operatorname{Cos}[c + d x]} \sqrt{\operatorname{Sec}[c + d x]} + \frac{a^2 (48 A + 56 B + 39 C) \operatorname{Sin}[c + d x]}{96 d \operatorname{Cos}[c + d x]^{5/2} \sqrt{a + a \operatorname{Sec}[c + d x]}} + \frac{a^2 (112 A + 88 B + 75 C) \operatorname{Sin}[c + d x]}{64 d \operatorname{Cos}[c + d x]^{3/2} \sqrt{a + a \operatorname{Sec}[c + d x]}} + \frac{a (8 B + 3 C) \sqrt{a + a \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{24 d \operatorname{Cos}[c + d x]^{5/2}} + \frac{C (a + a \operatorname{Sec}[c + d x])^{3/2} \operatorname{Sin}[c + d x]}{4 d \operatorname{Cos}[c + d x]^{5/2}}$$

Result (type 5, 281 leaves):

$$\frac{1}{192 d \operatorname{Cos}[c + d x]^{7/2} \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 (c + d x)]\right)} a (1 + \operatorname{Cos}[c + d x]) \left(C + B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[c + d x]^2\right) \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^3 \sqrt{a (1 + \operatorname{Sec}[c + d x])} \left(-3 i (112 A + 88 B + 75 C) e^{\frac{1}{2} i (c+d x)} \operatorname{Cos}[c + d x]^4 \operatorname{Hypergeometric2F1}\left[\frac{1}{4}, 1, \frac{5}{4}, -e^{2 i (c+d x)}\right] - i (112 A + 88 B + 75 C) e^{\frac{3}{2} i (c+d x)} \operatorname{Cos}[c + d x]^4 \operatorname{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{7}{4}, -e^{2 i (c+d x)}\right] + \left(48 C + 8 (8 B + 15 C) \operatorname{Cos}[c + d x] + 2 (48 A + 88 B + 75 C) \operatorname{Cos}[c + d x]^2 + 3 (112 A + 88 B + 75 C) \operatorname{Cos}[c + d x]^3\right) \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)$$

Problem 1261: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a \operatorname{Sec}[c + d x])^{3/2} \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)}{\operatorname{Cos}[c + d x]^{5/2}} \, dx$$

Optimal (type 3, 303 leaves, 8 steps):

$$\frac{1}{128 d} a^{3/2} (176 A + 150 B + 133 C) \operatorname{ArcSinh}\left[\frac{\sqrt{a} \operatorname{Tan}[c + d x]}{\sqrt{a + a \operatorname{Sec}[c + d x]}}\right] \sqrt{\operatorname{Cos}[c + d x]} \sqrt{\operatorname{Sec}[c + d x]} + \frac{a^2 (80 A + 90 B + 67 C) \operatorname{Sin}[c + d x]}{240 d \operatorname{Cos}[c + d x]^{7/2} \sqrt{a + a \operatorname{Sec}[c + d x]}} + \frac{a^2 (176 A + 150 B + 133 C) \operatorname{Sin}[c + d x]}{192 d \operatorname{Cos}[c + d x]^{5/2} \sqrt{a + a \operatorname{Sec}[c + d x]}} + \frac{a^2 (176 A + 150 B + 133 C) \operatorname{Sin}[c + d x]}{128 d \operatorname{Cos}[c + d x]^{3/2} \sqrt{a + a \operatorname{Sec}[c + d x]}} + \frac{a (10 B + 3 C) \sqrt{a + a \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{40 d \operatorname{Cos}[c + d x]^{7/2}} + \frac{C (a + a \operatorname{Sec}[c + d x])^{3/2} \operatorname{Sin}[c + d x]}{5 d \operatorname{Cos}[c + d x]^{7/2}}$$

Result (type 5, 301 leaves):

$$\frac{1}{1920\, d \operatorname{Cos}[c+d x]^{9/2} \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 (c+d x)]\right)} a \left(1+\operatorname{Cos}[c+d x]\right) \left(C+B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[c+d x]^2\right) \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^3 \sqrt{a \left(1+\operatorname{Sec}[c+d x]\right)} \left(-15 i (176 A+150 B+133 C) e^{\frac{1}{2} i (c+d x)} \operatorname{Cos}[c+d x]^5 \operatorname{Hypergeometric2F1}\left[\frac{1}{4}, 1, \frac{5}{4}, -e^{2 i (c+d x)}\right] - 5 i (176 A+150 B+133 C) e^{\frac{3}{2} i (c+d x)} \operatorname{Cos}[c+d x]^5 \operatorname{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{7}{4}, -e^{2 i (c+d x)}\right] + \left(384 C+48 (10 B+19 C) \operatorname{Cos}[c+d x]+8 (80 A+150 B+133 C) \operatorname{Cos}[c+d x]^2+10 (176 A+150 B+133 C) \operatorname{Cos}[c+d x]^3+15 (176 A+150 B+133 C) \operatorname{Cos}[c+d x]^4\right) \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)$$

Problem 1265: Result unnecessarily involves higher level functions.

$$\int \operatorname{Cos}[c+d x]^{7/2} \left(a+a \operatorname{Sec}[c+d x]\right)^{5/2} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 242 leaves, 7 steps):

$$\frac{2 a^{5/2} C \operatorname{ArcSinh}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right] \sqrt{\operatorname{Cos}[c+d x]} \sqrt{\operatorname{Sec}[c+d x]}}{d} + \frac{2 a^3 (160 A+224 B+245 C) \operatorname{Sin}[c+d x]}{105 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sec}[c+d x]}} + \frac{1}{105 d} 2 a^2 (40 A+56 B+35 C) \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x] + \frac{2 a (5 A+7 B) \operatorname{Cos}[c+d x]^{3/2} \left(a+a \operatorname{Sec}[c+d x]\right)^{3/2} \operatorname{Sin}[c+d x]}{35 d} + \frac{2 A \operatorname{Cos}[c+d x]^{5/2} \left(a+a \operatorname{Sec}[c+d x]\right)^{5/2} \operatorname{Sin}[c+d x]}{7 d}$$

Result (type 5, 343 leaves):

$$\left(C \operatorname{Cos}[c+d x]^{9/2} \left(-2 i e^{\frac{1}{2} i (c+d x)} \operatorname{Hypergeometric2F1}\left[\frac{1}{4}, 1, \frac{5}{4}, -e^{2 i (c+d x)}\right] - \frac{2}{3} i e^{\frac{3}{2} i (c+d x)} \operatorname{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{7}{4}, -e^{2 i (c+d x)}\right]\right) \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \left(a \left(1+\operatorname{Sec}[c+d x]\right)\right)^{5/2} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right) \Big/ \left(2 d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\right) + \left(\operatorname{Cos}[c+d x]^{9/2} \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \left(a \left(1+\operatorname{Sec}[c+d x]\right)\right)^{5/2} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(\frac{5}{8} (3 A+4 B+4 C) \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right] + \frac{1}{24} (11 A+10 B+4 C) \operatorname{Sin}\left[\frac{3}{2} (c+d x)\right] + \frac{1}{40} (5 A+2 B) \operatorname{Sin}\left[\frac{5}{2} (c+d x)\right] + \frac{1}{56} A \operatorname{Sin}\left[\frac{7}{2} (c+d x)\right]\right)\right) \Big/ \left(d \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\right)$$

Problem 1266: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d x]^{5/2} \left(a+a \,\text{Sec}[c+d x]\right)^{5/2} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 243 leaves, 7 steps):

$$\frac{a^{5/2} \left(2 B+5 C\right) \text{ArcSinh}\left[\frac{\sqrt{a} \,\text{Tan}[c+d x]}{\sqrt{a+a \,\text{Sec}[c+d x]}}\right] \sqrt{\text{Cos}[c+d x]} \sqrt{\text{Sec}[c+d x]}}{d}+\frac{a^3 \left(64 A+70 B+15 C\right) \text{Sin}[c+d x]}{15 d \sqrt{\text{Cos}[c+d x]} \sqrt{a+a \,\text{Sec}[c+d x]}}-\frac{a^2 \left(16 A+10 B-15 C\right) \sqrt{a+a \,\text{Sec}[c+d x]} \,\text{Sin}[c+d x]}{15 d \sqrt{\text{Cos}[c+d x]}}+\frac{2 a \left(A+B\right) \sqrt{\text{Cos}[c+d x]} \left(a+a \,\text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]}{3 d}+\frac{2 A \,\text{Cos}[c+d x]^{3/2} \left(a+a \,\text{Sec}[c+d x]\right)^{5/2} \text{Sin}[c+d x]}{5 d}$$

Result (type 5, 271 leaves):

$$\frac{1}{60 d \sqrt{\text{Cos}[c+d x]} \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 (c+d x)]\right)} a^2 \left(1+\text{Cos}[c+d x]\right)^2 \left(C+B \,\text{Cos}[c+d x]+A \,\text{Cos}[c+d x]^2\right) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^5 \sqrt{a \left(1+\text{Sec}[c+d x]\right)} \left(-30 i \left(2 B+5 C\right) e^{\frac{1}{2} i (c+d x)} \text{Cos}[c+d x] \,\text{Hypergeometric2F1}\left[\frac{1}{4}, 1, \frac{5}{4}, -e^{2 i (c+d x)}\right]-10 i \left(2 B+5 C\right) e^{\frac{3}{2} i (c+d x)} \text{Cos}[c+d x] \,\text{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{7}{4}, -e^{2 i (c+d x)}\right]+\left(28 A+10 B+30 C+\left(181 A+160 B+60 C\right) \text{Cos}[c+d x]+2 \left(14 A+5 B\right) \text{Cos}[2 (c+d x)]+3 A \,\text{Cos}[3 (c+d x)]\right) \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)$$

Problem 1267: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d x]^{3/2} \left(a+a \,\text{Sec}[c+d x]\right)^{5/2} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) dx$$

Optimal (type 3, 253 leaves, 7 steps):

$$\frac{1}{4 d} a^{5/2} \left(8 A+20 B+19 C\right) \text{ArcSinh}\left[\frac{\sqrt{a} \,\text{Tan}[c+d x]}{\sqrt{a+a \,\text{Sec}[c+d x]}}\right] \sqrt{\text{Cos}[c+d x]} \sqrt{\text{Sec}[c+d x]}+\frac{a^3 \left(56 A+12 B-27 C\right) \text{Sin}[c+d x]}{12 d \sqrt{\text{Cos}[c+d x]} \sqrt{a+a \,\text{Sec}[c+d x]}}-\frac{a^2 \left(8 A-12 B-21 C\right) \sqrt{a+a \,\text{Sec}[c+d x]} \,\text{Sin}[c+d x]}{12 d \sqrt{\text{Cos}[c+d x]}}-\frac{a \left(4 A-3 C\right) \left(a+a \,\text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]}{6 d \sqrt{\text{Cos}[c+d x]}}+\frac{2 A \sqrt{\text{Cos}[c+d x]} \left(a+a \,\text{Sec}[c+d x]\right)^{5/2} \text{Sin}[c+d x]}{3 d}$$

Result (type 5, 282 leaves):

$$\frac{1}{24\,d\,\mathrm{Cos}[c+d\,x]^{3/2}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,(c+d\,x)]\right)}\,a^2\,\left(1+\mathrm{Cos}[c+d\,x]\right)^2\,\left(C+B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[c+d\,x]^2\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\sqrt{a\,\left(1+\mathrm{Sec}[c+d\,x]\right)}\,\left(-3\,i\,(8\,A+20\,B+19\,C)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,(8\,A+20\,B+19\,C)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\left(32\,A+12\,B+6\,C+3\,(2\,A+4\,B+11\,C)\,\mathrm{Cos}[c+d\,x]+4\,(8\,A+3\,B)\,\mathrm{Cos}[2\,(c+d\,x)]+2\,A\,\mathrm{Cos}[3\,(c+d\,x)]\right)\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 1268: Result unnecessarily involves higher level functions.

$$\int\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 253 leaves, 7 steps):

$$\frac{1}{8\,d}a^{5/2}\,(40\,A+38\,B+25\,C)\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{\mathrm{Sec}[c+d\,x]}+\frac{a^3\,(24\,A-54\,B-49\,C)\,\mathrm{Sin}[c+d\,x]}{24\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+\frac{a^2\,(24\,A+42\,B+31\,C)\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{24\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{a\,(6\,B+5\,C)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\mathrm{Sin}[c+d\,x]}{12\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{C\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}$$

Result (type 5, 276 leaves):

$$\frac{1}{48\,d\,\mathrm{Cos}[c+d\,x]^{5/2}\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,(c+d\,x)]\right)}\,a^2\,\left(1+\mathrm{Cos}[c+d\,x]\right)^2\,\left(C+B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[c+d\,x]^2\right)\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\sqrt{a\,\left(1+\mathrm{Sec}[c+d\,x]\right)}\,\left(-3\,i\,(40\,A+38\,B+25\,C)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,(40\,A+38\,B+25\,C)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\left(8\,C+2\,(6\,B+17\,C)\,\mathrm{Cos}[c+d\,x]+3\,(8\,A+22\,B+25\,C)\,\mathrm{Cos}[c+d\,x]^2+48\,A\,\mathrm{Cos}[c+d\,x]^3\right)\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 1269: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{\mathrm{Cos}[c+d\,x]}}\,dx$$

Optimal (type 3, 253 leaves, 7 steps):

$$\frac{1}{64 d}a^{5/2} (304 A + 200 B + 163 C) \text{ArcSinh}\left[\frac{\sqrt{a} \text{ Tan}[c + d x]}{\sqrt{a + a \text{Sec}[c + d x]}}\right] \sqrt{\text{Cos}[c + d x]} \sqrt{\text{Sec}[c + d x]} + \frac{a^3 (432 A + 392 B + 299 C) \text{Sin}[c + d x]}{192 d \text{Cos}[c + d x]^{3/2} \sqrt{a + a \text{Sec}[c + d x]}} + \frac{a^2 (16 A + 24 B + 17 C) \sqrt{a + a \text{Sec}[c + d x]} \text{Sin}[c + d x]}{32 d \text{Cos}[c + d x]^{3/2}} + \frac{a (8 B + 5 C) (a + a \text{Sec}[c + d x])^{3/2} \text{Sin}[c + d x]}{24 d \text{Cos}[c + d x]^{3/2}} + \frac{C (a + a \text{Sec}[c + d x])^{5/2} \text{Sin}[c + d x]}{4 d \text{Cos}[c + d x]^{3/2}}$$

Result (type 5, 283 leaves):

$$\frac{1}{384 d \text{Cos}[c + d x]^{7/2} (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 (c + d x)])} a^2 (1 + \text{Cos}[c + d x])^2 (C + B \text{Cos}[c + d x] + A \text{Cos}[c + d x]^2) \text{Sec}\left[\frac{1}{2} (c + d x)\right]^5 \sqrt{a (1 + \text{Sec}[c + d x])} \left(-3 \text{i} (304 A + 200 B + 163 C) e^{\frac{1}{2} \text{i} (c+d x)} \text{Cos}[c + d x]^4 \text{Hypergeometric2F1}\left[\frac{1}{4}, 1, \frac{5}{4}, -e^{2 \text{i} (c+d x)}\right] - \text{i} (304 A + 200 B + 163 C) e^{\frac{3}{2} \text{i} (c+d x)} \text{Cos}[c + d x]^4 \text{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{7}{4}, -e^{2 \text{i} (c+d x)}\right] + (48 C + 8 (8 B + 23 C) \text{Cos}[c + d x] + (96 A + 272 B + 326 C) \text{Cos}[c + d x]^2 + (528 A + 600 B + 489 C) \text{Cos}[c + d x]^3) \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)$$

Problem 1270: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a \text{Sec}[c + d x])^{5/2} (A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2)}{\text{Cos}[c + d x]^{3/2}} \, dx$$

Optimal (type 3, 301 leaves, 8 steps):

$$\frac{1}{128 d}a^{5/2} (400 A + 326 B + 283 C) \text{ArcSinh}\left[\frac{\sqrt{a} \text{ Tan}[c + d x]}{\sqrt{a + a \text{Sec}[c + d x]}}\right] \sqrt{\text{Cos}[c + d x]} \sqrt{\text{Sec}[c + d x]} + \frac{a^3 (1040 A + 950 B + 787 C) \text{Sin}[c + d x]}{960 d \text{Cos}[c + d x]^{5/2} \sqrt{a + a \text{Sec}[c + d x]}} + \frac{a^3 (400 A + 326 B + 283 C) \text{Sin}[c + d x]}{128 d \text{Cos}[c + d x]^{3/2} \sqrt{a + a \text{Sec}[c + d x]}} + \frac{a^2 (80 A + 110 B + 79 C) \sqrt{a + a \text{Sec}[c + d x]} \text{Sin}[c + d x]}{240 d \text{Cos}[c + d x]^{5/2}} + \frac{a (2 B + C) (a + a \text{Sec}[c + d x])^{3/2} \text{Sin}[c + d x]}{8 d \text{Cos}[c + d x]^{5/2}} + \frac{C (a + a \text{Sec}[c + d x])^{5/2} \text{Sin}[c + d x]}{5 d \text{Cos}[c + d x]^{5/2}}$$

Result (type 5, 305 leaves):

$$\frac{1}{3840\,d\,\text{Cos}[c+d\,x]^{9/2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)]\right)}$$
$$a^2\,(1+\text{Cos}[c+d\,x])^2\,\left(C+B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}$$
$$\left(-15\,i\,(400\,A+326\,B+283\,C)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^5\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-\right.$$
$$5\,i\,(400\,A+326\,B+283\,C)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^5\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+$$
$$(384\,C+48\,(10\,B+29\,C)\,\text{Cos}[c+d\,x]+8\,(80\,A+230\,B+283\,C)\,\text{Cos}[c+d\,x]^2+10\,(272\,A+326\,B+$$
$$\left.283\,C)\,\text{Cos}[c+d\,x]^3+15\,(400\,A+326\,B+283\,C)\,\text{Cos}[c+d\,x]^4)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 1271: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Cos}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 3, 353 leaves, 9 steps):

$$\frac{1}{512\,d}a^{5/2}\,(1304\,A+1132\,B+1015\,C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{a^3\,(680\,A+628\,B+545\,C)\,\text{Sin}[c+d\,x]}{960\,d\,\text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,(1304\,A+1132\,B+1015\,C)\,\text{Sin}[c+d\,x]}{768\,d\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a^3\,(1304\,A+1132\,B+1015\,C)\,\text{Sin}[c+d\,x]}{512\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(120\,A+156\,B+115\,C)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{480\,d\,\text{Cos}[c+d\,x]^{7/2}}+$$
$$\frac{a\,(12\,B+5\,C)\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{60\,d\,\text{Cos}[c+d\,x]^{7/2}}+\frac{C\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{6\,d\,\text{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 536 leaves):

$$\left(\left(1304\,A+1132\,B+1015\,C\right)\,\mathrm{Cos}[c+d\,x]^{9/2}\right.$$
$$\left(-2\,\mathrm{i}\,e^{\frac{1}{2}\mathrm{i}\,(c+d\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,\mathrm{i}\,(c+d\,x)}\right]-\frac{2}{3}\,\mathrm{i}\,e^{\frac{3}{2}\mathrm{i}\,(c+d\,x)}\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,\mathrm{i}\,(c+d\,x)}\right]\right)$$
$$\left.\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right)\Big/$$
$$\left(2048\,d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)+\frac{1}{d\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)}$$
$$\mathrm{Cos}[c+d\,x]^{9/2}\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,\left(1+\mathrm{Sec}[c+d\,x]\right)\right)^{5/2}$$
$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,\left(\frac{1}{12}\,C\,\mathrm{Sec}[c+d\,x]^6\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$
$$\frac{1}{120}\,\mathrm{Sec}[c+d\,x]^5\,\left(12\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+35\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+\frac{1}{320}\,\mathrm{Sec}[c+d\,x]^4$$
$$\left(40\,A\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+116\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+145\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+\frac{1}{1920}\mathrm{Sec}[c+d\,x]^3$$
$$\left(920\,A\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+1132\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+1015\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+\frac{1}{1024}\mathrm{Sec}[$$
$$c+d\,x]\,\left(1304\,A\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+1132\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+1015\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+\frac{1}{1536}$$
$$\left.\mathrm{Sec}[c+d\,x]^2\,\left(1304\,A\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+1132\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+1015\,C\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)$$

Problem 1275: Result more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 178 leaves, 7 steps):

$$\frac{2\,C\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{\mathrm{Sec}[c+d\,x]}}{\sqrt{a}\,d}-\frac{1}{\sqrt{a}\,d}$$
$$\sqrt{2}\,\left(A-B+C\right)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{\mathrm{Sec}[c+d\,x]}+$$
$$\frac{2\,A\,\mathrm{Sin}[c+d\,x]}{d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 3, 388 leaves):

$$\frac{1}{2\, d\, \sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}\,\sqrt{\text{Sin}[c+d\,x]^2}}\,\text{Sin}[c+d\,x]\,\Big(2\sqrt{2}\,(A-B)\,\sqrt{1+\text{Cos}[c+d\,x]}\,\text{Log}[1+\text{Cos}[c+d\,x]]-4\,C\,\sqrt{1+\text{Cos}[c+d\,x]}\,\text{Log}\Big[\sqrt{\text{Cos}[c+d\,x]}\,(1+\text{Cos}[c+d\,x])\Big]+\sqrt{2}\,C\,\sqrt{1+\text{Cos}[c+d\,x]}\,\text{Log}\Big[(1+\text{Cos}[c+d\,x])^2\Big]-2\sqrt{2}\,A\,\sqrt{1+\text{Cos}[c+d\,x]}\,\text{Log}\Big[2\sqrt{1+\text{Cos}[c+d\,x]}+\sqrt{2-2\,\text{Cos}[c+d\,x]^2}\Big]+2\sqrt{2}\,B\,\sqrt{1+\text{Cos}[c+d\,x]}\,\text{Log}\Big[2\sqrt{1+\text{Cos}[c+d\,x]}+\sqrt{2-2\,\text{Cos}[c+d\,x]^2}\Big]+4\,C\,\sqrt{1+\text{Cos}[c+d\,x]}\,\text{Log}\Big[1+\text{Cos}[c+d\,x]+\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{\text{Sin}[c+d\,x]^2}\Big]-\sqrt{2}\,C\,\sqrt{1+\text{Cos}[c+d\,x]}\,\text{Log}\Big[3+2\,\text{Cos}[c+d\,x]-\text{Cos}[c+d\,x]^2+2\sqrt{2}\,\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{\text{Sin}[c+d\,x]^2}\Big]+4\,A\,\sqrt{\text{Sin}[c+d\,x]^2}\Big)$$

Problem 1283: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\sqrt{\text{Cos}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 189 leaves, 7 steps):

$$\frac{2\,C\,\text{ArcSinh}\Big[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\Big]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{a^{3/2}\,d}+\frac{1}{2\sqrt{2}\,a^{3/2}\,d}(3\,A+B-5\,C)\,\text{ArcTanh}\Big[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\Big]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}-\frac{(A-B+C)\,\text{Sin}[c+d\,x]}{2\,d\,\text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}$$

Result (type 3, 572 leaves):

$$-\left(\left(2\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\sqrt{\text{Cos}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.\right.$$
$$\left.\left(A\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+C\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$\left.\left(d\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)\right)-$$
$$\left(\sqrt{2}\,(3\,A+B-C)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}\right.$$
$$\left(\text{Log}[1+\text{Cos}[c+d\,x]]-\text{Log}\left[2\,\sqrt{1+\text{Cos}[c+d\,x]}+\sqrt{2-2\,\text{Cos}[c+d\,x]^2}\right]\right)$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c+d\,x]\right)\Big/$$
$$\left(d\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)-$$
$$\left(2\,C\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}\right.$$
$$\left(-\sqrt{2}\,\text{Log}\left[\left(1+\text{Cos}[c+d\,x]\right)^2\right]+4\,\text{Log}\left[\sqrt{\text{Cos}[c+d\,x]}+\text{Cos}[c+d\,x]^{3/2}\right]-\right.$$
$$4\,\text{Log}\left[1+\text{Cos}[c+d\,x]+\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right]+$$
$$\left.\sqrt{2}\,\text{Log}\left[3+2\,\text{Cos}[c+d\,x]-\text{Cos}[c+d\,x]^2+2\,\sqrt{2}\,\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right]\right)$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sin}[c+d\,x]\right)\Big/$$
$$\left(d\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)$$

Problem 1289: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 183 leaves, 5 steps):

$$\frac{1}{16\,\sqrt{2}\,a^{5/2}\,d}$$
$$(19\,A+5\,B+3\,C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,-$$
$$\frac{(A-B+C)\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}-\frac{(9\,A-B-7\,C)\,\text{Sin}[c+d\,x]}{16\,a\,d\,\text{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}$$

Result (type 3, 379 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^5 (A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\right.$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+C\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+\right.$$
$$\left.\left.\frac{1}{2}\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-13 A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+5 B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+3 C\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\Big/$$
$$\left(d\sqrt{\text{Cos}[c+d x]}\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,(a(1+\text{Sec}[c+d x]))^{5/2}\right)-$$
$$\left((19 A+5 B+3 C)\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^4\sqrt{1+\text{Cos}[c+d x]}\right.$$
$$\left(\text{Log}[1+\text{Cos}[c+d x]]-\text{Log}\left[2\sqrt{1+\text{Cos}[c+d x]}+\sqrt{2-2\,\text{Cos}[c+d x]^2}\right]\right)$$
$$\left.(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2)\,\text{Sin}[c+d x]\right)\Big/\left(2\sqrt{2}\,d\sqrt{\text{Cos}[c+d x]}\right.$$
$$\left.\sqrt{1-\text{Cos}[c+d x]^2}\,(A+2 C+2 B\,\text{Cos}[c+d x]+A\,\text{Cos}[2 c+2 d x])\,(a(1+\text{Sec}[c+d x]))^{5/2}\right)$$

Problem 1290: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{\text{Cos}[c+d x]^{3/2}\,(a+a\,\text{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 241 leaves, 8 steps):

$$\frac{2 C\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]\sqrt{\text{Cos}[c+d x]}\,\sqrt{\text{Sec}[c+d x]}}{a^{5/2}\,d}+\frac{1}{16\sqrt{2}\,a^{5/2}\,d}$$
$$(5 A+3 B-43 C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]\sqrt{\text{Cos}[c+d x]}\,\sqrt{\text{Sec}[c+d x]}-$$
$$\frac{(A-B+C)\,\text{Sin}[c+d x]}{4 d\,\text{Cos}[c+d x]^{5/2}\,(a+a\,\text{Sec}[c+d x])^{5/2}}+\frac{(5 A+3 B-11 C)\,\text{Sin}[c+d x]}{16 a d\,\text{Cos}[c+d x]^{3/2}\,(a+a\,\text{Sec}[c+d x])^{3/2}}$$

Result (type 3, 625 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5 \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\frac{1}{2}\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(5\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+3\,B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-11\,C\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+\right.$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\left(-A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-C\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\Big/$$
$$\left(d\sqrt{\text{Cos}[c+d\,x]}\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\sqrt{\text{Sec}[c+d\,x]}\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\left(\left(\sqrt{2}\,(5\,A+3\,B-11\,C)\sqrt{\text{Cos}[c+d\,x]}\sqrt{1+\text{Cos}[c+d\,x]}\right.\right.\right.$$
$$\left(\text{Log}[1+\text{Cos}[c+d\,x]]-\text{Log}\left[2\sqrt{1+\text{Cos}[c+d\,x]}+\sqrt{2-2\,\text{Cos}[c+d\,x]^2}\right]\right)$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right)-$$
$$\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}}16\,C\sqrt{\text{Cos}[c+d\,x]}\sqrt{1+\text{Cos}[c+d\,x]}$$
$$\left(-\sqrt{2}\,\text{Log}\left[(1+\text{Cos}[c+d\,x])^2\right]+4\,\text{Log}\left[\sqrt{\text{Cos}[c+d\,x]}+\text{Cos}[c+d\,x]^{3/2}\right]-\right.$$
$$4\,\text{Log}\left[1+\text{Cos}[c+d\,x]+\sqrt{1+\text{Cos}[c+d\,x]}\sqrt{1-\text{Cos}[c+d\,x]^2}\right]+$$
$$\left.\sqrt{2}\,\text{Log}\left[3+2\,\text{Cos}[c+d\,x]-\text{Cos}[c+d\,x]^2+2\sqrt{2}\sqrt{1+\text{Cos}[c+d\,x]}\sqrt{1-\text{Cos}[c+d\,x]^2}\right]\right)$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]\right)\right)\Big/$$
$$\left(4\,d\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)$$

Problem 1291: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{5/2}\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 294 leaves, 9 steps):

$$\frac{(2B-5C)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]\sqrt{\text{Cos}[c+d x]}\,\sqrt{\text{Sec}[c+d x]}}{a^{5/2}\,d}+\frac{1}{16\sqrt{2}\,a^{5/2}\,d}$$

$$(3A-43B+115C)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}\right]\sqrt{\text{Cos}[c+d x]}\,\sqrt{\text{Sec}[c+d x]}-$$

$$\frac{(A-B+C)\,\text{Sin}[c+d x]}{4\,d\,\text{Cos}[c+d x]^{7/2}\,(a+a\,\text{Sec}[c+d x])^{5/2}}+$$

$$\frac{(A+7B-15C)\,\text{Sin}[c+d x]}{16\,a\,d\,\text{Cos}[c+d x]^{5/2}\,(a+a\,\text{Sec}[c+d x])^{3/2}}+\frac{(3A-11B+35C)\,\text{Sin}[c+d x]}{16\,a^2\,d\,\text{Cos}[c+d x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d x]}}$$

Result (type 3, 651 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^5\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\left(16\,C\,\text{Sec}[c+d x]\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+C\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+$$
$$\left.\left.\frac{1}{2}\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(3\,A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-11\,B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+19\,C\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\Big/$$
$$\left(d\sqrt{\text{Cos}[c+d x]}\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,(a\,(1+\text{Sec}[c+d x]))^{5/2}\right)+$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^5\sqrt{\text{Sec}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\right.$$
$$\left(-\left(\left(\sqrt{2}\,(3A-11B+35C)\sqrt{\text{Cos}[c+d x]}\,\sqrt{1+\text{Cos}[c+d x]}\right.\right.\right.$$
$$\left(\text{Log}[1+\text{Cos}[c+d x]]-\text{Log}\left[2\sqrt{1+\text{Cos}[c+d x]}+\sqrt{2-2\,\text{Cos}[c+d x]^2}\right]\right)$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{\text{Sec}[c+d x]}\,\text{Sin}[c+d x]\right)\Big/\left(\sqrt{1-\text{Cos}[c+d x]^2}\right)\right)-$$
$$\frac{1}{2\sqrt{1-\text{Cos}[c+d x]^2}}(32B-80C)\sqrt{\text{Cos}[c+d x]}\,\sqrt{1+\text{Cos}[c+d x]}$$
$$\left(-\sqrt{2}\,\text{Log}\left[(1+\text{Cos}[c+d x])^2\right]+4\,\text{Log}\left[\sqrt{\text{Cos}[c+d x]}+\text{Cos}[c+d x]^{3/2}\right]-\right.$$
$$4\,\text{Log}\left[1+\text{Cos}[c+d x]+\sqrt{1+\text{Cos}[c+d x]}\,\sqrt{1-\text{Cos}[c+d x]^2}\right]+$$
$$\left.\sqrt{2}\,\text{Log}\left[3+2\,\text{Cos}[c+d x]-\text{Cos}[c+d x]^2+2\sqrt{2}\,\sqrt{1+\text{Cos}[c+d x]}\,\sqrt{1-\text{Cos}[c+d x]^2}\right]\right)$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{\text{Sec}[c+d x]}\,\text{Sin}[c+d x]\right)\right)\Big/$$
$$\left(4\,d\,(A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])\,(a\,(1+\text{Sec}[c+d x]))^{5/2}\right)$$

Problem 1294: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^{5/2} (a+b \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 116 leaves, 6 steps):

$$\frac{2 (3 a A+5 b B+5 a C) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{5 d}+\frac{2 (A b+a B+3 b C) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{3 d}+\frac{2 (A b+a B) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{3 d}+\frac{2 a A \text{Cos}[c+d x]^{3/2} \text{Sin}[c+d x]}{5 d}$$

Result (type 5, 1569 leaves):

$$\Bigg(\text{Cos}[c+d x]^{7/2} (a+b \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{4 (3 a A+5 b B+5 a C) \text{Cot}[c]}{5 d}+\frac{4 (A b+a B) \text{Cos}[d x] \text{Sin}[c]}{3 d}+\frac{2 a A \text{Cos}[2 d x] \text{Sin}[2 c]}{5 d}+\frac{4 (A b+a B) \text{Cos}[c] \text{Sin}[d x]}{3 d}+\frac{2 a A \text{Cos}[2 c] \text{Sin}[2 d x]}{5 d}\right)\Bigg)\Bigg/$$
$$((b+a \text{Cos}[c+d x]) (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))-$$
$$\Bigg(4 A b \text{Cos}[c+d x]^3 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] (a+b \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$
$$\left(3 d (b+a \text{Cos}[c+d x]) (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\Bigg(4 a B \text{Cos}[c+d x]^3 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] (a+b \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$
$$\left(3 d (b+a \text{Cos}[c+d x]) (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\Bigg(4 b C \text{Cos}[c+d x]^3 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$(a+b \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(d\,(b + a\,\text{Cos}[c + d\,x])\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right) -$$

$$\Bigg(6\,a\,A\,\text{Cos}[c + d\,x]^3\,\text{Csc}[c]\,(a + b\,\text{Sec}[c + d\,x])\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$

$$\Bigg(\Big(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2}, -\frac{1}{4}\Big\}, \Big\{\frac{3}{4}\Big\}, \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big) \Big/ \Big(\sqrt{1 - \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1 + \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\Big) - \frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right) \Big/$$

$$(5\,d\,(b + a\,\text{Cos}[c + d\,x])\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])) -$$

$$\Bigg(2\,b\,B\,\text{Cos}[c + d\,x]^3\,\text{Csc}[c]\,(a + b\,\text{Sec}[c + d\,x])\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$

$$\Bigg(\Big(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2}, -\frac{1}{4}\Big\}, \Big\{\frac{3}{4}\Big\}, \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Big) \Big/ \Big(\sqrt{1 - \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1 + \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(2\,a\,C\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)$$

Problem 1295: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{3/2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 106 leaves, 6 steps):

$$\frac{2\,\left(A\,b+a\,B-b\,C\right)\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{d}+\frac{2\,\left(3\,b\,B+a\,\left(A+3\,C\right)\right)\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),2\right]}{3\,d}+$$

$$\frac{2\,b\,C\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,a\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 1904 leaves):

$$\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$

$$
\begin{aligned}
&\mathrm{i}\, A\, b \operatorname{Cos}[c+d x]^3 \operatorname{Csc}[c]\, (a+b \operatorname{Sec}[c+d x])\, \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \\
&\Bigg(\bigg(2\, e^{2 i d x} \operatorname{Hypergeometric2F1}\Big[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+\mathrm{i} \operatorname{Sin}[c])^2\Big] \\
&\quad \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2\, \mathrm{i} \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)} \\
&\quad \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+\mathrm{i}\, e^{2 i d x} \operatorname{Sin}[2 c]}\bigg) \Big/ \\
&\quad \left(3\, \mathrm{i}\, d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)- \\
&\quad \bigg(2 \operatorname{Hypergeometric2F1}\Big[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+\mathrm{i} \operatorname{Sin}[c])^2\Big] \\
&\quad \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2\, \mathrm{i} \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)} \\
&\quad \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+\mathrm{i}\, e^{2 i d x} \operatorname{Sin}[2 c]}\bigg) \Big/ \\
&\quad \left(-\mathrm{i}\, d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)+ \\
&\frac{1}{(b+a \operatorname{Cos}[c+d x])\, (A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])} \\
&\mathrm{i}\, a\, B \operatorname{Cos}[c+d x]^3 \\
&\operatorname{Csc}[c]\, (a+b \operatorname{Sec}[c+d x]) \\
&\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \\
&\Bigg(\bigg(2\, e^{2 i d x} \operatorname{Hypergeometric2F1}\Big[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+\mathrm{i} \operatorname{Sin}[c])^2\Big] \\
&\quad \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2\, \mathrm{i} \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)} \\
&\quad \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+\mathrm{i}\, e^{2 i d x} \operatorname{Sin}[2 c]}\bigg) \Big/ \\
&\quad \left(3\, \mathrm{i}\, d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)- \\
&\quad \bigg(2 \operatorname{Hypergeometric2F1}\Big[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+\mathrm{i} \operatorname{Sin}[c])^2\Big] \\
&\quad \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2\, \mathrm{i} \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)} \\
&\quad \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+\mathrm{i}\, e^{2 i d x} \operatorname{Sin}[2 c]}\bigg) \Big/ \\
&\quad \left(-\mathrm{i}\, d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)- \\
&\frac{1}{(b+a \operatorname{Cos}[c+d x])\, (A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])} \\
&\mathrm{i}\, b\, C \\
&\operatorname{Cos}[c+d x]^3 \operatorname{Csc}[c] \\
&(a+b \operatorname{Sec}[c+d x]) \\
&\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \\
&\Bigg(\bigg(2\, e^{2 i d x} \operatorname{Hypergeometric2F1}\Big[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+\mathrm{i} \operatorname{Sin}[c])^2\Big] \\
&\quad \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2\, \mathrm{i} \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)} \\
&\quad \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+\mathrm{i}\, e^{2 i d x} \operatorname{Sin}[2 c]}\bigg) \Big/ \\
&\quad \left(3\, \mathrm{i}\, d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-
\end{aligned}
$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$
$$\left(\text{Cos}[c+d\,x]^{7/2}\left(a+b\,\text{Sec}[c+d\,x]\right)\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$
$$\left(-\frac{2\left(A\,b+a\,B-2\,b\,C+A\,b\,\text{Cos}[2\,c]+a\,B\,\text{Cos}[2\,c]\right)\text{Csc}[c]\,\text{Sec}[c]}{d}+\right.$$
$$\left.\left.\frac{4\,a\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{4\,a\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+\frac{4\,b\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{d}\right)\right)\Big/$$
$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$
$$\left(4\,a\,A\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(b+a\,\text{Cos}[c+d\,x]\right)\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,b\,B\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(b+a\,\text{Cos}[c+d\,x]\right)\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,a\,C\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(b+a\,\text{Cos}[c+d\,x]\right)\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)$$

Problem 1296: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \sqrt{\text{Cos}[c+d\,x]}\,\left(a+b\,\text{Sec}[c+d\,x]\right)\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 112 leaves, 6 steps):

$$-\frac{2\left(b\,B-a\,(A-C)\right)\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{d}+\frac{2\left(3\,A\,b+3\,a\,B+b\,C\right)\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{3\,d}+\frac{2\,b\,C\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,(b\,B+a\,C)\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 1909 leaves):

$$\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}\,i\,a\,A\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)-$$
$$\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}\,i\,b\,B\,\text{Cos}[c+d\,x]^3$$
$$\text{Csc}[c]\left(a+b\,\text{Sec}[c+d\,x]\right)$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg)\Bigg/$$

$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg)-\frac{1}{(b+a \text{Cos}[c+d x]) (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$

$$i a C \text{Cos}[c+d x]^3 \text{Csc}[c] (a+b \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg)\Bigg/$$

$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$

$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg)\Bigg/$$

$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg)+$$

$$\Bigg(\text{Cos}[c+d x]^{7/2} (a+b \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\Bigg(-\frac{2 (a A-2 b B-2 a C+a A \text{Cos}[2 c]) \text{Csc}[c] \text{Sec}[c]}{d}+\frac{4 b C \text{Sec}[c] \text{Sec}[c+d x]^2 \text{Sin}[d x]}{3 d}+$$

$$\frac{1}{3 d}4 \text{Sec}[c] \text{Sec}[c+d x] (b C \text{Sin}[c]+3 b B \text{Sin}[d x]+3 a C \text{Sin}[d x])\Bigg)\Bigg)\Bigg/$$

$$((b+a \text{Cos}[c+d x]) (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]))-$$

$$\Bigg(4 A b \text{Cos}[c+d x]^3 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$(a+b \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d (b+a \text{Cos}[c+d x]) (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\Bigg(4 a B \text{Cos}[c+d x]^3 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$(a+b \text{Sec}[c+d x]) \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$

$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\Bigg(4\,b\,C\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$(a+b\,\text{Sec}[c+d\,x])\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)$$

Problem 1300: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{7/2}\,(a+b\,\text{Sec}[c+d\,x])^2\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 4, 202 leaves, 7 steps):

$$\frac{2\,(6\,a\,A\,b+3\,a^2\,B+5\,b^2\,B+10\,a\,b\,C)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+$$

$$\frac{2\,(14\,a\,b\,B+7\,b^2\,(A+3\,C)+a^2\,(5\,A+7\,C))\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{21\,d}+$$

$$\frac{2\,(4\,A\,b^2+14\,a\,b\,B+a^2\,(5\,A+7\,C))\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{21\,d}+$$

$$\frac{2\,a\,(4\,A\,b+7\,a\,B)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{35\,d}+\frac{2\,A\,\sqrt{\text{Cos}[c+d\,x]}\,(b+a\,\text{Cos}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{7\,d}$$

Result (type 5, 2361 leaves):

$$\Bigg(\text{Cos}[c+d\,x]^{9/2}\,(a+b\,\text{Sec}[c+d\,x])^2$$

$$(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,\Bigg(-\frac{4\,(6\,a\,A\,b+3\,a^2\,B+5\,b^2\,B+10\,a\,b\,C)\,\text{Cot}[c]}{5\,d}+$$

$$\frac{(23\,a^2\,A+28\,A\,b^2+56\,a\,b\,B+28\,a^2\,C)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{21\,d}+\frac{2\,a\,(2\,A\,b+a\,B)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,d}+$$

$$\frac{a^2\,A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{7\,d}+\frac{(23\,a^2\,A+28\,A\,b^2+56\,a\,b\,B+28\,a^2\,C)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{21\,d}+$$

$$\frac{2\,a\,(2\,A\,b+a\,B)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,d}+\frac{a^2\,A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{7\,d}\Bigg)\Bigg)\Big/$$

$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(20\,a^2\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(21\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,A\,b^2\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(8\,a\,b\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,a^2\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,b^2\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$
$$\Bigg(12\,a\,A\,b\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]$$
$$\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}$$
$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$
$$\sqrt{1+\mathrm{Tan}[c]^2}\Bigg)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$
$$\left(5\,d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)-$$
$$\Bigg(6\,a^2\,B\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]$$
$$\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}$$
$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(2\,b^2\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\right.$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(4\,a\,b\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)$$

Problem 1301: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{5/2}\,(a+b\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 186 leaves, 7 steps):

$$\frac{2\,\left(10\,a\,b\,B+5\,b^2\,(A-C)+a^2\,(3\,A+5\,C)\right)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+$$
$$\frac{2\,\left(a^2\,B+3\,b^2\,B+2\,a\,b\,(A+3\,C)\right)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+$$
$$\frac{2\,a\,(2\,A\,b+a\,B-6\,b\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}+$$
$$\frac{2\,a^2\,(A-5\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{5\,d}+\frac{2\,C\,(b+a\,\text{Cos}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 3011 leaves):

$$\frac{1}{5\,(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$3\,i\,a^2\,A\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\Bigg)+$$
$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$i\,A\,b^2$$

$$\operatorname{Cos}[c+d x]^4 \operatorname{Csc}[c] \left(a+b \operatorname{Sec}[c+d x]\right)^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right) - \left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\right) +$$

$$\frac{1}{\left(b+a \operatorname{Cos}[c+d x]\right)^2 \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)} 2 i a b B \operatorname{Cos}[c+d x]^4 \operatorname{Csc}[c] \left(a+b \operatorname{Sec}[c+d x]\right)^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right) - \left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\right) +$$

$$\frac{1}{\left(b+a \operatorname{Cos}[c+d x]\right)^2 \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)} i a^2 C \operatorname{Cos}[c+d x]^4 \operatorname{Csc}[c] \left(a+b \operatorname{Sec}[c+d x]\right)^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/$$

$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$

$$i\,b^2\,C\,\text{Cos}[c+d\,x]^4$$

$$\text{Csc}[c]\left(a+b\,\text{Sec}[c+d\,x]\right)^2$$

$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$

$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$

$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\left(\text{Cos}[c+d\,x]^{9/2}\left(a+b\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(-\frac{1}{5\,d}2\left(3\,a^2\,A+5\,A\,b^2+10\,a\,b\,B+5\,a^2\,C-10\,b^2\,C+3\,a^2\,A\,\text{Cos}[2\,c]+5\,A\,b^2\,\text{Cos}[2\,c]+\right.\right.$$

$$\left.10\,a\,b\,B\,\text{Cos}[2\,c]+5\,a^2\,C\,\text{Cos}[2\,c]\right)\text{Csc}[c]\,\text{Sec}[c]+\frac{4\,a\left(2\,A\,b+a\,B\right)\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+$$

$$\frac{2\,a^2\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,d}+\frac{4\,a\left(2\,A\,b+a\,B\right)\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+$$

$$\left.\left.\frac{4\,b^2\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{d}+\frac{2\,a^2\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,d}\right)\right)\Big/$$

$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(8\,a\,A\,b\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,a^2\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,b^2\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(8\,a\,b\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^2\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)$$

Problem 1302: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^{3/2} \left(a+b \,\text{Sec}[c+d x]\right)^2 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 180 leaves, 7 steps):

$$\frac{2 \left(a^2 B-b^2 B+2 a b (A-C)\right) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{d}+\frac{2 \left(6 a b B+b^2 (3 A+C)+a^2 (A+3 C)\right) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{3 d}+\frac{2 b (3 b B+4 a C) \,\text{Sin}[c+d x]}{3 d \sqrt{\text{Cos}[c+d x]}}+\frac{2 a^2 (A-C) \sqrt{\text{Cos}[c+d x]} \,\text{Sin}[c+d x]}{3 d}+\frac{2 C (b+a \,\text{Cos}[c+d x])^2 \text{Sin}[c+d x]}{3 d \,\text{Cos}[c+d x]^{3/2}}$$

Result (type 5, 2779 leaves):

$$\frac{1}{(b+a \,\text{Cos}[c+d x])^2 \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right)} 2 i a A b \,\text{Cos}[c+d x]^4 \,\text{Csc}[c] \left(a+b \,\text{Sec}[c+d x]\right)^2 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \,\text{Cos}[2 c]+i e^{2 i d x} \,\text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-\left(2 \,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \,\text{Cos}[2 c]+i e^{2 i d x} \,\text{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right)+$$

$$\frac{1}{(b+a \,\text{Cos}[c+d x])^2 \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right)} i a^2 B \,\text{Cos}[c+d x]^4 \,\text{Csc}[c] \left(a+b \,\text{Sec}[c+d x]\right)^2 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \,\text{Cos}[2 c]+i e^{2 i d x} \,\text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-\left(2 \,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}\right.$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{(b+a \operatorname{Cos}[c+d x])^{2}(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])}$$

$$i b^{2} B$$

$$\operatorname{Cos}[c+d x]^{4} \operatorname{Csc}[c]$$

$$(a+b \operatorname{Sec}[c+d x])^{2}$$

$$\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^{2}\right)$$

$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4},-e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^{2}\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$

$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4},-e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^{2}\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{(b+a \operatorname{Cos}[c+d x])^{2}(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])}$$

$$2 i a b C$$

$$\operatorname{Cos}[c+d x]^{4} \operatorname{Csc}[c]$$

$$(a+b \operatorname{Sec}[c+d x])^{2}$$

$$\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^{2}\right)$$

$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4},-e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^{2}\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$

$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4},-e^{2 i d x}(\operatorname{Cos}[c]+i \operatorname{Sin}[c])^{2}\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)+$$

$$\Bigg(\operatorname{Cos}[c+d x]^{9/2}(a+b \operatorname{Sec}[c+d x])^{2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^{2}\right)$$

$$\left(-\frac{1}{d}2\left(2\,a\,A\,b+a^2\,B-2\,b^2\,B-4\,a\,b\,C+2\,a\,A\,b\,\mathrm{Cos}[2\,c]+a^2\,B\,\mathrm{Cos}[2\,c]\right)\mathrm{Csc}[c]\,\mathrm{Sec}[c]+\frac{4\,a^2\,A\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{3\,d}+\frac{4\,a^2\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{3\,d}+\frac{4\,b^2\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Sin}[d\,x]}{3\,d}+\frac{1}{3\,d}4\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\left(b^2\,C\,\mathrm{Sin}[c]+3\,b^2\,B\,\mathrm{Sin}[d\,x]+6\,a\,b\,C\,\mathrm{Sin}[d\,x]\right)\right)\Bigg)\Bigg/$$

$$\left(\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\Bigg(4\,a^2\,A\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(3\,d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$

$$\Bigg(4\,A\,b^2\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$

$$\Bigg(8\,a\,b\,B\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$

$$\Bigg(4\,a^2\,C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^2\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\ \sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Big/$$

$$\left(d\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$

$$\Bigg(4\,b^2\,C\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$(a+b\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\ \mathrm{Sin}[c]\ \mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\ \sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Big/$$

$$\left(3\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\right)$$

Problem 1303: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\mathrm{Cos}[c+d\,x]}\,(a+b\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 4, 201 leaves, 7 steps):

$$-\frac{2\,(10\,a\,b\,B-5\,a^2\,(A-C)+b^2\,(5\,A+3\,C))\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+$$

$$\frac{2\,(3\,a^2\,B+b^2\,B+2\,a\,b\,(3\,A+C))\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+\frac{2\,b\,(5\,b\,B+4\,a\,C)\,\mathrm{Sin}[c+d\,x]}{15\,d\,\mathrm{Cos}[c+d\,x]^{3/2}}+$$

$$\frac{2\,(5\,A\,b^2+10\,a\,b\,B+4\,a^2\,C+3\,b^2\,C)\,\mathrm{Sin}[c+d\,x]}{5\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{2\,C\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sin}[c+d\,x]}{5\,d\,\mathrm{Cos}[c+d\,x]^{5/2}}$$

Result (type 5, 3017 leaves):

$$\frac{1}{(b+a\,\mathrm{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])}$$

$$i\,a^2\,A\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Csc}[c]\,(a+b\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)$$

$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]$$

$$\sqrt{e^{-i\,d\,x}\,(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c])}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Big/$$

$$(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c])-$$

$$\Bigg(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]$$

$$\sqrt{e^{-i\,d\,x}\,(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c])}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg) -$$

$$\frac{1}{(b+a \operatorname{Cos}[c+d x])^2(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])}$$

$$i A b^2 \operatorname{Cos}[c+d x]^4 \operatorname{Csc}[c] (a+b \operatorname{Sec}[c+d x])^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$

$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right) -$$

$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg) -$$

$$\frac{1}{(b+a \operatorname{Cos}[c+d x])^2(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])}$$

$$2 i a b B \operatorname{Cos}[c+d x]^4 \operatorname{Csc}[c] (a+b \operatorname{Sec}[c+d x])^2 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$

$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(3 i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right) -$$

$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Bigg/$$

$$\left(-i d\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg) -$$

$$\frac{1}{(b+a \operatorname{Cos}[c+d x])^2(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])}$$

$$i a^2 C \operatorname{Cos}[c+d x]^4$$

$$\text{Csc}[c]\ (a+b\,\text{Sec}[c+d\,x])^2\ (A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\ \Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]\ \sqrt{e^{-i\,d\,x}\,\big(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)}\ \sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\big(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)-\Bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]\ \sqrt{e^{-i\,d\,x}\,\big(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)}\ \sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\big(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)\Bigg)-$$

$$\frac{1}{5\,(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}\ 3\,i\,b^2\,C\ \text{Cos}[c+d\,x]^4\,\text{Csc}[c]\ (a+b\,\text{Sec}[c+d\,x])^2\ (A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\ \Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]\ \sqrt{e^{-i\,d\,x}\,\big(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)}\ \sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\big(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)-\Bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]\ \sqrt{e^{-i\,d\,x}\,\big(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)}\ \sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\big(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\big)\Bigg)+$$

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}\ \text{Cos}[c+d\,x]^{9/2}\ (a+b\,\text{Sec}[c+d\,x])^2\ (A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\ \Bigg(-\frac{1}{5\,d}2\,\big(5\,a^2\,A-10\,A\,b^2-20\,a\,b\,B-10\,a^2\,C-6\,b^2\,C+5\,a^2\,A\,\text{Cos}[2\,c]\big)\,\text{Csc}[c]\,\text{Sec}[c]+\frac{4\,b^2\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\text{Sin}[d\,x]}{5\,d}+\frac{1}{15\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\big(3\,b^2\,C\,\text{Sin}[c]+5\,b^2\,B\,\text{Sin}[d\,x]+10\,a\,b\,C\,\text{Sin}[d\,x]\big)+$$

$$\frac{1}{15\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(5\,b^2\,B\,\text{Sin}[c]+10\,a\,b\,C\,\text{Sin}[c]+15\,A\,b^2\,\text{Sin}[d\,x]+30\,a\,b\,B\,\text{Sin}[d\,x]+15\,a^2\,C\,\text{Sin}[d\,x]+9\,b^2\,C\,\text{Sin}[d\,x]\right)\right)-$$

$$\left(8\,a\,A\,b\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\left(a+b\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,a^2\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\left(a+b\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,b^2\,B\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\left(a+b\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(8\,a\,b\,C\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\left(a+b\,\text{Sec}[c+d\,x]\right)^2\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\right)$$

Problem 1306: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^{9/2}\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 296 leaves, 8 steps):

$$\frac{1}{15\,d}2\,\left(27\,a^2\,b\,B+15\,b^3\,B+9\,a\,b^2\,(3\,A+5\,C)+a^3\,(7\,A+9\,C)\right)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]+\frac{1}{21\,d}2\,\left(5\,a^3\,B+21\,a\,b^2\,B+7\,b^3\,(A+3\,C)+3\,a^2\,b\,(5\,A+7\,C)\right)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]+\frac{1}{63\,d}2\,\left(8\,A\,b^3+15\,a^3\,B+54\,a\,b^2\,B+9\,a^2\,b\,(5\,A+7\,C)\right)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]+\frac{2\,a\,\left(24\,A\,b^2+99\,a\,b\,B+7\,a^2\,(7\,A+9\,C)\right)\,\mathrm{Cos}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{315\,d}+\frac{2\,(2\,A\,b+3\,a\,B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sin}[c+d\,x]}{21\,d}+\frac{2\,A\,\sqrt{\mathrm{Cos}[c+d\,x]}\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Sin}[c+d\,x]}{9\,d}$$

Result (type 5, 3237 leaves):

$$\frac{1}{(b+a\,\mathrm{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])}\mathrm{Cos}[c+d\,x]^{11/2}\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\left(-\frac{1}{15\,d}4\,\left(7\,a^3\,A+27\,a\,A\,b^2+27\,a^2\,b\,B+15\,b^3\,B+9\,a^3\,C+45\,a\,b^2\,C\right)\,\mathrm{Cot}[c]+\frac{1}{21\,d}\left(69\,a^2\,A\,b+28\,A\,b^3+23\,a^3\,B+84\,a\,b^2\,B+84\,a^2\,b\,C\right)\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]+\frac{a\,\left(19\,a^2\,A+54\,A\,b^2+54\,a\,b\,B+18\,a^2\,C\right)\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]}{45\,d}+\frac{a^2\,(3\,A\,b+a\,B)\,\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]}{7\,d}+\frac{a^3\,A\,\mathrm{Cos}[4\,d\,x]\,\mathrm{Sin}[4\,c]}{18\,d}+\frac{1}{21\,d}\left(69\,a^2\,A\,b+28\,A\,b^3+23\,a^3\,B+84\,a\,b^2\,B+84\,a^2\,b\,C\right)\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]+\frac{a\,\left(19\,a^2\,A+54\,A\,b^2+54\,a\,b\,B+18\,a^2\,C\right)\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{45\,d}+\frac{a^2\,(3\,A\,b+a\,B)\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{7\,d}+\frac{a^3\,A\,\mathrm{Cos}[4\,c]\,\mathrm{Sin}[4\,d\,x]}{18\,d}\right)-$$

$$\left(20\,a^2\,A\,b\,\mathrm{Cos}[c+d\,x]^5\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\,\frac{1}{2}\right\},\,\left\{\frac{5}{4}\right\},\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$

$$(a+b\,\mathrm{Sec}[c+d\,x])^3\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$
$$\left(7\,d\,\left(b + a\,\text{Cos}[c + d\,x]\right)^3\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\sqrt{1 + \text{Cot}[c]^2}\right) -$$
$$\left(4\,A\,b^3\,\text{Cos}[c + d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a + b\,\text{Sec}[c + d\,x]\right)^3\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$
$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$
$$\left(3\,d\,\left(b + a\,\text{Cos}[c + d\,x]\right)^3\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\sqrt{1 + \text{Cot}[c]^2}\right) -$$
$$\left(20\,a^3\,B\,\text{Cos}[c + d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a + b\,\text{Sec}[c + d\,x]\right)^3\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$
$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$
$$\left(21\,d\,\left(b + a\,\text{Cos}[c + d\,x]\right)^3\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\sqrt{1 + \text{Cot}[c]^2}\right) -$$
$$\left(4\,a\,b^2\,B\,\text{Cos}[c + d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a + b\,\text{Sec}[c + d\,x]\right)^3\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$
$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$
$$\left(d\,\left(b + a\,\text{Cos}[c + d\,x]\right)^3\,\left(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x]\right)\,\sqrt{1 + \text{Cot}[c]^2}\right) -$$
$$\left(4\,a^2\,b\,C\,\text{Cos}[c + d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a + b\,\text{Sec}[c + d\,x]\right)^3\,\left(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2\right)$$
$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\right) \Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,b^3\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$(a+b\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(14\,a^3\,A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(15\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)-$$

$$\left(18\,a\,A\,b^2\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\left.\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\right/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)-$$

$$\left(18\,a^2\,b\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\left.\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\right/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)-$$

$$\left(2\,b^3\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$\Big(d\,\big(b+a\,\text{Cos}[c+d\,x]\big)^3\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\Big)-$$

$$\Bigg(6\,a^3\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\big(a+b\,\text{Sec}[c+d\,x]\big)^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$\Big(5\,d\,\big(b+a\,\text{Cos}[c+d\,x]\big)^3\,\big(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\big)\Big)-$$

$$\Bigg(6\,a\,b^2\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\big(a+b\,\text{Sec}[c+d\,x]\big)^3\,\big(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\big)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/\left(d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)$$

Problem 1307: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{7/2}\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 277 leaves, 8 steps):

$$\frac{1}{5\,d}2\,\left(3\,a^3\,B+15\,a\,b^2\,B+5\,b^3\,(A-C)+3\,a^2\,b\,(3\,A+5\,C)\right)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]+\frac{1}{21\,d}2\,\left(21\,a^2\,b\,B+21\,b^3\,B+21\,a\,b^2\,(A+3\,C)+a^3\,(5\,A+7\,C)\right)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]+\frac{1}{21\,d}2\,a\,\left(21\,a\,b\,B+6\,b^2\,(3\,A-7\,C)+a^2\,(5\,A+7\,C)\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]+\frac{2\,a^2\,(11\,A\,b+7\,a\,B-35\,b\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{35\,d}+\frac{2\,a\,(A-7\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,(b+a\,\text{Cos}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{7\,d}+\frac{2\,C\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 3915 leaves):

$$\frac{1}{5\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}\,9\,i\,a^2\,A\,b\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,Cos[2\,c]+i\,e^{2\,i\,d\,x}\,Sin[2\,c]}\Bigg)\Bigg/$$

$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,Cos[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,Sin[c]\right)\Bigg)+$$

$$\frac{1}{\left(b+a\,Cos[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x]\right)}$$

$$i\,A\,b^3$$
$$Cos[c+d\,x]^5\,Csc[c]$$
$$\left(a+b\,Sec[c+d\,x]\right)^3$$
$$\left(A+B\,Sec[c+d\,x]+C\,Sec[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,Hypergeometric2F1\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(Cos[c]+i\,Sin[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,Cos[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,Sin[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,Cos[2\,c]+i\,e^{2\,i\,d\,x}\,Sin[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,Cos[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,Sin[c]\right)-$$
$$\Bigg(2\,Hypergeometric2F1\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,\left(Cos[c]+i\,Sin[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,Cos[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,Sin[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,Cos[2\,c]+i\,e^{2\,i\,d\,x}\,Sin[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,Cos[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,Sin[c]\right)\Bigg)+$$

$$\frac{1}{5\,\left(b+a\,Cos[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x]\right)}$$

$$3\,i\,a^3\,B$$
$$Cos[c+d\,x]^5\,Csc[c]$$
$$\left(a+b\,Sec[c+d\,x]\right)^3$$
$$\left(A+B\,Sec[c+d\,x]+C\,Sec[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,Hypergeometric2F1\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(Cos[c]+i\,Sin[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,Cos[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,Sin[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,Cos[2\,c]+i\,e^{2\,i\,d\,x}\,Sin[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,Cos[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,Sin[c]\right)-$$
$$\Bigg(2\,Hypergeometric2F1\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,\left(Cos[c]+i\,Sin[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,Cos[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,Sin[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,Cos[2\,c]+i\,e^{2\,i\,d\,x}\,Sin[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,Cos[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,Sin[c]\right)\Bigg)+$$

$$\frac{1}{\left(b+a\,Cos[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,Cos[c+d\,x]+A\,Cos[2\,c+2\,d\,x]\right)}$$

$$3\,i\,a\,b^2\,B$$

$$\text{Cos}[c+d x]^5 \,\text{Csc}[c] \left(a+b \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \,\text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \,\text{Cos}[2 c]+i e^{2 i d x} \,\text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right) - \left(2 \,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \,\text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \,\text{Cos}[2 c]+i e^{2 i d x} \,\text{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right) +$$

$$\frac{1}{\left(b+a \,\text{Cos}[c+d x]\right)^3 \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right)} 3 i a^2 b C \,\text{Cos}[c+d x]^5 \,\text{Csc}[c] \left(a+b \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \,\text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \,\text{Cos}[2 c]+i e^{2 i d x} \,\text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right) - \left(2 \,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \,\text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \,\text{Cos}[2 c]+i e^{2 i d x} \,\text{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right) -$$

$$\frac{1}{\left(b+a \,\text{Cos}[c+d x]\right)^3 \left(A+2 C+2 B \,\text{Cos}[c+d x]+A \,\text{Cos}[2 c+2 d x]\right)} i b^3 C \,\text{Cos}[c+d x]^5 \,\text{Csc}[c] \left(a+b \,\text{Sec}[c+d x]\right)^3 \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \,\text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}\right.\right.$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Bigg/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Bigg/$$
$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{(b+a \text{Cos}[c+d x])^3 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$
$$\text{Cos}[c+d x]^{11/2}$$
$$(a+b \text{Sec}[c+d x])^3$$
$$\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\Bigg(-\frac{1}{5 d}2 \left(9 a^2 A b+5 A b^3+3 a^3 B+15 a b^2 B+15 a^2 b C-10 b^3 C+9 a^2 A b \text{Cos}[2 c]+5 A b^3 \text{Cos}[2 c]+\right.$$
$$\left.3 a^3 B \text{Cos}[2 c]+15 a b^2 B \text{Cos}[2 c]+15 a^2 b C \text{Cos}[2 c]\right) \text{Csc}[c] \text{Sec}[c]+$$
$$\frac{a \left(23 a^2 A+84 A b^2+84 a b B+28 a^2 C\right) \text{Cos}[d x] \text{Sin}[c]}{21 d}+\frac{2 a^2 (3 A b+a B) \text{Cos}[2 d x] \text{Sin}[2 c]}{5 d}+$$
$$\frac{a^3 A \text{Cos}[3 d x] \text{Sin}[3 c]}{7 d}+\frac{a \left(23 a^2 A+84 A b^2+84 a b B+28 a^2 C\right) \text{Cos}[c] \text{Sin}[d x]}{21 d}+$$
$$\frac{4 b^3 C \text{Sec}[c] \text{Sec}[c+d x] \text{Sin}[d x]}{d}+$$
$$\frac{2 a^2 (3 A b+a B) \text{Cos}[2 c] \text{Sin}[2 d x]}{5 d}+\frac{a^3 A \text{Cos}[3 c] \text{Sin}[3 d x]}{7 d}\Bigg)-$$

$$\Bigg(20 a^3 A \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$(a+b \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Bigg/$$
$$\left(21 d (b+a \text{Cos}[c+d x])^3 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]) \sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\Bigg(4 a A b^2 \text{Cos}[c+d x]^5 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$(a+b \text{Sec}[c+d x])^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,a^2\,b\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,b^3\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,a^3\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(12\,a\,b^2\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)$$

Problem 1308: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{5/2}\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 267 leaves, 8 steps):

$$\frac{1}{5\,d}2\,\left(15\,a^2\,b\,B-5\,b^3\,B+15\,a\,b^2\,(A-C)+a^3\,(3\,A+5\,C)\right)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]+$$
$$\frac{1}{3\,d}2\,\left(a^3\,B+9\,a\,b^2\,B+b^3\,(3\,A+C)+3\,a^2\,b\,(A+3\,C)\right)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]+$$
$$\frac{2\,a\,\left(a^2\,B-6\,b^2\,B+3\,a\,b\,(A-5\,C)\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}+$$
$$\frac{2\,a^2\,(3\,a\,A-15\,b\,B-35\,a\,C)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{15\,d}+$$
$$\frac{2\,(b\,B+2\,a\,C)\,(b+a\,\text{Cos}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,C\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}$$

Result (type 5, 3868 leaves):

$$\frac{1}{5\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$3\,i\,a^3\,A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\right)+$$
$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$3\,i\,a\,A\,b^2$$
$$\text{Cos}[c+d\,x]^5\,\text{Csc}[c]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)^3\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$
$$3\,i\,a^2\,b\,B$$
$$\text{Cos}[c+d\,x]^5\,\text{Csc}[c]$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)-$$

$$\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)^3\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$
$$i\,b^3\,B\,\text{Cos}[c+d\,x]^5$$
$$\text{Csc}[c]\left(a+b\,\text{Sec}[c+d\,x]\right)^3$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}\,i\,a^3\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}\,3\,i\,a\,b^2\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$

$$\text{Cos}[c+d\,x]^{11/2}\left(a+b\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(-\frac{1}{5\,d}2\,\left(3\,a^3\,A+15\,a\,A\,b^2+15\,a^2\,b\,B-10\,b^3\,B+5\,a^3\,C-30\,a\,b^2\,C+3\,a^3\,A\,\text{Cos}[2\,c]+15\,a\,A\,b^2\,\text{Cos}[2\,c]+15\,a^2\,b\,B\,\text{Cos}[2\,c]+5\,a^3\,C\,\text{Cos}[2\,c]\right)\,\text{Csc}[c]\,\text{Sec}[c]+\frac{4\,a^2\,\left(3\,A\,b+a\,B\right)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{2\,a^3\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,d}+\frac{4\,a^2\,\left(3\,A\,b+a\,B\right)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+\frac{4\,b^3\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{3\,d}+\frac{1}{3\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(b^3\,C\,\text{Sin}[c]+3\,b^3\,B\,\text{Sin}[d\,x]+9\,a\,b^2\,C\,\text{Sin}[d\,x]\right)+\frac{2\,a^3\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,d}\right)-$$

$$\left(4\,a^2\,A\,b\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,A\,b^3\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,a^3\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$(a + b\,\text{Sec}[c + d\,x])^3\,(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2)\;\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Bigg/$$

$$\left(3\,d\,(b + a\,\text{Cos}[c + d\,x])^3\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])\,\sqrt{1 + \text{Cot}[c]^2}\right) -$$

$$\Bigg(12\,a\,b^2\,B\,\text{Cos}[c + d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$(a + b\,\text{Sec}[c + d\,x])^3\,(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2)\;\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Bigg/$$

$$\left(d\,(b + a\,\text{Cos}[c + d\,x])^3\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])\,\sqrt{1 + \text{Cot}[c]^2}\right) -$$

$$\Bigg(12\,a^2\,b\,C\,\text{Cos}[c + d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$(a + b\,\text{Sec}[c + d\,x])^3\,(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2)\;\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Bigg/$$

$$\left(d\,(b + a\,\text{Cos}[c + d\,x])^3\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])\,\sqrt{1 + \text{Cot}[c]^2}\right) -$$

$$\Bigg(4\,b^3\,C\,\text{Cos}[c + d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$(a + b\,\text{Sec}[c + d\,x])^3\,(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2)\;\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Bigg/$$

$$\left(3\,d\,(b + a\,\text{Cos}[c + d\,x])^3\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])\,\sqrt{1 + \text{Cot}[c]^2}\right)$$

Problem 1309: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c + d\,x]^{3/2}\,(a + b\,\text{Sec}[c + d\,x])^3\,(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2)\,dx$$

Optimal (type 4, 274 leaves, 8 steps):

$$\frac{1}{5 d} 2 \left(5 a^3 B - 15 a b^2 B + 15 a^2 b (A - C) - b^3 (5 A + 3 C)\right) \text{EllipticE}\left[\frac{1}{2} (c + d x), 2\right] +$$
$$\frac{1}{3 d} 2 \left(9 a^2 b B + b^3 B + 3 a b^2 (3 A + C) + a^3 (A + 3 C)\right) \text{EllipticF}\left[\frac{1}{2} (c + d x), 2\right] +$$
$$\frac{2 b \left(15 A b^2 + 35 a b B + 24 a^2 C + 9 b^2 C\right) \text{Sin}[c + d x]}{15 d \sqrt{\text{Cos}[c + d x]}} +$$
$$\frac{2 a^2 (5 a A - 5 b B - 9 a C) \sqrt{\text{Cos}[c + d x]}\, \text{Sin}[c + d x]}{15 d} +$$
$$\frac{2 (5 b B + 6 a C) (b + a \text{Cos}[c + d x])^2 \text{Sin}[c + d x]}{15 d \text{Cos}[c + d x]^{3/2}} + \frac{2 C (b + a \text{Cos}[c + d x])^3 \text{Sin}[c + d x]}{5 d \text{Cos}[c + d x]^{5/2}}$$

Result (type 5, 3871 leaves):

$$\frac{1}{(b + a \text{Cos}[c + d x])^3 (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])}$$
$$3 i a^2 A b \text{Cos}[c + d x]^5 \text{Csc}[c] (a + b \text{Sec}[c + d x])^3 \left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\text{Cos}[c] + i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1 + e^{2 i d x}\right) \text{Cos}[c] + 2 i \left(-1 + e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2 i d x} \text{Cos}[2 c] + i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d \left(1 + e^{2 i d x}\right) \text{Cos}[c] - 3 d \left(-1 + e^{2 i d x}\right) \text{Sin}[c]\right) -$$
$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\text{Cos}[c] + i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1 + e^{2 i d x}\right) \text{Cos}[c] + 2 i \left(-1 + e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2 i d x} \text{Cos}[2 c] + i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(-i d \left(1 + e^{2 i d x}\right) \text{Cos}[c] + d \left(-1 + e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg) -$$
$$\frac{1}{(b + a \text{Cos}[c + d x])^3 (A + 2 C + 2 B \text{Cos}[c + d x] + A \text{Cos}[2 c + 2 d x])}$$
$$i A b^3$$
$$\text{Cos}[c + d x]^5 \text{Csc}[c]$$
$$(a + b \text{Sec}[c + d x])^3$$
$$\left(A + B \text{Sec}[c + d x] + C \text{Sec}[c + d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\text{Cos}[c] + i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1 + e^{2 i d x}\right) \text{Cos}[c] + 2 i \left(-1 + e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2 i d x} \text{Cos}[2 c] + i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d \left(1 + e^{2 i d x}\right) \text{Cos}[c] - 3 d \left(-1 + e^{2 i d x}\right) \text{Sin}[c]\right) -$$
$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\text{Cos}[c] + i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1 + e^{2 i d x}\right) \text{Cos}[c] + 2 i \left(-1 + e^{2 i d x}\right) \text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$

$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg) +$$

$$\frac{1}{(b+a \text{Cos}[c+d x])^3 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$

$$i a^3 B$$
$$\text{Cos}[c+d x]^5 \text{Csc}[c]$$
$$(a+b \text{Sec}[c+d x])^3$$
$$\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right) -$$
$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg) -$$

$$\frac{1}{(b+a \text{Cos}[c+d x])^3 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$

$$3 i a b^2 B$$
$$\text{Cos}[c+d x]^5 \text{Csc}[c]$$
$$(a+b \text{Sec}[c+d x])^3$$
$$\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right) -$$
$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg) -$$

$$\frac{1}{(b+a \text{Cos}[c+d x])^3 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$

$$3 i a^2 b C$$

$$\text{Cos}[c+d x]^5 \text{Csc}[c] \left(a+b \text{Sec}[c+d x]\right)^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-\left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right)-$$

$$\frac{1}{5 \left(b+a \text{Cos}[c+d x]\right)^3 \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)} 3 i b^3 C \text{Cos}[c+d x]^5 \text{Csc}[c] \left(a+b \text{Sec}[c+d x]\right)^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-\left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right)+$$

$$\frac{1}{\left(b+a \text{Cos}[c+d x]\right)^3 \left(A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x]\right)} \text{Cos}[c+d x]^{11/2} \left(a+b \text{Sec}[c+d x]\right)^3 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \left(-\frac{1}{5 d} 2 \left(15 a^2 A b-10 A b^3+5 a^3 B-30 a b^2 B-30 a^2 b C-6 b^3 C+15 a^2 A b \text{Cos}[2 c]+5 a^3 B \text{Cos}[2 c]\right) \text{Csc}[c] \text{Sec}[c]+\frac{4 a^3 A \text{Cos}[d x] \text{Sin}[c]}{3 d}+\frac{4 a^3 A \text{Cos}[c] \text{Sin}[d x]}{3 d}+\frac{4 b^3 C \text{Sec}[c] \text{Sec}[c+d x]^3 \text{Sin}[d x]}{5 d}+\right.$$

$$\frac{1}{15\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(3\,b^3\,C\,\text{Sin}[c]+5\,b^3\,B\,\text{Sin}[d\,x]+15\,a\,b^2\,C\,\text{Sin}[d\,x]\right)+$$

$$\frac{1}{15\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(5\,b^3\,B\,\text{Sin}[c]+15\,a\,b^2\,C\,\text{Sin}[c]+15\,A\,b^3\,\text{Sin}[d\,x]+45\,a\,b^2\,B\,\text{Sin}[d\,x]+45\,a^2\,b\,C\,\text{Sin}[d\,x]+9\,b^3\,C\,\text{Sin}[d\,x]\right)\Big)-$$

$$\left(4\,a^3\,A\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(12\,a\,A\,b^2\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(12\,a^2\,b\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,b^3\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Big/$$

$$\left(3\,d\,(b + a\,\text{Cos}[c+d\,x])^3\,(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right) -$$

$$\Bigg(4\,a^3\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$(a + b\,\text{Sec}[c+d\,x])^3\,(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2)$$

$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Big/$$

$$\left(d\,(b + a\,\text{Cos}[c+d\,x])^3\,(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right) -$$

$$\Bigg(4\,a\,b^2\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$(a + b\,\text{Sec}[c+d\,x])^3\,(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2)$$

$$\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Big/$$

$$\left(d\,(b + a\,\text{Cos}[c+d\,x])^3\,(A + 2\,C + 2\,B\,\text{Cos}[c+d\,x] + A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)$$

Problem 1310: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \sqrt{\text{Cos}[c+d\,x]}\,(a + b\,\text{Sec}[c+d\,x])^3\,(A + B\,\text{Sec}[c+d\,x] + C\,\text{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 4, 294 leaves, 8 steps):

$$-\frac{1}{5\,d}2\,(15\,a^2\,b\,B + 3\,b^3\,B - 5\,a^3\,(A - C) + 3\,a\,b^2\,(5\,A + 3\,C))\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right] +$$

$$\frac{1}{21\,d}2\,(21\,a^3\,B + 21\,a\,b^2\,B + 21\,a^2\,b\,(3\,A + C) + b^3\,(7\,A + 5\,C))\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right] +$$

$$\frac{2\,b\,(35\,A\,b^2 + 63\,a\,b\,B + 24\,a^2\,C + 25\,b^2\,C)\,\text{Sin}[c+d\,x]}{105\,d\,\text{Cos}[c+d\,x]^{3/2}} +$$

$$\frac{2\,(98\,a^2\,b\,B + 21\,b^3\,B + 24\,a^3\,C + 21\,a\,b^2\,(5\,A + 3\,C))\,\text{Sin}[c+d\,x]}{35\,d\,\sqrt{\text{Cos}[c+d\,x]}} +$$

$$\frac{2\,(7\,b\,B + 6\,a\,C)\,(b + a\,\text{Cos}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{35\,d\,\text{Cos}[c+d\,x]^{5/2}} + \frac{2\,C\,(b + a\,\text{Cos}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{7\,d\,\text{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 3933 leaves) :

$$\frac{1}{(b + a\,\text{Cos}[c + d\,x])^3\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])}\,\mathrm{i}\,a^3\,A\,\text{Cos}[c + d\,x]^5\,\text{Csc}[c]\,(a + b\,\text{Sec}[c + d\,x])^3\,(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2)$$
$$\Bigg(\bigg(2\,e^{2\,\mathrm{i}\,d\,x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c] + \mathrm{i}\,\text{Sin}[c])^2\Big]$$
$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c] + 2\,\mathrm{i}\,(-1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c] + \mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\bigg)\Big/$$
$$\left(3\,\mathrm{i}\,d\,(1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c] - 3\,d\,(-1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right) -$$
$$\bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c] + \mathrm{i}\,\text{Sin}[c])^2\Big]$$
$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c] + 2\,\mathrm{i}\,(-1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c] + \mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\bigg)\Big/$$
$$\left(-\mathrm{i}\,d\,(1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c] + d\,(-1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)\Bigg) -$$

$$\frac{1}{(b + a\,\text{Cos}[c + d\,x])^3\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])}\,3\,\mathrm{i}\,a\,A\,b^2$$
$$\text{Cos}[c + d\,x]^5\,\text{Csc}[c]$$
$$(a + b\,\text{Sec}[c + d\,x])^3$$
$$(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2)$$
$$\Bigg(\bigg(2\,e^{2\,\mathrm{i}\,d\,x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c] + \mathrm{i}\,\text{Sin}[c])^2\Big]$$
$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c] + 2\,\mathrm{i}\,(-1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c] + \mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\bigg)\Big/$$
$$\left(3\,\mathrm{i}\,d\,(1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c] - 3\,d\,(-1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right) -$$
$$\bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c] + \mathrm{i}\,\text{Sin}[c])^2\Big]$$
$$\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c] + 2\,\mathrm{i}\,(-1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c] + \mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\bigg)\Big/$$
$$\left(-\mathrm{i}\,d\,(1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c] + d\,(-1 + e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)\Bigg) -$$

$$\frac{1}{(b + a\,\text{Cos}[c + d\,x])^3\,(A + 2\,C + 2\,B\,\text{Cos}[c + d\,x] + A\,\text{Cos}[2\,c + 2\,d\,x])}\,3\,\mathrm{i}\,a^2\,b\,B$$
$$\text{Cos}[c + d\,x]^5\,\text{Csc}[c]$$
$$(a + b\,\text{Sec}[c + d\,x])^3$$
$$(A + B\,\text{Sec}[c + d\,x] + C\,\text{Sec}[c + d\,x]^2)$$
$$\Bigg(\bigg(2\,e^{2\,\mathrm{i}\,d\,x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c] + \mathrm{i}\,\text{Sin}[c])^2\Big]$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\operatorname{Cos}[2c]+i e^{2 i d x}\operatorname{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\operatorname{Cos}[c]+i\operatorname{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\operatorname{Cos}[2c]+i e^{2 i d x}\operatorname{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(-i d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)\Bigg)-$$
$$\frac{1}{5\left(b+a\operatorname{Cos}[c+d x]\right)^3\left(A+2C+2B\operatorname{Cos}[c+d x]+A\operatorname{Cos}[2c+2d x]\right)}$$
$$3 i b^3 B\operatorname{Cos}[c+d x]^5$$
$$\operatorname{Csc}[c]\left(a+b\operatorname{Sec}[c+d x]\right)^3$$
$$\left(A+B\operatorname{Sec}[c+d x]+C\operatorname{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\operatorname{Cos}[c]+i\operatorname{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\operatorname{Cos}[2c]+i e^{2 i d x}\operatorname{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\operatorname{Cos}[c]+i\operatorname{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\operatorname{Cos}[2c]+i e^{2 i d x}\operatorname{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(-i d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)\Bigg)-$$
$$\frac{1}{\left(b+a\operatorname{Cos}[c+d x]\right)^3\left(A+2C+2B\operatorname{Cos}[c+d x]+A\operatorname{Cos}[2c+2d x]\right)}$$
$$i a^3 C\operatorname{Cos}[c+d x]^5$$
$$\operatorname{Csc}[c]\left(a+b\operatorname{Sec}[c+d x]\right)^3$$
$$\left(A+B\operatorname{Sec}[c+d x]+C\operatorname{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\left(\operatorname{Cos}[c]+i\operatorname{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x}\operatorname{Cos}[2c]+i e^{2 i d x}\operatorname{Sin}[2c]}\Bigg)\Bigg/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\operatorname{Cos}[c]+i\operatorname{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\,\Big)\Big/$$

$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Big)-$$

$$\frac{1}{5\left(b+a\,\text{Cos}[c+d\,x]\right)^3\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$

$$9\,i\,a\,b^2\,C$$
$$\text{Cos}[c+d\,x]^5\,\text{Csc}[c]$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\,\Bigg)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\,\Bigg)\Big/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)^3\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$

$$\text{Cos}[c+d\,x]^{11/2}$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\Bigg(-\frac{1}{5\,d}2\left(5\,a^3\,A-30\,a\,A\,b^2-30\,a^2\,b\,B-6\,b^3\,B-10\,a^3\,C-18\,a\,b^2\,C+5\,a^3\,A\,\text{Cos}[2\,c]\right)\text{Csc}[c]\,\text{Sec}[c]+$$
$$\frac{4\,b^3\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^4\,\text{Sin}[d\,x]}{7\,d}+\frac{1}{35\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3$$
$$\left(5\,b^3\,C\,\text{Sin}[c]+7\,b^3\,B\,\text{Sin}[d\,x]+21\,a\,b^2\,C\,\text{Sin}[d\,x]\right)+\frac{1}{105\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]$$
$$\big(35\,A\,b^3\,\text{Sin}[c]+105\,a\,b^2\,B\,\text{Sin}[c]+105\,a^2\,b\,C\,\text{Sin}[c]+25\,b^3\,C\,\text{Sin}[c]+315\,a\,A\,b^2\,\text{Sin}[d\,x]+$$
$$315\,a^2\,b\,B\,\text{Sin}[d\,x]+63\,b^3\,B\,\text{Sin}[d\,x]+105\,a^3\,C\,\text{Sin}[d\,x]+189\,a\,b^2\,C\,\text{Sin}[d\,x]\big)+$$
$$\frac{1}{105\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\big(21\,b^3\,B\,\text{Sin}[c]+63\,a\,b^2\,C\,\text{Sin}[c]+35\,A\,b^3\,\text{Sin}[d\,x]+$$
$$105\,a\,b^2\,B\,\text{Sin}[d\,x]+105\,a^2\,b\,C\,\text{Sin}[d\,x]+25\,b^3\,C\,\text{Sin}[d\,x]\big)\Bigg)-$$

$$\Bigg(12\,a^2\,A\,b\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^3\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,A\,b^3\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,a^3\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,a\,b^2\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,a^2\,b\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\left(d\ (b+a\,\text{Cos}[c+d\,x])^3\ (A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\ \sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\Bigg(20\,b^3\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$(a+b\,\text{Sec}[c+d\,x])^3\ (A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\ \sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\left(21\,d\ (b+a\,\text{Cos}[c+d\,x])^3\ (A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\ \sqrt{1+\text{Cot}[c]^2}\right)$$

Problem 1311: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+b\,\text{Sec}[c+d\,x])^3\ (A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 357 leaves, 9 steps):

$$-\frac{1}{15\,d}2\,\left(15\,a^3\,B+27\,a\,b^2\,B+9\,a^2\,b\,(5\,A+3\,C)+b^3\,(9\,A+7\,C)\right)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]+$$

$$\frac{1}{21\,d}2\,\left(21\,a^2\,b\,B+5\,b^3\,B+7\,a^3\,(3\,A+C)+3\,a\,b^2\,(7\,A+5\,C)\right)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]+$$

$$\frac{2\,b\,\left(63\,A\,b^2+99\,a\,b\,B+24\,a^2\,C+49\,b^2\,C\right)\,\text{Sin}[c+d\,x]}{315\,d\,\text{Cos}[c+d\,x]^{5/2}}+$$

$$\frac{2\,\left(54\,a^2\,b\,B+15\,b^3\,B+8\,a^3\,C+9\,a\,b^2\,(7\,A+5\,C)\right)\,\text{Sin}[c+d\,x]}{63\,d\,\text{Cos}[c+d\,x]^{3/2}}+$$

$$\frac{2\,\left(15\,a^3\,B+27\,a\,b^2\,B+9\,a^2\,b\,(5\,A+3\,C)+b^3\,(9\,A+7\,C)\right)\,\text{Sin}[c+d\,x]}{15\,d\,\sqrt{\text{Cos}[c+d\,x]}}+$$

$$\frac{2\,(3\,b\,B+2\,a\,C)\,(b+a\,\text{Cos}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{21\,d\,\text{Cos}[c+d\,x]^{7/2}}+\frac{2\,C\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{9\,d\,\text{Cos}[c+d\,x]^{9/2}}$$

Result (type 5, 3345 leaves):

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^3\ (A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$

$$\text{Cos}[c+d\,x]^{11/2}\ (a+b\,\text{Sec}[c+d\,x])^3\ (A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)$$

$$\Bigg(\frac{1}{15\,d}4\,\left(45\,a^2\,A\,b+9\,A\,b^3+15\,a^3\,B+27\,a\,b^2\,B+27\,a^2\,b\,C+7\,b^3\,C\right)\,\text{Csc}[c]\ \text{Sec}[c]+$$

$$\frac{4\,b^3\,C\,\text{Sec}[c]\ \text{Sec}[c+d\,x]^5\,\text{Sin}[d\,x]}{9\,d}+\frac{1}{63\,d}4\,\text{Sec}[c]\ \text{Sec}[c+d\,x]^4$$

$$\left(7 b^3 C \operatorname{Sin}[c] + 9 b^3 B \operatorname{Sin}[d x] + 27 a b^2 C \operatorname{Sin}[d x]\right) + \frac{1}{315 d} 4 \operatorname{Sec}[c] \operatorname{Sec}[c + d x]^2$$
$$\left(63 A b^3 \operatorname{Sin}[c] + 189 a b^2 B \operatorname{Sin}[c] + 189 a^2 b C \operatorname{Sin}[c] + 49 b^3 C \operatorname{Sin}[c] + 315 a A b^2 \operatorname{Sin}[d x] + 315 a^2 b B \operatorname{Sin}[d x] + 75 b^3 B \operatorname{Sin}[d x] + 105 a^3 C \operatorname{Sin}[d x] + 225 a b^2 C \operatorname{Sin}[d x]\right) +$$
$$\frac{1}{315 d} 4 \operatorname{Sec}[c] \operatorname{Sec}[c + d x]^3 \left(45 b^3 B \operatorname{Sin}[c] + 135 a b^2 C \operatorname{Sin}[c] + 63 A b^3 \operatorname{Sin}[d x] + 189 a b^2 B \operatorname{Sin}[d x] + 189 a^2 b C \operatorname{Sin}[d x] + 49 b^3 C \operatorname{Sin}[d x]\right) + \frac{1}{105 d}$$
$$4 \operatorname{Sec}[c] \operatorname{Sec}[c + d x] \left(105 a A b^2 \operatorname{Sin}[c] + 105 a^2 b B \operatorname{Sin}[c] + 25 b^3 B \operatorname{Sin}[c] + 35 a^3 C \operatorname{Sin}[c] + 75 a b^2 C \operatorname{Sin}[c] + 315 a^2 A b \operatorname{Sin}[d x] + 63 A b^3 \operatorname{Sin}[d x] + 105 a^3 B \operatorname{Sin}[d x] + 189 a b^2 B \operatorname{Sin}[d x] + 189 a^2 b C \operatorname{Sin}[d x] + 49 b^3 C \operatorname{Sin}[d x]\right)\Bigg) -$$

$$\Bigg(4 a^3 A \operatorname{Cos}[c + d x]^5 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]$$
$$\left(a + b \operatorname{Sec}[c + d x]\right)^3 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) \operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\Bigg) \Bigg/$$
$$\left(d \left(b + a \operatorname{Cos}[c + d x]\right)^3 \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right) \sqrt{1 + \operatorname{Cot}[c]^2}\right) -$$

$$\Bigg(4 a A b^2 \operatorname{Cos}[c + d x]^5 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]$$
$$\left(a + b \operatorname{Sec}[c + d x]\right)^3 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) \operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\Bigg) \Bigg/$$
$$\left(d \left(b + a \operatorname{Cos}[c + d x]\right)^3 \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right) \sqrt{1 + \operatorname{Cot}[c]^2}\right) -$$

$$\Bigg(4 a^2 b B \operatorname{Cos}[c + d x]^5 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]$$
$$\left(a + b \operatorname{Sec}[c + d x]\right)^3 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) \operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\Bigg) \Bigg/$$
$$\left(d \left(b + a \operatorname{Cos}[c + d x]\right)^3 \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right) \sqrt{1 + \operatorname{Cot}[c]^2}\right) -$$

$$\Bigg(20 b^3 B \operatorname{Cos}[c + d x]^5 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]$$

$$\left.(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(21\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,a^3\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\left.(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(20\,a\,b^2\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\left.(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(7\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)+$$

$$\left(6\,a^2\,A\,b\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Bigg(6\,A\,b^3\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Bigg(2\,a^3\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Bigg(18\,a\,b^2\,B\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$

$$\left(5\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\Bigg(18\,a^2\,b\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{4}\Big\},\Big\{\frac{3}{4}\Big\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\Big]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg) - \frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg) \Big/$$

$$\left(5\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$

$$\Bigg(14\,b^3\,C\,\text{Cos}[c+d\,x]^5\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^3\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg) - \frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}} + \frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg) \Big/$$

$$\left(15\,d\,(b+a\,\text{Cos}[c+d\,x])^3\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)$$

Problem 1313: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{9/2}\,(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 377 leaves, 9 steps):

$$\frac{1}{15\,d}2\left(36 a^3 b B+60 a b^3 B+15 b^4 (A-C)+18 a^2 b^2 (3A+5C)+a^4 (7A+9C)\right)\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]+\frac{1}{21\,d}2\left(5 a^4 B+42 a^2 b^2 B+21 b^4 B+28 a b^3 (A+3C)+4 a^3 b (5A+7C)\right)\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]+\frac{1}{63\,d}2 a\left(15 a^3 B+117 a b^2 B+2 b^3 (31A-63C)+12 a^2 b (5A+7C)\right)\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]+\frac{1}{315\,d}2 a^2\left(162 a b B+3 b^2 (41A-105C)+7 a^2 (7A+9C)\right)\text{Cos}[c+d x]^{3/2}\text{Sin}[c+d x]+\frac{1}{21\,d}2 a (5 A b+3 a B-21 b C)\sqrt{\text{Cos}[c+d x]}\,(b+a\,\text{Cos}[c+d x])^2\text{Sin}[c+d x]+\frac{2 a (A-9C)\sqrt{\text{Cos}[c+d x]}\,(b+a\,\text{Cos}[c+d x])^3\text{Sin}[c+d x]}{9\,d}+\frac{2 C (b+a\,\text{Cos}[c+d x])^4\text{Sin}[c+d x]}{d\sqrt{\text{Cos}[c+d x]}}$$

Result (type 5, 4114 leaves) :

$$\frac{1}{(b+a\,\text{Cos}[c+d x])^4 (A+2C+2B\,\text{Cos}[c+d x]+A\,\text{Cos}[2c+2d x])}\text{Cos}[c+d x]^{13/2}(a+b\,\text{Sec}[c+d x])^4\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)\left(-\frac{1}{15\,d}2\left(7 a^4 A+54 a^2 A b^2+15 A b^4+36 a^3 b B+60 a b^3 B+9 a^4 C+90 a^2 b^2 C-30 b^4 C+7 a^4 A\,\text{Cos}[2c]+54 a^2 A b^2\text{Cos}[2c]+15 A b^4\text{Cos}[2c]+36 a^3 b B\,\text{Cos}[2c]+60 a b^3 B\,\text{Cos}[2c]+9 a^4 C\,\text{Cos}[2c]+90 a^2 b^2 C\,\text{Cos}[2c]\right)\text{Csc}[c]\,\text{Sec}[c]+\frac{1}{21\,d}a\left(92 a^2 A b+112 A b^3+23 a^3 B+168 a b^2 B+112 a^2 b C\right)\text{Cos}[d x]\,\text{Sin}[c]+\frac{a^2\left(19 a^2 A+108 A b^2+72 a b B+18 a^2 C\right)\text{Cos}[2 d x]\,\text{Sin}[2c]}{45\,d}+\frac{a^3 (4 A b+a B)\text{Cos}[3 d x]\,\text{Sin}[3c]}{7\,d}+\frac{a^4 A\,\text{Cos}[4 d x]\,\text{Sin}[4c]}{18\,d}+\frac{1}{21\,d}a\left(92 a^2 A b+112 A b^3+23 a^3 B+168 a b^2 B+112 a^2 b C\right)\text{Cos}[c]\,\text{Sin}[d x]+\frac{4 b^4 C\,\text{Sec}[c]\,\text{Sec}[c+d x]\,\text{Sin}[d x]}{d}+\frac{a^2\left(19 a^2 A+108 A b^2+72 a b B+18 a^2 C\right)\text{Cos}[2c]\,\text{Sin}[2 d x]}{45\,d}+\frac{a^3 (4 A b+a B)\text{Cos}[3c]\,\text{Sin}[3 d x]}{7\,d}+\frac{a^4 A\,\text{Cos}[4c]\,\text{Sin}[4 d x]}{18\,d}\right)-$$

$$\left(80 a^3 A b\,\text{Cos}[c+d x]^6\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\frac{(a+b\,\text{Sec}[c+d x])^4\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}}\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(21\, d\, (b + a \operatorname{Cos}[c + d x])^4 \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right) \sqrt{1 + \operatorname{Cot}[c]^2}\right) -$$

$$\left(16\, a\, A\, b^3 \operatorname{Cos}[c + d x]^6 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$

$$(a + b \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)$$
$$\operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right) \Big/$$

$$\left(3\, d\, (b + a \operatorname{Cos}[c + d x])^4 \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right) \sqrt{1 + \operatorname{Cot}[c]^2}\right) -$$

$$\left(20\, a^4\, B \operatorname{Cos}[c + d x]^6 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$

$$(a + b \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)$$
$$\operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right) \Big/$$

$$\left(21\, d\, (b + a \operatorname{Cos}[c + d x])^4 \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right) \sqrt{1 + \operatorname{Cot}[c]^2}\right) -$$

$$\left(8\, a^2\, b^2\, B \operatorname{Cos}[c + d x]^6 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$

$$(a + b \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)$$
$$\operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right) \Big/$$

$$\left(d\, (b + a \operatorname{Cos}[c + d x])^4 \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right) \sqrt{1 + \operatorname{Cot}[c]^2}\right) -$$

$$\left(4\, b^4\, B \operatorname{Cos}[c + d x]^6 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$

$$(a + b \operatorname{Sec}[c + d x])^4 \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)$$
$$\operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]} \sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right) \Big/$$

$$\left(d\, (b + a \operatorname{Cos}[c + d x])^4 \left(A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]\right) \sqrt{1 + \operatorname{Cot}[c]^2}\right) -$$

$$\left(16\, a^3\, b\, C \operatorname{Cos}[c + d x]^6 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\\ \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\\ \sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(3\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\Bigg(16\,a\,b^3\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\\ \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\\ \sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\left(d\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\Bigg(14\,a^4\,A\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\left(a+b\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]$$

$$\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\sqrt{1+\text{Tan}[c]^2}\Bigg)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)\Bigg)\Bigg/$$

$$\left(15\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\Bigg(36\,a^2\,A\,b^2\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\left(a+b\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(2\,A\,b^4\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)-$$

$$\left(24\,a^3\,b\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)-$$

$$\left(8\,a\,b^3\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)-$$

$$\left(6\,a^4\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)-$$

$$\left(12\,a^2\,b^2\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)+$$

$$\left(2\,b^4\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$
$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\right)$$

Problem 1314: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{7/2}\,(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 371 leaves, 9 steps):

$$\frac{1}{5\,d}2\,\left(3\,a^4\,B+30\,a^2\,b^2\,B-5\,b^4\,B+20\,a\,b^3\,(A-C)+4\,a^3\,b\,(3\,A+5\,C)\right)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]+\frac{1}{21\,d}$$
$$2\,\left(28\,a^3\,b\,B+84\,a\,b^3\,B+7\,b^4\,(3\,A+C)+42\,a^2\,b^2\,(A+3\,C)+a^4\,(5\,A+7\,C)\right)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]+$$
$$\frac{1}{21\,d}2\,a\,\left(28\,a^2\,b\,B-42\,b^3\,B+3\,a\,b^2\,(13\,A-49\,C)+a^3\,(5\,A+7\,C)\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]+$$
$$\frac{1}{105\,d}2\,a^2\,\left(54\,a\,A\,b+21\,a^2\,B-105\,b^2\,B-350\,a\,b\,C\right)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]+$$
$$\frac{1}{7\,d}2\,a\,(a\,A-7\,b\,B-21\,a\,C)\,\sqrt{\text{Cos}[c+d\,x]}\,(b+a\,\text{Cos}[c+d\,x])^2\,\text{Sin}[c+d\,x]+$$
$$\frac{2\,(3\,b\,B+8\,a\,C)\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,C\,(b+a\,\text{Cos}[c+d\,x])^4\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}$$

Result (type 5, 4776 leaves):

$$\frac{1}{5\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$12\,i\,a^3\,A\,b\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg)+$$
$$\frac{1}{(b+a \text{Cos}[c+d x])^4 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$
$$4 i a A b^3$$
$$\text{Cos}[c+d x]^6 \text{Csc}[c]$$
$$(a+b \text{Sec}[c+d x])^4$$
$$\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Bigg)+$$
$$\frac{1}{5 (b+a \text{Cos}[c+d x])^4 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$
$$3 i a^4 B$$
$$\text{Cos}[c+d x]^6 \text{Csc}[c]$$
$$(a+b \text{Sec}[c+d x])^4$$
$$\left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\Bigg(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$

$$\left(-i d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{(b+a \operatorname{Cos}[c+d x])^4 (A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])}$$

$$6 i a^2 b^2 B$$
$$\operatorname{Cos}[c+d x]^6 \operatorname{Csc}[c]$$
$$(a+b \operatorname{Sec}[c+d x])^4$$
$$\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\Big]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$
$$\Bigg(2 \text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\Big]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$
$$\left(-i d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{(b+a \operatorname{Cos}[c+d x])^4 (A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])}$$

$$i b^4 B \operatorname{Cos}[c+d x]^6$$
$$\operatorname{Csc}[c] (a+b \operatorname{Sec}[c+d x])^4$$
$$\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)$$
$$\Bigg(\Bigg(2 e^{2 i d x} \text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\Big]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$
$$\Bigg(2 \text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\Big]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i e^{2 i d x} \operatorname{Sin}[2 c]}\Bigg) \Big/$$
$$\left(-i d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{(b+a \operatorname{Cos}[c+d x])^4 (A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])}$$

$$4 i a^3 b C$$
$$\operatorname{Cos}[c+d x]^6 \operatorname{Csc}[c]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)-$$

$$\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$

$$4\,i\,a\,b^3\,C$$
$$\text{Cos}[c+d\,x]^6\,\text{Csc}[c]$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)}$$

$$\text{Cos}[c+d\,x]^{13/2}$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(-\frac{1}{5\,d}2\left(12\,a^3\,A\,b+20\,a\,A\,b^3+3\,a^4\,B+30\,a^2\,b^2\,B-10\,b^4\,B+20\,a^3\,b\,C-40\,a\,b^3\,C+12\,a^3\,A\,b\,\text{Cos}[2\,c]+\right.\right.$$
$$\left.20\,a\,A\,b^3\,\text{Cos}[2\,c]+3\,a^4\,B\,\text{Cos}[2\,c]+30\,a^2\,b^2\,B\,\text{Cos}[2\,c]+20\,a^3\,b\,C\,\text{Cos}[2\,c]\right)$$
$$\text{Csc}[c]\,\text{Sec}[c]+\frac{a^2\left(23\,a^2\,A+168\,A\,b^2+112\,a\,b\,B+28\,a^2\,C\right)\text{Cos}[d\,x]\,\text{Sin}[c]}{21\,d}+$$

$$\frac{2 a^3 (4 A b + a B) \operatorname{Cos}[2 d x] \operatorname{Sin}[2 c]}{5 d} + \frac{a^4 A \operatorname{Cos}[3 d x] \operatorname{Sin}[3 c]}{7 d} +$$
$$\frac{a^2 (23 a^2 A + 168 A b^2 + 112 a b B + 28 a^2 C) \operatorname{Cos}[c] \operatorname{Sin}[d x]}{21 d} +$$
$$\frac{4 b^4 C \operatorname{Sec}[c] \operatorname{Sec}[c + d x]^2 \operatorname{Sin}[d x]}{3 d} + \frac{1}{3 d}$$
$$4 \operatorname{Sec}[c] \operatorname{Sec}[c + d x] (b^4 C \operatorname{Sin}[c] + 3 b^4 B \operatorname{Sin}[d x] + 12 a b^3 C \operatorname{Sin}[d x]) +$$
$$\left.\frac{2 a^3 (4 A b + a B) \operatorname{Cos}[2 c] \operatorname{Sin}[2 d x]}{5 d} + \frac{a^4 A \operatorname{Cos}[3 c] \operatorname{Sin}[3 d x]}{7 d}\right) -$$

$$\left(20 a^4 A \operatorname{Cos}[c + d x]^6 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$
$$(a + b \operatorname{Sec}[c + d x])^4 (A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2)$$
$$\operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right) \Big/$$
$$\left(21 d (b + a \operatorname{Cos}[c + d x])^4 (A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]) \sqrt{1 + \operatorname{Cot}[c]^2}\right) -$$

$$\left(8 a^2 A b^2 \operatorname{Cos}[c + d x]^6 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$
$$(a + b \operatorname{Sec}[c + d x])^4 (A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2)$$
$$\operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right) \Big/$$
$$\left(d (b + a \operatorname{Cos}[c + d x])^4 (A + 2 C + 2 B \operatorname{Cos}[c + d x] + A \operatorname{Cos}[2 c + 2 d x]) \sqrt{1 + \operatorname{Cot}[c]^2}\right) -$$

$$\left(4 A b^4 \operatorname{Cos}[c + d x]^6 \operatorname{Csc}[c] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$
$$(a + b \operatorname{Sec}[c + d x])^4 (A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2)$$
$$\operatorname{Sec}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1 - \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1 + \operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{1 + \operatorname{Sin}[d x - \operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right) \Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(16\,a^3\,b\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(16\,a\,b^3\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,a^4\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(24\,a^2\,b^2\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,b^4\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^4\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\right)$$

Problem 1315: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^{5/2}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^4\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 4, 388 leaves, 9 steps):

$$\frac{1}{5\,d}2\left(20\,a^3\,b\,B-20\,a\,b^3\,B+30\,a^2\,b^2\,(A-C)-b^4\,(5\,A+3\,C)+a^4\,(3\,A+5\,C)\right)\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]+$$
$$\frac{1}{3\,d}2\left(a^4\,B+18\,a^2\,b^2\,B+b^4\,B+4\,a\,b^3\,(3\,A+C)+4\,a^3\,b\,(A+3\,C)\right)\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]+$$
$$\frac{1}{15\,d}2\,a\left(5\,a^3\,B-105\,a\,b^2\,B+4\,a^2\,b\,(5\,A-33\,C)-6\,b^3\,(5\,A+3\,C)\right)\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]-$$
$$\frac{1}{15\,d}2\,a^2\left(50\,a\,b\,B-a^2\,(3\,A-59\,C)+3\,b^2\,(5\,A+3\,C)\right)\mathrm{Cos}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]+$$
$$\frac{2\left(5\,A\,b^2+15\,a\,b\,B+16\,a^2\,C+3\,b^2\,C\right)\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\mathrm{Sin}[c+d\,x]}{5\,d\sqrt{\mathrm{Cos}[c+d\,x]}}+$$
$$\frac{2\,(5\,b\,B+8\,a\,C)\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^3\mathrm{Sin}[c+d\,x]}{15\,d\,\mathrm{Cos}[c+d\,x]^{3/2}}+\frac{2\,C\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^4\mathrm{Sin}[c+d\,x]}{5\,d\,\mathrm{Cos}[c+d\,x]^{5/2}}$$

Result (type 5, 4960 leaves):

$$\frac{1}{5\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)}$$
$$3\,i\,a^4\,A\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^4\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\left(\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)\right)+$$

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}6\,i\,a^2\,A\,b^2\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-\Bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}i\,A\,b^4\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-\Bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Big/\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}4\,i\,a^3\,b\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)$$

$$\left(\left(2\, e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\text{Cos}[c] + i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c] + 2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c] + i\, e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c] - 3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right) - \left(2 \,\text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\text{Cos}[c] + i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c] + 2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c] + i\, e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c] + d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right) -$$

$$\frac{1}{(b + a\,\text{Cos}[c + d x])^4 \,(A + 2 C + 2 B\,\text{Cos}[c + d x] + A\,\text{Cos}[2 c + 2 d x])} 4 i a b^3 B \,\text{Cos}[c + d x]^6 \,\text{Csc}[c] \,(a + b\,\text{Sec}[c + d x])^4 \left(A + B\,\text{Sec}[c + d x] + C\,\text{Sec}[c + d x]^2\right)$$

$$\left(\left(2\, e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\text{Cos}[c] + i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c] + 2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c] + i\, e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c] - 3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right) - \left(2 \,\text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\text{Cos}[c] + i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c] + 2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c] + i\, e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c] + d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right) +$$

$$\frac{1}{(b + a\,\text{Cos}[c + d x])^4 \,(A + 2 C + 2 B\,\text{Cos}[c + d x] + A\,\text{Cos}[2 c + 2 d x])} i a^4 C \,\text{Cos}[c + d x]^6 \,\text{Csc}[c] \,(a + b\,\text{Sec}[c + d x])^4 \left(A + B\,\text{Sec}[c + d x] + C\,\text{Sec}[c + d x]^2\right)$$

$$\left(\left(2\, e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\text{Cos}[c] + i \,\text{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c] + 2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c] + i\, e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c] - 3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right) -$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)-$$

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$6\,i\,a^2\,b^2\,C$$
$$\text{Cos}[c+d\,x]^6\,\text{Csc}[c]$$
$$(a+b\,\text{Sec}[c+d\,x])^4$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)-$$

$$\frac{1}{5\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$3\,i\,b^4\,C$$
$$\text{Cos}[c+d\,x]^6\,\text{Csc}[c]$$
$$(a+b\,\text{Sec}[c+d\,x])^4$$
$$\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$

$$\text{Cos}[c+d\,x]^{13/2}\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,\Bigg(-\frac{1}{5\,d}2\,\big(3\,a^4\,A+30\,a^2\,A\,b^2-10\,A\,b^4+20\,a^3\,b\,B-40\,a\,b^3\,B+5\,a^4\,C-60\,a^2\,b^2\,C-6\,b^4\,C+3\,a^4\,A\,\text{Cos}[2\,c]+30\,a^2\,A\,b^2\,\text{Cos}[2\,c]+20\,a^3\,b\,B\,\text{Cos}[2\,c]+5\,a^4\,C\,\text{Cos}[2\,c]\big)\,\text{Csc}[c]\,\text{Sec}[c]+\frac{4\,a^3\,(4\,A\,b+a\,B)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{2\,a^4\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{5\,d}+\frac{4\,a^3\,(4\,A\,b+a\,B)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+\frac{4\,b^4\,C\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\text{Sin}[d\,x]}{5\,d}+\frac{1}{15\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\big(3\,b^4\,C\,\text{Sin}[c]+5\,b^4\,B\,\text{Sin}[d\,x]+20\,a\,b^3\,C\,\text{Sin}[d\,x]\big)+\frac{1}{15\,d}4\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\big(5\,b^4\,B\,\text{Sin}[c]+20\,a\,b^3\,C\,\text{Sin}[c]+15\,A\,b^4\,\text{Sin}[d\,x]+60\,a\,b^3\,B\,\text{Sin}[d\,x]+90\,a^2\,b^2\,C\,\text{Sin}[d\,x]+9\,b^4\,C\,\text{Sin}[d\,x]\big)+\frac{2\,a^4\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,d}\Bigg)-$$

$$\Bigg(16\,a^3\,A\,b\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\Big(3\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\Big)-$$

$$\Bigg(16\,a\,A\,b^3\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Bigg/$$

$$\Big(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\Big)-$$

$$\Bigg(4\,a^4\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]$$

$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(24\,a^2\,b^2\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,b^4\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(16\,a^3\,b\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(16\,a\,b^3\,C\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\left(a+b\,\text{Sec}[c+d\,x]\right)^4\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)$$

Problem 1316: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{3/2}\,(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 384 leaves, 9 steps):

$$\frac{1}{5\,d}2\,\left(5\,a^4\,B-30\,a^2\,b^2\,B-3\,b^4\,B+20\,a^3\,b\,(A-C)-4\,a\,b^3\,(5\,A+3\,C)\right)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]+\frac{1}{21\,d}$$
$$2\,\left(84\,a^3\,b\,B+28\,a\,b^3\,B+42\,a^2\,b^2\,(3\,A+C)+7\,a^4\,(A+3\,C)+b^4\,(7\,A+5\,C)\right)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]+$$
$$\frac{2\,b\,\left(413\,a^2\,b\,B+63\,b^3\,B+192\,a^3\,C+2\,a\,b^2\,(175\,A+101\,C)\right)\,\text{Sin}[c+d\,x]}{105\,d\,\sqrt{\text{Cos}[c+d\,x]}}-\frac{1}{105\,d}$$
$$2\,a^2\,\left(98\,a\,b\,B-a^2\,(35\,A-87\,C)+5\,b^2\,(7\,A+5\,C)\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]+$$
$$\left(2\,\left(35\,A\,b^2+77\,a\,b\,B+48\,a^2\,C+25\,b^2\,C\right)\,(b+a\,\text{Cos}[c+d\,x])^2\,\text{Sin}[c+d\,x]\right)\Big/\left(105\,d\,\text{Cos}[c+d\,x]^{3/2}\right)+$$
$$\frac{2\,(7\,b\,B+8\,a\,C)\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{35\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{2\,C\,(b+a\,\text{Cos}[c+d\,x])^4\,\text{Sin}[c+d\,x]}{7\,d\,\text{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 4791 leaves):

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$4\,i\,a^3\,A\,b\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)\right)-$$
$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}$$
$$4\,i\,a\,A\,b^3$$

$$\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)\right)+$$

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}\,i\,a^4\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)\right)-$$

$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])}\,6\,i\,a^2\,b^2\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2)\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\right.\right.$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\,\Big)\Big/$$

$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)-$$

$$\Big(2\,\mathrm{Hypergeometric2F1}\Big[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\,\Big)\Big/$$

$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)\Big)-$$

$$\frac{1}{5\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^4\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)}$$

$$3\,i\,b^4\,B\,\mathrm{Cos}[c+d\,x]^6$$

$$\mathrm{Csc}[c]\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^4$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Big(\Big(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\,\Big)\Big/$$

$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)-$$

$$\Big(2\,\mathrm{Hypergeometric2F1}\Big[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\,\Big)\Big/$$

$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)\Big)-$$

$$\frac{1}{\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^4\,\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)}$$

$$4\,i\,a^3\,b\,C$$

$$\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^4$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Big(\Big(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\,\Big)\Big/$$

$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)-$$

$$\Big(2\,\mathrm{Hypergeometric2F1}\Big[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,\left(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c]\right)^2\Big]$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\,\Big)\Big/$$

$$\left(-\mathrm{i}\, d\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)\Bigg)-$$

$$\frac{1}{5\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)}12\,\mathrm{i}\,a\,b^3\,C\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^4\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(\Bigg(2\,e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\mathrm{i}\,d\,x}\left(\mathrm{Cos}[c]+\mathrm{i}\,\mathrm{Sin}[c]\right)^2\right]$$

$$\sqrt{e^{-\mathrm{i}\,d\,x}\left(2\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Big/$$

$$\left(3\,\mathrm{i}\,d\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)-$$

$$\Bigg(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathrm{i}\,d\,x}\left(\mathrm{Cos}[c]+\mathrm{i}\,\mathrm{Sin}[c]\right)^2\right]$$

$$\sqrt{e^{-\mathrm{i}\,d\,x}\left(2\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+2\,\mathrm{i}\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Big/$$

$$\left(-\mathrm{i}\,d\left(1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,\mathrm{i}\,d\,x}\right)\mathrm{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x]\right)}\mathrm{Cos}[c+d\,x]^{13/2}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^4\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\Bigg(-\frac{1}{5\,d}2\left(20\,a^3\,A\,b-40\,a\,A\,b^3+5\,a^4\,B-60\,a^2\,b^2\,B-6\,b^4\,B-40\,a^3\,b\,C-24\,a\,b^3\,C+\right.$$

$$\left.20\,a^3\,A\,b\,\mathrm{Cos}[2\,c]+5\,a^4\,B\,\mathrm{Cos}[2\,c]\right)\mathrm{Csc}[c]\,\mathrm{Sec}[c]+\frac{4\,a^4\,A\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{3\,d}+$$

$$\frac{4\,a^4\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{3\,d}+\frac{4\,b^4\,C\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^4\,\mathrm{Sin}[d\,x]}{7\,d}+\frac{1}{35\,d}4\,\mathrm{Sec}[c]$$

$$\mathrm{Sec}[c+d\,x]^3\left(5\,b^4\,C\,\mathrm{Sin}[c]+7\,b^4\,B\,\mathrm{Sin}[d\,x]+28\,a\,b^3\,C\,\mathrm{Sin}[d\,x]\right)+\frac{1}{105\,d}4\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]$$

$$\left(35\,A\,b^4\,\mathrm{Sin}[c]+140\,a\,b^3\,B\,\mathrm{Sin}[c]+210\,a^2\,b^2\,C\,\mathrm{Sin}[c]+25\,b^4\,C\,\mathrm{Sin}[c]+420\,a\,A\,b^3\,\mathrm{Sin}[d\,x]+\right.$$

$$\left.630\,a^2\,b^2\,B\,\mathrm{Sin}[d\,x]+63\,b^4\,B\,\mathrm{Sin}[d\,x]+420\,a^3\,b\,C\,\mathrm{Sin}[d\,x]+252\,a\,b^3\,C\,\mathrm{Sin}[d\,x]\right)+$$

$$\frac{1}{105\,d}4\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\left(21\,b^4\,B\,\mathrm{Sin}[c]+84\,a\,b^3\,C\,\mathrm{Sin}[c]+35\,A\,b^4\,\mathrm{Sin}[d\,x]+\right.$$

$$\left.140\,a\,b^3\,B\,\mathrm{Sin}[d\,x]+210\,a^2\,b^2\,C\,\mathrm{Sin}[d\,x]+25\,b^4\,C\,\mathrm{Sin}[d\,x]\right)\Bigg)-$$

$$\Bigg(4\,a^4\,A\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^4\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$

$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(24\,a^2\,A\,b^2\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(4\,A\,b^4\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(16\,a^3\,b\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\ \sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$
$$\left(16\,a\,b^3\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$(a+b\,\mathrm{Sec}[c+d\,x])^4\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Big/$$

$$\left(3\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$

$$\Bigg(4\,a^4\,C\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$(a+b\,\mathrm{Sec}[c+d\,x])^4\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Big/$$

$$\left(d\,(b+a\,\mathrm{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$

$$\Bigg(8\,a^2\,b^2\,C\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$(a+b\,\mathrm{Sec}[c+d\,x])^4\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Big/$$

$$\left(d\,(b+a\,\mathrm{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$

$$\Bigg(20\,b^4\,C\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$

$$(a+b\,\mathrm{Sec}[c+d\,x])^4\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Big/$$

$$\left(21\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\right)$$

Problem 1317: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\mathrm{Cos}[c+d\,x]}\,(a+b\,\mathrm{Sec}[c+d\,x])^4\,(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2)\,dx$$

Optimal (type 4, 401 leaves, 9 steps):

$$-\frac{1}{15 d}2\left(60 a^3 b B+36 a b^3 B-15 a^4 (A-C)+18 a^2 b^2 (5 A+3 C)+b^4 (9 A+7 C)\right)$$
$$\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]+\frac{1}{21 d}$$
$$2\left(21 a^4 B+42 a^2 b^2 B+5 b^4 B+28 a^3 b (3 A+C)+4 a b^3 (7 A+5 C)\right) \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]+$$
$$\frac{2 b\left(261 a^2 b B+75 b^3 B+64 a^3 C+2 a b^2 (147 A+101 C)\right) \text{Sin}[c+d x]}{315 d \text{Cos}[c+d x]^{3/2}}+$$
$$\left(2\left(1098 a^3 b B+756 a b^3 B+192 a^4 C+21 b^4 (9 A+7 C)+7 a^2 b^2 (261 A+155 C)\right) \text{Sin}[c+d x]\right)\Big/$$
$$\left(315 d \sqrt{\text{Cos}[c+d x]}\right)+$$
$$\left(2\left(63 A b^2+117 a b B+48 a^2 C+49 b^2 C\right)(b+a \text{Cos}[c+d x])^2 \text{Sin}[c+d x]\right)\Big/\left(315 d \text{Cos}[c+d x]^{5/2}\right)+$$
$$\frac{2 (9 b B+8 a C)(b+a \text{Cos}[c+d x])^3 \text{Sin}[c+d x]}{63 d \text{Cos}[c+d x]^{7/2}}+\frac{2 C (b+a \text{Cos}[c+d x])^4 \text{Sin}[c+d x]}{9 d \text{Cos}[c+d x]^{9/2}}$$

Result (type 5, 4150 leaves) :

$$\frac{1}{(b+a \text{Cos}[c+d x])^4 (A+2 C+2 B \text{Cos}[c+d x]+A \text{Cos}[2 c+2 d x])}$$
$$\text{Cos}[c+d x]^{13/2} (a+b \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)$$
$$\left(-\frac{1}{15 d}2\left(15 a^4 A-180 a^2 A b^2-18 A b^4-120 a^3 b B-72 a b^3 B-30 a^4 C-108 a^2 b^2 C-\right.\right.$$
$$\left.14 b^4 C+15 a^4 A \text{Cos}[2 c]\right) \text{Csc}[c] \text{Sec}[c]+\frac{4 b^4 C \text{Sec}[c] \text{Sec}[c+d x]^5 \text{Sin}[d x]}{9 d}+$$
$$\frac{1}{63 d}4 \text{Sec}[c] \text{Sec}[c+d x]^4\left(7 b^4 C \text{Sin}[c]+9 b^4 B \text{Sin}[d x]+36 a b^3 C \text{Sin}[d x]\right)+$$
$$\frac{1}{315 d}4 \text{Sec}[c] \text{Sec}[c+d x]^2$$
$$\left(63 A b^4 \text{Sin}[c]+252 a b^3 B \text{Sin}[c]+378 a^2 b^2 C \text{Sin}[c]+49 b^4 C \text{Sin}[c]+420 a A b^3 \text{Sin}[d x]+\right.$$
$$\left.630 a^2 b^2 B \text{Sin}[d x]+75 b^4 B \text{Sin}[d x]+420 a^3 b C \text{Sin}[d x]+300 a b^3 C \text{Sin}[d x]\right)+$$
$$\frac{1}{315 d}4 \text{Sec}[c] \text{Sec}[c+d x]^3\left(45 b^4 B \text{Sin}[c]+180 a b^3 C \text{Sin}[c]+63 A b^4 \text{Sin}[d x]+\right.$$
$$\left.252 a b^3 B \text{Sin}[d x]+378 a^2 b^2 C \text{Sin}[d x]+49 b^4 C \text{Sin}[d x]\right)+\frac{1}{105 d}$$
$$4 \text{Sec}[c] \text{Sec}[c+d x]\left(140 a A b^3 \text{Sin}[c]+210 a^2 b^2 B \text{Sin}[c]+25 b^4 B \text{Sin}[c]+140 a^3 b C \text{Sin}[c]+\right.$$
$$100 a b^3 C \text{Sin}[c]+630 a^2 A b^2 \text{Sin}[d x]+63 A b^4 \text{Sin}[d x]+420 a^3 b B \text{Sin}[d x]+$$
$$\left.\left.252 a b^3 B \text{Sin}[d x]+105 a^4 C \text{Sin}[d x]+378 a^2 b^2 C \text{Sin}[d x]+49 b^4 C \text{Sin}[d x]\right)\right)-$$
$$\left(16 a^3 A b \text{Cos}[c+d x]^6 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\frac{(a+b \text{Sec}[c+d x])^4 \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right)}{\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(16\,a\,A\,b^3\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(4\,a^4\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(8\,a^2\,b^2\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(20\,b^4\,B\,\text{Cos}[c+d\,x]^6\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$(a+b\,\text{Sec}[c+d\,x])^4\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(21\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(16\,a^3\,b\,C\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\mathrm{Sec}[c+d\,x])^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$
$$\left(80\,a\,b^3\,C\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$(a+b\,\mathrm{Sec}[c+d\,x])^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(21\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\right)-$$
$$\left(2\,a^4\,A\,\mathrm{Cos}[c+d\,x]^6\,\mathrm{Csc}[c]\,(a+b\,\mathrm{Sec}[c+d\,x])^4\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\right.$$
$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$
$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$
$$\left.\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/$$
$$\left(d\,(b+a\,\mathrm{Cos}[c+d\,x])^4\,(A+2\,C+2\,B\,\mathrm{Cos}[c+d\,x]+A\,\mathrm{Cos}[2\,c+2\,d\,x])\right)+$$

$$\left(12\, a^2\, A\, b^2\, \text{Cos}[c+d\,x]^6\, \text{Csc}[c]\, \left(a+b\, \text{Sec}[c+d\,x]\right)^4 \left(A+B\, \text{Sec}[c+d\,x]+C\, \text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\, \text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(6\, A\, b^4\, \text{Cos}[c+d\,x]^6\, \text{Csc}[c]\, \left(a+b\, \text{Sec}[c+d\,x]\right)^4 \left(A+B\, \text{Sec}[c+d\,x]+C\, \text{Sec}[c+d\,x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\, \text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\, d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\left(A+2\,C+2\,B\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,c+2\,d\,x]\right)\right)+$$

$$\left(8 a^3 b B \operatorname{Cos}[c+d x]^6 \operatorname{Csc}[c] \left(a+b \operatorname{Sec}[c+d x]\right)^4 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\operatorname{Tan}[c]\right)\Big/\left(\sqrt{1-\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\right.$$

$$\sqrt{1+\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\sqrt{\operatorname{Cos}[c]\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\operatorname{Tan}[c]^2}\right)-\frac{\frac{\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\operatorname{Tan}[c]}{\sqrt{1+\operatorname{Tan}[c]^2}}+\frac{2\operatorname{Cos}[c]^2\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}{\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2}}{\sqrt{\operatorname{Cos}[c]\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(d\left(b+a\operatorname{Cos}[c+d x]\right)^4\left(A+2 C+2 B\operatorname{Cos}[c+d x]+A\operatorname{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(24 a b^3 B \operatorname{Cos}[c+d x]^6 \operatorname{Csc}[c] \left(a+b \operatorname{Sec}[c+d x]\right)^4 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\operatorname{Tan}[c]\right)\Big/\left(\sqrt{1-\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\right.$$

$$\sqrt{1+\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\sqrt{\operatorname{Cos}[c]\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\operatorname{Tan}[c]^2}\right)-\frac{\frac{\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\operatorname{Tan}[c]}{\sqrt{1+\operatorname{Tan}[c]^2}}+\frac{2\operatorname{Cos}[c]^2\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}{\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2}}{\sqrt{\operatorname{Cos}[c]\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]\sqrt{1+\operatorname{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5 d\left(b+a\operatorname{Cos}[c+d x]\right)^4\left(A+2 C+2 B\operatorname{Cos}[c+d x]+A\operatorname{Cos}[2 c+2 d x]\right)\right)+$$

$$\left(2 a^4 C \operatorname{Cos}[c+d x]^6 \operatorname{Csc}[c] \left(a+b \operatorname{Sec}[c+d x]\right)^4 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]^2\right] \operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]\right) \Big/ \left(\sqrt{1-\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]} \sqrt{1+\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]} \sqrt{\operatorname{Cos}[c] \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}} \sqrt{1+\operatorname{Tan}[c]^2}\right) - \frac{\frac{\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]}{\sqrt{1+\operatorname{Tan}[c]^2}}+\frac{2 \operatorname{Cos}[c]^2 \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}{\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2}}{\sqrt{\operatorname{Cos}[c] \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}}\right)\right) \Big/ \left(d \left(b+a \operatorname{Cos}[c+d x]\right)^4 \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\right) +$$

$$\left(36 a^2 b^2 C \operatorname{Cos}[c+d x]^6 \operatorname{Csc}[c] \left(a+b \operatorname{Sec}[c+d x]\right)^4 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) \left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]^2\right] \operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]\right) \Big/ \left(\sqrt{1-\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]} \sqrt{1+\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]} \sqrt{\operatorname{Cos}[c] \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}} \sqrt{1+\operatorname{Tan}[c]^2}\right) - \frac{\frac{\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]}{\sqrt{1+\operatorname{Tan}[c]^2}}+\frac{2 \operatorname{Cos}[c]^2 \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}{\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2}}{\sqrt{\operatorname{Cos}[c] \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}}\right)\right) \Big/ \left(5 d \left(b+a \operatorname{Cos}[c+d x]\right)^4 \left(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x]\right)\right) +$$

$$\left(14\, b^4\, C \operatorname{Cos}[c+d x]^6 \operatorname{Csc}[c] \,(a+b \operatorname{Sec}[c+d x])^4 \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]\right) \Big/ \left(\sqrt{1-\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\right.$$

$$\sqrt{1+\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\, \sqrt{\operatorname{Cos}[c] \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\operatorname{Tan}[c]^2}\right)-\frac{\frac{\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]}{\sqrt{1+\operatorname{Tan}[c]^2}}+\frac{2 \operatorname{Cos}[c]^2 \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}{\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2}}{\sqrt{\operatorname{Cos}[c] \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}}\right)\right) \Big/$$

$$\left(15\, d\,(b+a \operatorname{Cos}[c+d x])^4\,(A+2 C+2 B \operatorname{Cos}[c+d x]+A \operatorname{Cos}[2 c+2 d x])\right)$$

Problem 1320: Attempted integration timed out after 120 seconds.

$$\int \frac{\sqrt{\operatorname{Cos}[c+d x]}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{a+b \operatorname{Sec}[c+d x]}\, dx$$

Optimal (type 4, 97 leaves, 6 steps):

$$\frac{2 A \operatorname{EllipticE}\left[\frac{1}{2}(c+d x), 2\right]}{a d}-\frac{2 (A b-a B) \operatorname{EllipticF}\left[\frac{1}{2}(c+d x), 2\right]}{a^2 d}+\frac{2\left(A b^2-a (b B-a C)\right) \operatorname{EllipticPi}\left[\frac{2 a}{a+b}, \frac{1}{2}(c+d x), 2\right]}{a^2 (a+b) d}$$

Result (type 1, 1 leaves):

???

Problem 1334: Unable to integrate problem.

$$\int \operatorname{Cos}[c+d x]^{9/2} \sqrt{a+b \operatorname{Sec}[c+d x]}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 457 leaves, 12 steps):

$$-\left(\left(2\left(a^2-b^2\right)\left(16 A b^3-75 a^3 B-24 a b^2 B+6 a^2 b (6 A+7 C)\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.\right.$$
$$\left.\left.\operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(315 a^4 d \sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\right)-$$
$$\left(2\left(16 A b^4-57 a^3 b B-24 a b^3 B+6 a^2 b^2(4 A+7 C)-21 a^4(7 A+9 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\right.$$
$$\left.\operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(315 a^4 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{1}{315 a^3 d}$$
$$2\left(8 A b^3+75 a^3 B-12 a b^2 B+a^2 b(13 A+21 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]-$$
$$\frac{1}{315 a^2 d}2\left(6 A b^2-9 a b B-7 a^2(7 A+9 C)\right)\operatorname{Cos}[c+d x]^{3/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]+$$
$$\frac{2(A b+9 a B)\operatorname{Cos}[c+d x]^{5/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{63 a d}+$$
$$\frac{2 A \operatorname{Cos}[c+d x]^{7/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{9 d}$$

Result (type 8, 47 leaves) :

$$\int \operatorname{Cos}[c+d x]^{9/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)dx$$

Problem 1335: Unable to integrate problem.

$$\int \operatorname{Cos}[c+d x]^{7/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)dx$$

Optimal (type 4, 360 leaves, 11 steps) :

$$\left(2\left(a^2-b^2\right)\left(25 a^2 A+8 A b^2-14 a b B+35 a^2 C\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/$$
$$\left(105 a^3 d\sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\right)+$$
$$\left(2\left(8 A b^3+63 a^3 B-14 a b^2 B+a^2 b(19 A+35 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right.$$
$$\left.\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(105 a^3 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)-\frac{1}{105 a^2 d}$$
$$2\left(4 A b^2-7 a b B-5 a^2(5 A+7 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]+$$
$$\frac{2(A b+7 a B)\operatorname{Cos}[c+d x]^{3/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{35 a d}+$$
$$\frac{2 A \operatorname{Cos}[c+d x]^{5/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{7 d}$$

Result (type 8, 47 leaves):

$$\int \text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Problem 1336: Unable to integrate problem.

$$\int \text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 273 leaves, 10 steps):

$$-\frac{2\left(a^2-b^2\right)\left(2\,A\,b-5\,a\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]}{15\,a^2\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}-$$
$$\left(2\left(2\,A\,b^2-5\,a\,b\,B-3\,a^2\left(3\,A+5\,C\right)\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(15\,a^2\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+$$
$$\frac{2\left(A\,b+5\,a\,B\right)\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{15\,a\,d}+$$
$$\frac{2\,A\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 8, 47 leaves):

$$\int \text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Problem 1337: Attempted integration timed out after 120 seconds.

$$\int \text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 277 leaves, 13 steps):

$$-\frac{2\left(A b^2-a^2(A+3C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]}{3\,a\,d\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,b\,C\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\ \text{EllipticPi}\left[2,\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]}{d\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$
$$\left(2\,(A\,b+3\,a\,B)\sqrt{\text{Cos}[c+d\,x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Bigg/$$
$$\left(3\,a\,d\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+\frac{2\,A\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{3\,d}$$

Result (type 1, 1 leaves):

???

Problem 1338: Unable to integrate problem.

$$\int\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 258 leaves, 13 steps):

$$\frac{(2\,a\,B+b\,C)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]}{d\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$
$$\frac{(2\,b\,B+a\,C)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\ \text{EllipticPi}\left[2,\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]}{d\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}}+\frac{1}{d\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}}$$
$$(2\,A-C)\sqrt{\text{Cos}[c+d\,x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}+$$
$$\frac{C\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{d\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 8, 47 leaves):

$$\int\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Problem 1339: Unable to integrate problem.

$$\int\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 346 leaves, 14 steps):

$$\frac{(8 a A+4 b B+3 a C) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]}{4 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$

$$\left(\left(8 A b^2+4 a b B-a^2 C+4 b^2 C\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/$$

$$\left(4 b d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-$$

$$\left((4 b B+a C) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Big/$$

$$\left(4 b d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{C \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{2 d \operatorname{Cos}[c+d x]^{3/2}}+$$

$$\frac{(4 b B+a C) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{4 b d \sqrt{\operatorname{Cos}[c+d x]}}$$

Result (type 8, 47 leaves):

$$\int \frac{\sqrt{a+b \operatorname{Sec}[c+d x]} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\sqrt{\operatorname{Cos}[c+d x]}} \, dx$$

Problem 1340: Unable to integrate problem.

$$\int \frac{\sqrt{a+b \operatorname{Sec}[c+d x]} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\operatorname{Cos}[c+d x]^{3/2}} \, dx$$

Optimal (type 4, 447 leaves, 15 steps):

$$\left(\left(24\,A\,b^2+18\,a\,b\,B-a^2\,C+16\,b^2\,C\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/$$
$$\left(24\,b\,d\,\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$
$$\left(\left(2\,a^2\,b\,B-8\,b^3\,B-a^3\,C-4\,a\,b^2\,(2\,A+C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\ \text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/$$
$$\left(8\,b^2\,d\,\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$
$$\left(\left(24\,A\,b^2+6\,a\,b\,B-3\,a^2\,C+16\,b^2\,C\right)\sqrt{\text{Cos}[c+d\,x]}\ \text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right.$$
$$\left.\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(24\,b^2\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+$$
$$\frac{C\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{(6\,b\,B+a\,C)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{12\,b\,d\,\text{Cos}[c+d\,x]^{3/2}}+$$
$$\frac{\left(24\,A\,b^2+6\,a\,b\,B-3\,a^2\,C+16\,b^2\,C\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{24\,b^2\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 8, 47 leaves):

$$\int\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Problem 1341: Attempted integration timed out after 120 seconds.

$$\int\text{Cos}[c+d\,x]^{9/2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 455 leaves, 12 steps):

$$\left(2\left(a^2-b^2\right)\left(8 A b^3+75 a^3 B-18 a b^2 B+a^2 (39 A b+63 b C)\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(315 a^3 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\right)+$$
$$\left(2\left(8 A b^4+246 a^3 b B-18 a b^3 B+21 a^4 (7 A+9 C)+3 a^2 b^2 (11 A+21 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(315 a^3 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)-\frac{1}{315 a^2 d}$$
$$2\left(4 A b^3-75 a^3 B-9 a b^2 B-2 a^2 b (44 A+63 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]+$$
$$\frac{1}{315 a d}2\left(3 A b^2+72 a b B+7 a^2 (7 A+9 C)\right)\operatorname{Cos}[c+d x]^{3/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]+$$
$$\frac{2 (A b+3 a B) \operatorname{Cos}[c+d x]^{5/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{21 d}+$$
$$\frac{2 A \operatorname{Cos}[c+d x]^{7/2}(a+b \operatorname{Sec}[c+d x])^{3/2}\operatorname{Sin}[c+d x]}{9 d}$$

Result (type 1, 1 leaves):

???

Problem 1342: Attempted integration timed out after 120 seconds.

$$\int \operatorname{Cos}[c+d x]^{7/2}(a+b \operatorname{Sec}[c+d x])^{3/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 359 leaves, 11 steps):

$$\left(2\left(a^2-b^2\right)\left(25 a^2 A-6 A b^2+21 a b B+35 a^2 C\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/$$
$$\left(105 a^2 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-$$
$$\left(2\left(6 A b^3-63 a^3 B-21 a b^2 B-2 a^2 b (41 A+70 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right.$$
$$\left.\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(105 a^2 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{1}{105 a d}$$
$$2\left(3 A b^2+42 a b B+5 a^2 (5 A+7 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]+$$
$$\frac{2 (3 A b+7 a B) \operatorname{Cos}[c+d x]^{3/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{35 d}+$$
$$\frac{2 A \operatorname{Cos}[c+d x]^{5/2}(a+b \operatorname{Sec}[c+d x])^{3/2}\operatorname{Sin}[c+d x]}{7 d}$$

Result (type 1, 1 leaves):

???

Problem 1343: Attempted integration timed out after 120 seconds.

$$\int \text{Cos}[c+d x]^{5/2} (a+b \text{Sec}[c+d x])^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 356 leaves, 14 steps):

$$-\left(\left(2 \left(3 A b^3-5 a^3 B+5 a b^2 B-3 a^2 b (A+5 C)\right) \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \text{EllipticF}\left[\frac{1}{2} (c+d x),\frac{2 a}{a+b}\right]\right) \Big/ \left(15 a d \sqrt{\text{Cos}[c+d x]} \sqrt{a+b \text{Sec}[c+d x]}\right)\right)+\frac{2 b^2 C \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \text{EllipticPi}\left[2,\frac{1}{2} (c+d x),\frac{2 a}{a+b}\right]}{d \sqrt{\text{Cos}[c+d x]} \sqrt{a+b \text{Sec}[c+d x]}}+\left(2 \left(3 A b^2+20 a b B+3 a^2 (3 A+5 C)\right) \sqrt{\text{Cos}[c+d x]} \text{EllipticE}\left[\frac{1}{2} (c+d x),\frac{2 a}{a+b}\right] \sqrt{a+b \text{Sec}[c+d x]}\right) \Big/ \left(15 a d \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}}\right)+\frac{2 (3 A b+5 a B) \sqrt{\text{Cos}[c+d x]} \sqrt{a+b \text{Sec}[c+d x]} \text{Sin}[c+d x]}{15 d}+\frac{2 A \text{Cos}[c+d x]^{3/2} (a+b \text{Sec}[c+d x])^{3/2} \text{Sin}[c+d x]}{5 d}$$

Result (type 1, 1 leaves):

???

Problem 1344: Attempted integration timed out after 120 seconds.

$$\int \text{Cos}[c+d x]^{3/2} (a+b \text{Sec}[c+d x])^{3/2} \left(A+B \text{Sec}[c+d x]+C \text{Sec}[c+d x]^2\right) \, dx$$

Optimal (type 4, 340 leaves, 14 steps):

$$\left(\left(6\,a\,b\,B-b^2\,(2\,A-3\,C)+2\,a^2\,(A+3\,C)\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\left(3\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\frac{b\,(2\,b\,B+3\,a\,C)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+\frac{1}{3\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}}(8\,A\,b+6\,a\,B-3\,b\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}-\frac{b\,(2\,A-3\,C)\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{2\,A\,\sqrt{\mathrm{Cos}[c+d\,x]}\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{3\,d}$$

Result (type 1, 1 leaves):

???

Problem 1345: Attempted integration timed out after 120 seconds.

$$\int\sqrt{\mathrm{Cos}[c+d\,x]}\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 353 leaves, 14 steps):

$$\left(\left(8\,a^2\,B+4\,b^2\,B+a\,b\,(8\,A+7\,C)\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\left(4\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\left(\left(8\,A\,b^2+12\,a\,b\,B+3\,a^2\,C+4\,b^2\,C\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\left(4\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\frac{1}{4\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}}(8\,a\,A-4\,b\,B-5\,a\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}+\frac{(4\,b\,B+3\,a\,C)\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{4\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{C\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}$$

Result (type 1, 1 leaves):

???

Problem 1346: Attempted integration timed out after 120 seconds.

$$\int \frac{(a + b \operatorname{Sec}[c + d x])^{3/2} \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)}{\sqrt{\operatorname{Cos}[c + d x]}} \, dx$$

Optimal (type 4, 446 leaves, 15 steps):

$$\left(\left(42 a b B + 8 b^2 (3 A + 2 C) + a^2 (48 A + 17 C)\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right]\right) \Big/ \left(24 d \sqrt{\operatorname{Cos}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}\right) + \left(\left(6 a^2 b B + 8 b^3 B - a^3 C + 12 a b^2 (2 A + C)\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticPi}\left[2, \frac{1}{2} (c + d x), \frac{2 a}{a + b}\right]\right) \Big/ \left(8 b d \sqrt{\operatorname{Cos}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}\right) - \left(\left(24 A b^2 + 30 a b B + 3 a^2 C + 16 b^2 C\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{a + b \operatorname{Sec}[c + d x]}\right) \Big/ \left(24 b d \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}}\right) + \frac{(2 b B + a C) \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{4 d \operatorname{Cos}[c + d x]^{3/2}} + \frac{\left(24 A b^2 + 30 a b B + 3 a^2 C + 16 b^2 C\right) \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{24 b d \sqrt{\operatorname{Cos}[c + d x]}} + \frac{C (a + b \operatorname{Sec}[c + d x])^{3/2} \operatorname{Sin}[c + d x]}{3 d \operatorname{Cos}[c + d x]^{3/2}}$$

Result (type 1, 1 leaves):

???

Problem 1347: Attempted integration timed out after 120 seconds.

$$\int \frac{(a + b \operatorname{Sec}[c + d x])^{3/2} \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right)}{\operatorname{Cos}[c + d x]^{3/2}} \, dx$$

Optimal (type 4, 551 leaves, 16 steps):

$$\left(\left(136 a^2 b B+128 b^3 B-3 a^3 C+12 a b^2 (28 A+19 C)\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(192 b d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-$$

$$\left(\left(8 a^3 b B-96 a b^3 B-3 a^4 C-24 a^2 b^2 (2 A+C)-16 b^4 (4 A+3 C)\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \text{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(64 b^2 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-$$

$$\left(\left(24 a^2 b B+128 b^3 B-9 a^3 C+12 a b^2 (20 A+13 C)\right) \sqrt{\operatorname{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Big/ \left(192 b^2 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{(8 b B+3 a C) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{24 d \operatorname{Cos}[c+d x]^{5/2}}+$$

$$\frac{\left(48 A b^2+56 a b B+3 a^2 C+36 b^2 C\right) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{96 b d \operatorname{Cos}[c+d x]^{3/2}}+$$

$$\left(\left(24 a^2 b B+128 b^3 B-9 a^3 C+12 a b^2 (20 A+13 C)\right) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]\right) \Big/ \left(192 b^2 d \sqrt{\operatorname{Cos}[c+d x]}\right)+\frac{C (a+b \operatorname{Sec}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{4 d \operatorname{Cos}[c+d x]^{5/2}}$$

Result (type 1, 1 leaves):

???

Problem 1348: Attempted integration timed out after 120 seconds.

$$\int \operatorname{Cos}[c+d x]^{11/2} (a+b \operatorname{Sec}[c+d x])^{5/2} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 565 leaves, 13 steps):

$$\left(2\left(a^2-b^2\right)\left(40\,A\,b^4+1254\,a^3\,b\,B-110\,a\,b^3\,B+75\,a^4\,(9\,A+11\,C)+15\,a^2\,b^2\,(19\,A+33\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/$$
$$\left(3465\,a^3\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$
$$\left(2\left(40\,A\,b^5+1617\,a^5\,B+3069\,a^3\,b^2\,B-110\,a\,b^4\,B+15\,a^2\,b^3\,(17\,A+33\,C)+15\,a^4\,b\,(247\,A+319\,C)\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/$$
$$\left(3465\,a^3\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)-\frac{1}{3465\,a^2\,d}$$
$$2\left(20\,A\,b^4-1793\,a^3\,b\,B-55\,a\,b^3\,B-75\,a^4\,(9\,A+11\,C)-5\,a^2\,b^2\,(205\,A+297\,C)\right)$$
$$\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+$$
$$\frac{1}{3465\,a\,d}2\left(15\,A\,b^3+539\,a^3\,B+825\,a\,b^2\,B+5\,a^2\,b\,(229\,A+297\,C)\right)$$
$$\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+\frac{1}{231\,d}$$
$$2\left(5\,A\,b^2+44\,a\,b\,B+3\,a^2\,(9\,A+11\,C)\right)\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+$$
$$\frac{2\,(5\,A\,b+11\,a\,B)\,\text{Cos}[c+d\,x]^{7/2}\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{99\,d}+$$
$$\frac{2\,A\,\text{Cos}[c+d\,x]^{9/2}\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{11\,d}$$

Result (type 1, 1 leaves):

???

Problem 1349: Attempted integration timed out after 120 seconds.

$$\int \text{Cos}[c+d\,x]^{9/2}\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 452 leaves, 12 steps):

$$-\left(\left(2\left(a^2-b^2\right)\left(10\,A\,b^3-75\,a^3\,B-45\,a\,b^2\,B-6\,a^2\,b\,(19\,A+28\,C)\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right.\right.$$
$$\left.\mathrm{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(315\,a^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)-$$
$$\left(2\left(10\,A\,b^4-435\,a^3\,b\,B-45\,a\,b^3\,B-21\,a^4\,(7\,A+9\,C)-3\,a^2\,b^2\,(93\,A+161\,C)\right)\sqrt{\mathrm{Cos}[c+d\,x]}\right.$$
$$\left.\mathrm{EllipticE}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/\left(315\,a^2\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right)+$$
$$\frac{1}{315\,a\,d}2\left(5\,A\,b^3+75\,a^3\,B+135\,a\,b^2\,B+a^2\,b\,(163\,A+231\,C)\right)\sqrt{\mathrm{Cos}[c+d\,x]}$$
$$\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]+\frac{1}{315\,d}$$
$$2\left(15\,A\,b^2+90\,a\,b\,B+7\,a^2\,(7\,A+9\,C)\right)\mathrm{Cos}[c+d\,x]^{3/2}\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]+$$
$$\frac{2\,(5\,A\,b+9\,a\,B)\,\mathrm{Cos}[c+d\,x]^{5/2}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\mathrm{Sin}[c+d\,x]}{63\,d}+$$
$$\frac{2\,A\,\mathrm{Cos}[c+d\,x]^{7/2}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\mathrm{Sin}[c+d\,x]}{9\,d}$$

Result (type 1, 1 leaves):

???

Problem 1350: Attempted integration timed out after 120 seconds.

$$\int \mathrm{Cos}[c+d\,x]^{7/2}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2\right)dx$$

Optimal (type 4, 441 leaves, 15 steps):

$$-\left(\left(2\left(15 A b^4-56 a^3 b B+56 a b^3 B+10 a^2 b^2 (A-7 C)-5 a^4 (5 A+7 C)\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(105\, a\, d \sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\right)+\frac{2 b^3 C \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticPi}\left[2,\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]}{d\sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}}+\left(2\left(15 A b^3+63 a^3 B+161 a b^2 B+5 a^2 b (29 A+49 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(105\, a\, d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{1}{105 d}2\left(15 A b^2+56 a b B+5 a^2 (5 A+7 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]+\frac{2 (5 A b+7 a B)\operatorname{Cos}[c+d x]^{3/2}(a+b \operatorname{Sec}[c+d x])^{3/2}\operatorname{Sin}[c+d x]}{35 d}+\frac{2 A \operatorname{Cos}[c+d x]^{5/2}(a+b \operatorname{Sec}[c+d x])^{5/2}\operatorname{Sin}[c+d x]}{7 d}\right)$$

Result (type 1, 1 leaves):

???

Problem 1351: Attempted integration timed out after 120 seconds.

$$\int \operatorname{Cos}[c+d x]^{5/2}(a+b \operatorname{Sec}[c+d x])^{5/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right) dx$$

Optimal (type 4, 419 leaves, 15 steps):

$$\left(\left(10\,a^3\,B+20\,a\,b^2\,B-b^3\,(16\,A-15\,C)+4\,a^2\,b\,(4\,A+15\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right.$$

$$\left.\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\left(15\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$

$$\frac{b^2\,(2\,b\,B+5\,a\,C)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\left(\left(70\,a\,b\,B+b^2\,(46\,A-15\,C)+6\,a^2\,(3\,A+5\,C)\right)\sqrt{\text{Cos}[c+d\,x]}\right.$$

$$\left.\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(15\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)-$$

$$\frac{b\,(16\,A\,b+10\,a\,B-15\,b\,C)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d\,\sqrt{\text{Cos}[c+d\,x]}}+$$

$$\frac{2\,(A\,b+a\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{3\,d}+$$

$$\frac{2\,A\,\text{Cos}[c+d\,x]^{3/2}\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 1, 1 leaves):

???

Problem 1352: Attempted integration timed out after 120 seconds.

$$\int \text{Cos}[c+d\,x]^{3/2}\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)\,dx$$

Optimal (type 4, 427 leaves, 15 steps):

$$\left(\left(48 a^2 b B + 12 b^3 B + 8 a^3 (A + 3 C) + a b^2 (16 A + 33 C)\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right]\right) \Big/ \left(12 d \sqrt{\operatorname{Cos}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}\right) +$$

$$\left(b \left(8 A b^2 + 20 a b B + 15 a^2 C + 4 b^2 C\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticPi}\left[2, \frac{1}{2} (c + d x), \frac{2 a}{a + b}\right]\right) \Big/ \left(4 d \sqrt{\operatorname{Cos}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}\right) +$$

$$\left(\left(24 a^2 B - 12 b^2 B + a b (56 A - 27 C)\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{a + b \operatorname{Sec}[c + d x]}\right) \Big/ \left(12 d \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}}\right) -$$

$$\frac{b (8 a A - 12 b B - 21 a C) \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{12 d \sqrt{\operatorname{Cos}[c + d x]}} - \frac{b (4 A - 3 C) (a + b \operatorname{Sec}[c + d x])^{3/2} \operatorname{Sin}[c + d x]}{6 d \sqrt{\operatorname{Cos}[c + d x]}} + \frac{2 A \sqrt{\operatorname{Cos}[c + d x]} (a + b \operatorname{Sec}[c + d x])^{5/2} \operatorname{Sin}[c + d x]}{3 d}$$

Result (type 1, 1 leaves):

???

Problem 1353: Attempted integration timed out after 120 seconds.

$$\int \sqrt{\operatorname{Cos}[c + d x]} (a + b \operatorname{Sec}[c + d x])^{5/2} \left(A + B \operatorname{Sec}[c + d x] + C \operatorname{Sec}[c + d x]^2\right) dx$$

Optimal (type 4, 453 leaves, 15 steps):

$$\left(\left(48 a^3 B+66 a b^2 B+8 b^3 (3 A+2 C)+a^2 b (96 A+59 C)\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.$$
$$\left.\operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(24 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right)+$$
$$\left(\left(30 a^2 b B+8 b^3 B+5 a^3 C+20 a b^2 (2 A+C)\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.$$
$$\left.\operatorname{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(8 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-$$
$$\left(\left(54 a b B-a^2 (48 A-33 C)+8 b^2 (3 A+2 C)\right) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right.$$
$$\left.\sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Big/ \left(24 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+$$
$$\frac{\left(24 A b^2+42 a b B+15 a^2 C+16 b^2 C\right) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{24 d \sqrt{\operatorname{Cos}[c+d x]}}+$$
$$\frac{(6 b B+5 a C) (a+b \operatorname{Sec}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{12 d \sqrt{\operatorname{Cos}[c+d x]}}+$$
$$\frac{C (a+b \operatorname{Sec}[c+d x])^{5/2} \operatorname{Sin}[c+d x]}{3 d \sqrt{\operatorname{Cos}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 1354: Attempted integration timed out after 120 seconds.

$$\int \frac{(a+b \operatorname{Sec}[c+d x])^{5/2} \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\sqrt{\operatorname{Cos}[c+d x]}} \, dx$$

Optimal (type 4, 550 leaves, 16 steps):

$$\left(\left(472\,a^2\,b\,B+128\,b^3\,B+4\,a\,b^2\,(132\,A+89\,C)+a^3\,(384\,A+133\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(192\,d\,\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$

$$\left(\left(40\,a^3\,b\,B+160\,a\,b^3\,B-5\,a^4\,C+120\,a^2\,b^2\,(2\,A+C)+16\,b^4\,(4\,A+3\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\ \text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(64\,b\,d\,\sqrt{\text{Cos}[c+d\,x]}\ \sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$

$$\left(\left(264\,a^2\,b\,B+128\,b^3\,B+15\,a^3\,C+4\,a\,b^2\,(108\,A+71\,C)\right)\sqrt{\text{Cos}[c+d\,x]}\ \text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(192\,b\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+$$

$$\frac{\left(16\,A\,b^2+24\,a\,b\,B+5\,a^2\,C+12\,b^2\,C\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{32\,d\,\text{Cos}[c+d\,x]^{3/2}}+$$

$$\left(\left(264\,a^2\,b\,B+128\,b^3\,B+15\,a^3\,C+4\,a\,b^2\,(108\,A+71\,C)\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]\right)\Big/\left(192\,b\,d\,\sqrt{\text{Cos}[c+d\,x]}\right)+$$

$$\frac{(8\,b\,B+5\,a\,C)\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{24\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{C\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{3/2}}$$

Result (type 1, 1 leaves):

???

Problem 1355: Attempted integration timed out after 120 seconds.

$$\int \frac{(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 674 leaves, 17 steps):

$$\left(\left(1330 a^3 b B+3560 a b^3 B-15 a^4 C+256 b^4 (5 A+4 C)+4 a^2 b^2 (1180 A+809 C)\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.$$
$$\left.\operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(1920 b d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-$$
$$\left(\left(10 a^4 b B-240 a^2 b^3 B-96 b^5 B-3 a^5 C-40 a^3 b^2 (2 A+C)-80 a b^4 (4 A+3 C)\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.$$
$$\left.\operatorname{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(128 b^2 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-$$
$$\left(\left(150 a^3 b B+2840 a b^3 B-45 a^4 C+256 b^4 (5 A+4 C)+12 a^2 b^2 (220 A+141 C)\right) \sqrt{\operatorname{Cos}[c+d x]}\right.$$
$$\left.\operatorname{EllipticE}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Big/ \left(1920 b^2 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+$$
$$\frac{\left(80 A b^2+110 a b B+15 a^2 C+64 b^2 C\right) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{240 d \operatorname{Cos}[c+d x]^{5/2}}+$$
$$\left(\left(590 a^2 b B+360 b^3 B+15 a^3 C+4 a b^2 (260 A+193 C)\right) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]\right) \Big/$$
$$\left(960 b d \operatorname{Cos}[c+d x]^{3/2}\right)+$$
$$\left(\left(150 a^3 b B+2840 a b^3 B-45 a^4 C+256 b^4 (5 A+4 C)+12 a^2 b^2 (220 A+141 C)\right)\right.$$
$$\left.\sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]\right) \Big/ \left(1920 b^2 d \sqrt{\operatorname{Cos}[c+d x]}\right)+$$
$$\frac{(2 b B+a C)(a+b \operatorname{Sec}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{8 d \operatorname{Cos}[c+d x]^{5/2}}+\frac{C (a+b \operatorname{Sec}[c+d x])^{5/2} \operatorname{Sin}[c+d x]}{5 d \operatorname{Cos}[c+d x]^{5/2}}$$

Result (type 1, 1 leaves):

???

Problem 1356: Unable to integrate problem.

$$\int \frac{\operatorname{Cos}[c+d x]^{7/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\sqrt{a+b \operatorname{Sec}[c+d x]}} \, dx$$

Optimal (type 4, 380 leaves, 11 steps):

$$\left(2\left(48 A b^4-49 a^3 b B-56 a b^3 B+5 a^4 (5 A+7 C)+2 a^2 b^2 (16 A+35 C)\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(105 a^4 d\sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-\left(2\left(48 A b^3-63 a^3 B-56 a b^2 B+a^2 (44 A b+70 b C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(105 a^4 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{1}{105 a^3 d}2\left(24 A b^2-28 a b B+5 a^2 (5 A+7 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]-\frac{2 (6 A b-7 a B) \operatorname{Cos}[c+d x]^{3/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{35 a^2 d}+\frac{2 A \operatorname{Cos}[c+d x]^{5/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{7 a d}$$

Result (type 8, 47 leaves):

$$\int\frac{\operatorname{Cos}[c+d x]^{7/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\sqrt{a+b \operatorname{Sec}[c+d x]}}\,dx$$

Problem 1357: Unable to integrate problem.

$$\int\frac{\operatorname{Cos}[c+d x]^{5/2}\left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{\sqrt{a+b \operatorname{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 291 leaves, 10 steps):

$$-\left(\left(\left(2\left(8 A b^3-5 a^3 B-10 a b^2 B+a^2 b (7 A+15 C)\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(15 a^3 d\sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\right)\right)+\left(2\left(8 A b^2-10 a b B+3 a^2 (3 A+5 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(15 a^3 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)-\frac{2 (4 A b-5 a B)\sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{15 a^2 d}+\frac{2 A \operatorname{Cos}[c+d x]^{3/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{5 a d}$$

Result (type 8, 47 leaves):

$$\int \frac{\text{Cos}[c+d x]^{5/2} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b \,\text{Sec}[c+d x]}}\, dx$$

Problem 1358: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Cos}[c+d x]^{3/2} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b \,\text{Sec}[c+d x]}}\, dx$$

Optimal (type 4, 216 leaves, 9 steps):

$$\left(2 \left(2 A b^2-3 a b B+a^2 (A+3 C)\right) \sqrt{\frac{b+a \,\text{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(3 a^2 d \sqrt{\text{Cos}[c+d x]}\ \sqrt{a+b \,\text{Sec}[c+d x]}\right) - \left(2 (2 A b-3 a B) \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \,\text{Sec}[c+d x]}\right) \Big/ \left(3 a^2 d \sqrt{\frac{b+a \,\text{Cos}[c+d x]}{a+b}}\right) + \frac{2 A \sqrt{\text{Cos}[c+d x]}\ \sqrt{a+b \,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{3 a d}$$

Result (type 1, 1 leaves):

???

Problem 1359: Unable to integrate problem.

$$\int \frac{\sqrt{\text{Cos}[c+d x]}\ \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b \,\text{Sec}[c+d x]}}\, dx$$

Optimal (type 4, 219 leaves, 12 steps):

$$-\frac{2 (A b-a B) \sqrt{\frac{b+a \,\text{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right]}{a d \sqrt{\text{Cos}[c+d x]}\ \sqrt{a+b \,\text{Sec}[c+d x]}} + \frac{2 C \sqrt{\frac{b+a \,\text{Cos}[c+d x]}{a+b}}\ \text{EllipticPi}\left[2, \frac{1}{2} (c+d x), \frac{2 a}{a+b}\right]}{d \sqrt{\text{Cos}[c+d x]}\ \sqrt{a+b \,\text{Sec}[c+d x]}} + \frac{2 A \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \,\text{Sec}[c+d x]}}{a d \sqrt{\frac{b+a \,\text{Cos}[c+d x]}{a+b}}}$$

Result (type 8, 47 leaves):

$$\int \frac{\sqrt{\text{Cos}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Problem 1360: Unable to integrate problem.

$$\int \frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{\sqrt{\text{Cos}[c+d x]}\,\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 260 leaves, 13 steps):

$$\frac{(2 A+C)\,\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]}{d\,\sqrt{\text{Cos}[c+d x]}\,\sqrt{a+b\,\text{Sec}[c+d x]}}+\frac{(2 b B-a C)\,\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]}{b\,d\,\sqrt{\text{Cos}[c+d x]}\,\sqrt{a+b\,\text{Sec}[c+d x]}}-\frac{C\,\sqrt{\text{Cos}[c+d x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d x]}}{b\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}}+\frac{C\,\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{b\,d\,\sqrt{\text{Cos}[c+d x]}}$$

Result (type 8, 47 leaves):

$$\int \frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{\sqrt{\text{Cos}[c+d x]}\,\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Problem 1361: Unable to integrate problem.

$$\int \frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{\text{Cos}[c+d x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 350 leaves, 14 steps):

$$\frac{(4\,b\,B-a\,C)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{4\,b\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\left((8\,A\,b^2-4\,a\,b\,B+3\,a^2\,C+4\,b^2\,C)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/$$

$$\left(4\,b^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)-$$

$$\left((4\,b\,B-3\,a\,C)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/$$

$$\left(4\,b^2\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right)+\frac{C\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{2\,b\,d\,\mathrm{Cos}[c+d\,x]^{3/2}}+$$

$$\frac{(4\,b\,B-3\,a\,C)\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{4\,b^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}$$

Result (type 8, 47 leaves):

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]+C\,\mathrm{Sec}[c+d\,x]^2}{\mathrm{Cos}[c+d\,x]^{3/2}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}\,dx$$

Problem 1362: Unable to integrate problem.

$$\int\frac{\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(a\,A+(A\,b+a\,B)\,\mathrm{Sec}[c+d\,x]+b\,B\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 208 leaves, 13 steps):

$$\frac{2\,a\,B\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\frac{2\,b\,B\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\frac{2\,A\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}}$$

Result (type 8, 56 leaves):

$$\int\frac{\sqrt{\mathrm{Cos}[c+d\,x]}\,\left(a\,A+(A\,b+a\,B)\,\mathrm{Sec}[c+d\,x]+b\,B\,\mathrm{Sec}[c+d\,x]^2\right)}{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}\,dx$$

Problem 1363: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Cos}[c+d x]^{5/2} \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\left(a+b\,\text{Sec}[c+d x]\right)^{3/2}}\, dx$$

Optimal (type 4, 461 leaves, 11 steps):

$$-\left(\left(2\left(48 A b^3-5 a^3 B-40 a b^2 B+6 a^2 b (2 A+5 C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(15 a^4 d\sqrt{\text{Cos}[c+d x]}\sqrt{a+b\,\text{Sec}[c+d x]}\right)\right)-$$
$$\left(2\left(48 A b^4+25 a^3 b B-40 a b^3 B-6 a^2 b^2 (4 A-5 C)-3 a^4 (3 A+5 C)\right)\sqrt{\text{Cos}[c+d x]}\;\text{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d x]}\right)\Big/\left(15 a^4\left(a^2-b^2\right) d\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\right)+$$
$$\frac{2\left(A b^2-a (b B-a C)\right)\text{Cos}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{a\left(a^2-b^2\right) d\sqrt{a+b\,\text{Sec}[c+d x]}}+\frac{1}{15 a^3\left(a^2-b^2\right) d}$$
$$2\left(24 A b^3+5 a^3 B-20 a b^2 B-a^2 (9 A b-15 b C)\right)\sqrt{\text{Cos}[c+d x]}\sqrt{a+b\,\text{Sec}[c+d x]}\;\text{Sin}[c+d x]-$$
$$\frac{1}{5 a^2\left(a^2-b^2\right) d}2\left(6 A b^2-5 a b B-a^2 (A-5 C)\right)\text{Cos}[c+d x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d x]}\;\text{Sin}[c+d x]$$

Result (type 1, 1 leaves):

???

Problem 1364: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Cos}[c+d x]^{3/2} \left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{\left(a+b\,\text{Sec}[c+d x]\right)^{3/2}}\, dx$$

Optimal (type 4, 350 leaves, 10 steps):

$$\left(2\left(8 A b^2-6 a b B+a^2 (A+3 C)\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/$$
$$\left(3 a^3 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\right)+$$
$$\left(2\left(8 A b^3+3 a^3 B-6 a b^2 B-a^2 (5 A b-3 b C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right.$$
$$\left.\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(3 a^3\left(a^2-b^2\right) d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+$$
$$\frac{2\left(A b^2-a (b B-a C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{Sin}[c+d x]}{a\left(a^2-b^2\right) d \sqrt{a+b \operatorname{Sec}[c+d x]}}-\frac{1}{3 a^2\left(a^2-b^2\right) d}$$
$$2\left(4 A b^2-3 a b B-a^2 (A-3 C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]$$

Result (type 1, 1 leaves):

???

Problem 1365: Unable to integrate problem.

$$\int \frac{\sqrt{\operatorname{Cos}[c+d x]}\ \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{(a+b \operatorname{Sec}[c+d x])^{3/2}}\, dx$$

Optimal (type 4, 249 leaves, 9 steps):

$$-\frac{2 (2 A b-a B)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]}{a^2 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}-$$
$$\left(2\left(2 A b^2-a b B-a^2 (A-C)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/$$
$$\left(a^2\left(a^2-b^2\right) d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{2\left(A b^2-a (b B-a C)\right)\operatorname{Sin}[c+d x]}{a\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 8, 47 leaves):

$$\int \frac{\sqrt{\operatorname{Cos}[c+d x]}\ \left(A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2\right)}{(a+b \operatorname{Sec}[c+d x])^{3/2}}\, dx$$

Problem 1366: Unable to integrate problem.

$$\int \frac{A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2}{\sqrt{\operatorname{Cos}[c+d x]}\ (a+b \operatorname{Sec}[c+d x])^{3/2}}\, dx$$

Optimal (type 4, 311 leaves, 13 steps):

$$\frac{2\,A\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]}{a\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+\frac{2\,C\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]}{b\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\left(2\,\left(A\,b^2-a\,(b\,B-a\,C)\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/$$

$$\left(a\,b\,(a^2-b^2)\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)-\frac{2\,\left(A\,b^2-a\,(b\,B-a\,C)\right)\text{Sin}[c+d\,x]}{b\,(a^2-b^2)\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 8, 47 leaves):

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\sqrt{\text{Cos}[c+d\,x]}\;(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Problem 1367: Attempted integration timed out after 120 seconds.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2}{\text{Cos}[c+d\,x]^{3/2}\;(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 393 leaves, 14 steps):

$$\frac{C\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]}{b\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+\frac{(2\,b\,B-3\,a\,C)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]}{b^2\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}-$$

$$\left(\left(2\,A\,b^2-2\,a\,b\,B+3\,a^2\,C-b^2\,C\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/$$

$$\left(b^2\,(a^2-b^2)\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)-\frac{2\,\left(A\,b^2-a\,(b\,B-a\,C)\right)\text{Sin}[c+d\,x]}{b\,(a^2-b^2)\,d\,\text{Cos}[c+d\,x]^{3/2}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\frac{\left(2\,A\,b^2-2\,a\,b\,B+3\,a^2\,C-b^2\,C\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{b^2\,(a^2-b^2)\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 1, 1 leaves):

???

Problem 1368: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Cos}[c+d x]^{5/2} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)}{\left(a+b \,\text{Sec}[c+d x]\right)^{5/2}} \, dx$$

Optimal (type 4, 663 leaves, 12 steps):

$$\left(2 \left(128 A b^5+5 a^5 B+80 a^3 b^2 B-80 a b^4 B-4 a^2 b^3 (29 A-10 C)-a^4 b (17 A+45 C)\right) \sqrt{\frac{b+a \,\text{Cos}[c+d x]}{a+b}} \,\text{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(15 a^5 \left(a^2-b^2\right) d \sqrt{\text{Cos}[c+d x]} \sqrt{a+b \,\text{Sec}[c+d x]}\right)+\left(2 \left(128 A b^6-40 a^5 b B+140 a^3 b^3 B-80 a b^5 B+5 a^4 b^2 (11 A-15 C)-4 a^2 b^4 (53 A-10 C)+3 a^6 (3 A+5 C)\right) \sqrt{\text{Cos}[c+d x]} \,\text{EllipticE}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \,\text{Sec}[c+d x]}\right) \Big/ \left(15 a^5 \left(a^2-b^2\right)^2 d \sqrt{\frac{b+a \,\text{Cos}[c+d x]}{a+b}}\right)+\frac{2 \left(A b^2-a (b B-a C)\right) \text{Cos}[c+d x]^{3/2} \,\text{Sin}[c+d x]}{3 a \left(a^2-b^2\right) d \left(a+b \,\text{Sec}[c+d x]\right)^{3/2}}-\left(2 \left(8 A b^4+9 a^3 b B-5 a b^3 B-2 a^2 b^2 (6 A-C)-6 a^4 C\right) \text{Cos}[c+d x]^{3/2} \,\text{Sin}[c+d x]\right) \Big/ \left(3 a^2 \left(a^2-b^2\right)^2 d \sqrt{a+b \,\text{Sec}[c+d x]}\right)-\frac{1}{15 a^4 \left(a^2-b^2\right)^2 d} 2 \left(64 A b^5-5 a^5 B+65 a^3 b^2 B-40 a b^4 B+2 a^4 b (7 A-20 C)-2 a^2 b^3 (49 A-10 C)\right) \sqrt{\text{Cos}[c+d x]} \sqrt{a+b \,\text{Sec}[c+d x]} \,\text{Sin}[c+d x]+\frac{1}{15 a^3 \left(a^2-b^2\right)^2 d} 2 \left(48 A b^4+50 a^3 b B-30 a b^3 B+a^4 (3 A-35 C)-a^2 b^2 (71 A-15 C)\right) \text{Cos}[c+d x]^{3/2} \sqrt{a+b \,\text{Sec}[c+d x]} \,\text{Sin}[c+d x]$$

Result (type 1, 1 leaves):

???

Problem 1369: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Cos}[c+d x]^{3/2} \left(A+B \,\text{Sec}[c+d x]+C \,\text{Sec}[c+d x]^2\right)}{\left(a+b \,\text{Sec}[c+d x]\right)^{5/2}} \, dx$$

Optimal (type 4, 521 leaves, 11 steps):

$$-\left(\left(2\left(16\,A\,b^4+9\,a^3\,b\,B-8\,a\,b^3\,B-2\,a^2\,b^2\,(8\,A-C)-a^4\,(A+3\,C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right.\right.$$
$$\left.\left.\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\bigg/\left(3\,a^4\,\left(a^2-b^2\right)\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\right)-$$
$$\left(2\left(16\,A\,b^5-3\,a^5\,B+15\,a^3\,b^2\,B-8\,a\,b^4\,B-2\,a^2\,b^3\,(14\,A-C)+a^4\,(8\,A\,b-6\,b\,C)\right)\right.$$
$$\left.\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\bigg/$$
$$\left(3\,a^4\,\left(a^2-b^2\right)^2\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+\frac{2\left(A\,b^2-a\,(b\,B-a\,C)\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,a\,\left(a^2-b^2\right)\,d\,(a+b\,\text{Sec}[c+d\,x])^{3/2}}+$$
$$\left(2\left(10\,a^2\,A\,b^2-6\,A\,b^4-7\,a^3\,b\,B+3\,a\,b^3\,B+4\,a^4\,C\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]\right)\bigg/$$
$$\left(3\,a^2\,\left(a^2-b^2\right)^2\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+\frac{1}{3\,a^3\,\left(a^2-b^2\right)^2\,d}$$
$$2\left(8\,A\,b^4+8\,a^3\,b\,B-4\,a\,b^3\,B+a^4\,(A-5\,C)-a^2\,b^2\,(13\,A-C)\right)$$
$$\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]$$

Result (type 1, 1 leaves):

???

Problem 1370: Unable to integrate problem.

$$\int\frac{\sqrt{\text{Cos}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]+C\,\text{Sec}[c+d\,x]^2\right)}{(a+b\,\text{Sec}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 401 leaves, 10 steps):

$$\left(2\left(8\,A\,b^3+3\,a^3\,B-2\,a\,b^2\,B-a^2\,b\,(9\,A+C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\bigg/$$
$$\left(3\,a^3\,\left(a^2-b^2\right)\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$
$$\left(2\left(8\,A\,b^4+6\,a^3\,b\,B-2\,a\,b^3\,B+3\,a^4\,(A-C)-a^2\,b^2\,(15\,A+C)\right)\sqrt{\text{Cos}[c+d\,x]}\right.$$
$$\left.\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\bigg/\left(3\,a^3\,\left(a^2-b^2\right)^2\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+$$
$$\frac{2\left(A\,b^2-a\,(b\,B-a\,C)\right)\text{Sin}[c+d\,x]}{3\,a\,\left(a^2-b^2\right)\,d\,\sqrt{\text{Cos}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])^{3/2}}-$$
$$\frac{2\left(4\,A\,b^4+5\,a^3\,b\,B-a\,b^3\,B-2\,a^4\,C-2\,a^2\,b^2\,(4\,A+C)\right)\text{Sin}[c+d\,x]}{3\,a^2\,\left(a^2-b^2\right)^2\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 8, 47 leaves):

$$\int \frac{\sqrt{\text{Cos}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2\right)}{(a+b\,\text{Sec}[c+d x])^{5/2}}\,dx$$

Problem 1371: Unable to integrate problem.

$$\int \frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{\sqrt{\text{Cos}[c+d x]}\,(a+b\,\text{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 4, 378 leaves, 10 steps):

$$-\left(\left(2\left(2 A b^2+a b B-a^2(3 A+C)\right)\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(3 a^2\left(a^2-b^2\right) d\sqrt{\text{Cos}[c+d x]}\,\sqrt{a+b\,\text{Sec}[c+d x]}\right)\right)-$$

$$\left(2\left(2 A b^3+3 a^3 B+a b^2 B-2 a^2 b(3 A+2 C)\right)\sqrt{\text{Cos}[c+d x]}\;\text{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d x]}\right)\Big/\left(3 a^2\left(a^2-b^2\right)^2 d\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\right)-$$

$$\frac{2\left(A b^2-a(b B-a C)\right)\text{Sin}[c+d x]}{3 b\left(a^2-b^2\right) d\sqrt{\text{Cos}[c+d x]}\,(a+b\,\text{Sec}[c+d x])^{3/2}}+\frac{2\left(A b^4+2 a^3 b B+2 a b^3 B+a^4 C-5 a^2 b^2(A+C)\right)\text{Sin}[c+d x]}{3 a b\left(a^2-b^2\right)^2 d\sqrt{\text{Cos}[c+d x]}\,\sqrt{a+b\,\text{Sec}[c+d x]}}$$

Result (type 8, 47 leaves):

$$\int \frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{\sqrt{\text{Cos}[c+d x]}\,(a+b\,\text{Sec}[c+d x])^{5/2}}\,dx$$

Problem 1372: Attempted integration timed out after 120 seconds.

$$\int \frac{A+B\,\text{Sec}[c+d x]+C\,\text{Sec}[c+d x]^2}{\text{Cos}[c+d x]^{3/2}\,(a+b\,\text{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 4, 447 leaves, 14 steps):

$$-\frac{2\left(A b^2-a\left(b B-a C\right)\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}\left(c+d x\right),\frac{2 a}{a+b}\right]}{3 a b\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$

$$\frac{2 C\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticPi}\left[2,\frac{1}{2}\left(c+d x\right),\frac{2 a}{a+b}\right]}{b^2 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}-$$

$$\left(2\left(A b^4-4 a b^3 B-3 a^4 C+a^2 b^2\left(3 A+7 C\right)\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}\left(c+d x\right),\frac{2 a}{a+b}\right]\right.$$

$$\left.\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Bigg/\left(3 a b^2\left(a^2-b^2\right)^2 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)-$$

$$\frac{2\left(A b^2-a\left(b B-a C\right)\right)\operatorname{Sin}[c+d x]}{3 b\left(a^2-b^2\right) d \operatorname{Cos}[c+d x]^{3/2}\left(a+b \operatorname{Sec}[c+d x]\right)^{3/2}}+$$

$$\frac{2\left(A b^4-4 a b^3 B-3 a^4 C+a^2 b^2\left(3 A+7 C\right)\right)\operatorname{Sin}[c+d x]}{3 b^2\left(a^2-b^2\right)^2 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 1373: Attempted integration timed out after 120 seconds.

$$\int \frac{A+B \operatorname{Sec}[c+d x]+C \operatorname{Sec}[c+d x]^2}{\operatorname{Cos}[c+d x]^{5/2}\left(a+b \operatorname{Sec}[c+d x]\right)^{5/2}}\, dx$$

Optimal (type 4, 563 leaves, 15 steps):

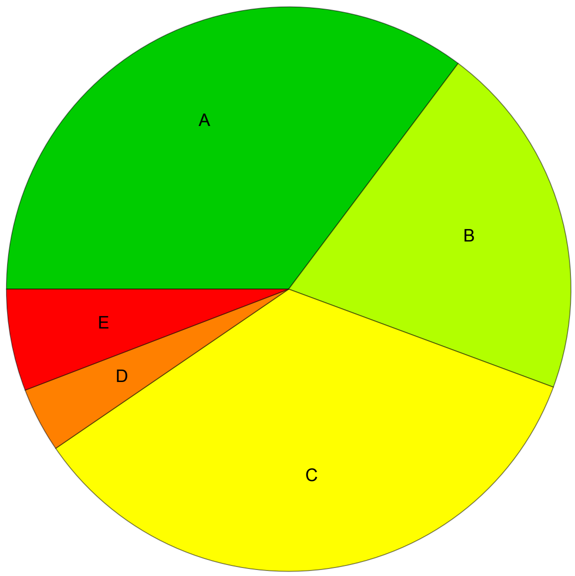
$$\left(\left(2 A b^2-2 a b B+5 a^2 C-3 b^2 C\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/$$
$$\left(3 b^2\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\right)+$$
$$\frac{(2 b B-5 a C)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticPi}\left[2,\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]}{b^3 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$
$$\left(\left(8 A b^4+6 a^3 b B-14 a b^3 B-15 a^4 C+26 a^2 b^2 C-3 b^4 C\right)\sqrt{\operatorname{Cos}[c+d x]}\right.$$
$$\left.\operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(3 b^3\left(a^2-b^2\right)^2 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)-$$
$$\frac{2\left(A b^2-a(b B-a C)\right)\operatorname{Sin}[c+d x]}{3 b\left(a^2-b^2\right) d \operatorname{Cos}[c+d x]^{5/2}\left(a+b \operatorname{Sec}[c+d x]\right)^{3/2}}+$$
$$\frac{2\left(3 A b^4+2 a^3 b B-6 a b^3 B-5 a^4 C+a^2 b^2(A+9 C)\right)\operatorname{Sin}[c+d x]}{3 b^2\left(a^2-b^2\right)^2 d \operatorname{Cos}[c+d x]^{3/2}\sqrt{a+b \operatorname{Sec}[c+d x]}}-$$
$$\left(\left(8 A b^4+6 a^3 b B-14 a b^3 B-15 a^4 C+26 a^2 b^2 C-3 b^4 C\right)\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]\right)\Big/$$
$$\left(3 b^3\left(a^2-b^2\right)^2 d \sqrt{\operatorname{Cos}[c+d x]}\right)$$

Result (type 1, 1 leaves):

???

Summary of Integration Test Results

1373 integration problems



A - 484 optimal antiderivatives

B - 280 more than twice size of optimal antiderivatives

C - 478 unnecessarily complex antiderivatives

D - 51 unable to integrate problems

E - 80 integration timeouts