Mathematica 11.3 Integration Test Results

Test results for the 634 problems in "4.5.3.1 (a+b sec)^m (d sec)^n (A+B sec).m"

Problem 27: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 167 leaves, 6 steps):

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

Result (type 6, 4860 leaves):

$$-\left(\left(18\,\mathrm{Sec}[c+d\,x]^{-2+m}\,(b\,\mathrm{Sec}[c+d\,x])^{4/3}\,(A+B\,\mathrm{Sec}[c+d\,x])\right.\right.$$
$$\left(B\,\mathrm{Sec}[c+d\,x]^{\frac{1}{3}+m}+\mathrm{Cos}[2\,(c+d\,x)]\,\left(\frac{1}{2}\,A\,\mathrm{Sec}[c+d\,x]^{\frac{4}{3}+m}-\frac{1}{2}\,i\,A\,\mathrm{Sec}[c+d\,x]^{\frac{7}{3}+m}\,\mathrm{Sin}[c+d\,x]\right)+\right.$$
$$\mathrm{Sec}[c+d\,x]\,\left(\frac{1}{2}\,A\,\mathrm{Sec}[c+d\,x]^{\frac{1}{3}+m}+\frac{1}{2}\,i\,A\,\mathrm{Sec}[c+d\,x]^{\frac{1}{3}+m}\,\mathrm{Sin}[2\,(c+d\,x)]\right)+$$
$$\mathrm{Sec}[c+d\,x]^2\,\left(B\,\mathrm{Sec}[c+d\,x]^{\frac{1}{3}+m}\,\mathrm{Sin}[c+d\,x]^2+\right.$$
$$\left.\left.\mathrm{Sin}[c+d\,x]\,\left(-\frac{1}{2}\,i\,A\,\mathrm{Sec}[c+d\,x]^{\frac{1}{3}+m}+\frac{1}{2}\,A\,\mathrm{Sec}[c+d\,x]^{\frac{1}{3}+m}\,\mathrm{Sin}[2\,(c+d\,x)]\right)\right)\right)$$
$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\left((A-B)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{4}{3}+m,-\frac{1}{3}-m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.\right.$$
$$\left.\left.-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\Big/$$
$$\left(9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{4}{3}+m,-\frac{1}{3}-m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$2\,\left((1+3\,m)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{4}{3}+m,\frac{2}{3}-m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$

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

$$\left(2 B \text{AppellF1}\left[\frac{1}{2}, \frac{7}{3}+m, -\frac{1}{3}-m, \frac{3}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right]\right) \Big/ \left(9 \text{AppellF1}\left[\frac{1}{2}, \frac{7}{3}+m, -\frac{1}{3}-m, \frac{3}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right] + 2 \left(\left(1+3 m\right) \text{AppellF1}\left[\frac{3}{2}, \frac{7}{3}+m, \frac{2}{3}-m, \frac{5}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right] + \left(7+3 m\right) \text{AppellF1}\left[\frac{3}{2}, \frac{10}{3}+m, -\frac{1}{3}-m, \frac{5}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right)\Big)\Big) \Big/ \left(d \left(B+A \text{Cos}\left[c+d x\right]\right) \left(-1+\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right)^2\right.$$

$$\left(\frac{1}{\left(-1+\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right)^3} 36 \text{Sec}\left[\frac{1}{2} \left(c+d x\right)\right]^2 \text{Sec}\left[c+d x\right]^{\frac{1}{3}+m} \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right.$$

$$\Big(\Big(\left(A-B\right) \text{AppellF1}\left[\frac{1}{2}, \frac{4}{3}+m, -\frac{1}{3}-m, \frac{3}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right] \left(-1+\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right)\Big) \Big/ \Big(9 \text{AppellF1}\left[\frac{1}{2}, \frac{4}{3}+m, -\frac{1}{3}-m, \frac{3}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right] + 2 \Big(\left(1+3 m\right) \text{AppellF1}\left[\frac{3}{2}, \frac{4}{3}+m, \frac{2}{3}-m, \frac{5}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right] + \left(4+3 m\right) \text{AppellF1}\left[\frac{3}{2}, \frac{7}{3}+m, -\frac{1}{3}-m, \frac{5}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\Big) -$$

$$\left(2 B \text{AppellF1}\left[\frac{1}{2}, \frac{7}{3}+m, -\frac{1}{3}-m, \frac{3}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right]\right) \Big/ \Big(9 \text{AppellF1}\left[\frac{1}{2}, \frac{7}{3}+m, -\frac{1}{3}-m, \frac{3}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right] + 2 \Big(\left(1+3 m\right) \text{AppellF1}\left[\frac{3}{2}, \frac{7}{3}+m, \frac{2}{3}-m, \frac{5}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right] + \left(7+3 m\right) \text{AppellF1}\left[\frac{3}{2}, \frac{10}{3}+m, -\frac{1}{3}-m, \frac{5}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\Big)\Big) -$$

$$\frac{1}{\left(-1+\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right)^2} 9 \text{Sec}\left[\frac{1}{2} \left(c+d x\right)\right]^2 \text{Sec}\left[c+d x\right]^{\frac{1}{3}+m}$$

$$\Big(\Big(\left(A-B\right) \text{AppellF1}\left[\frac{1}{2}, \frac{4}{3}+m, -\frac{1}{3}-m, \frac{3}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right] \left(-1+\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2\right)\Big) \Big/ \Big(9 \text{AppellF1}\left[\frac{1}{2}, \frac{4}{3}+m, -\frac{1}{3}-m, \frac{3}{2}, \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2,\right.$$

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

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

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

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

$$\left(9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{7}{3}+m,-\frac{1}{3}-m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

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

$$\left(7+3\,m\right)\mathrm{AppellF1}\left[\frac{3}{2},\frac{10}{3}+m,-\frac{1}{3}-m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

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

$$\frac{1}{\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2}\,18\left(\frac{1}{3}+m\right)\mathrm{Sec}\left[c+d\,x\right]^{\frac{4}{3}+m}\mathrm{Sin}\left[c+d\,x\right]\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]$$

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

$$\left.\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/\left(9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{4}{3}+m,-\frac{1}{3}-m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.\right.$$

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

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

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

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

$$\left(9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{7}{3}+m,-\frac{1}{3}-m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+\right.$$

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

$$\left(7+3\,m\right)\mathrm{AppellF1}\left[\frac{3}{2},\frac{10}{3}+m,-\frac{1}{3}-m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\right.$$

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

$$\frac{1}{\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2}\,18\,\mathrm{Sec}\left[c+d\,x\right]^{\frac{1}{3}+m}\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]$$

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

$$\left.\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\Big/\left(9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{4}{3}+m,-\frac{1}{3}-m,\frac{3}{2},\right.\right.$$

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

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

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

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

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

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

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

$$\left(9\,\mathrm{AppellF1}\left[\frac{1}{2},\,\frac{4}{3}+m,\,-\frac{1}{3}-m,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$

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

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

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

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

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

$$\frac{1}{3}\,\left(\frac{7}{3}+m\right)\mathrm{AppellF1}\left[\frac{3}{2},\,\frac{10}{3}+m,\,-\frac{1}{3}-m,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

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

$$\left(9\,\mathrm{AppellF1}\left[\frac{1}{2},\,\frac{7}{3}+m,\,-\frac{1}{3}-m,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$

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

$$(7+3\,m)\,\mathrm{AppellF1}\left[\frac{3}{2},\,\frac{10}{3}+m,\,-\frac{1}{3}-m,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

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

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

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

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

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

$$\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+9\left(-\frac{1}{3}\left(-\frac{1}{3}-m\right)\text{AppellF1}\left[\frac{3}{2},\frac{4}{3}+m,\frac{2}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+\frac{1}{3}\left(\frac{4}{3}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{7}{3}+m,-\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right)+$$

$$2\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\left(\left(1+3 m\right)\left(-\frac{3}{5}\left(\frac{2}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},\frac{4}{3}+m,\frac{5}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+\frac{3}{5}\left(\frac{4}{3}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{3}+m,\frac{2}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right)+\left(4+3 m\right)\left(-\frac{3}{5}\left(-\frac{1}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{3}+m,\frac{2}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+\frac{3}{5}\left(\frac{7}{3}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{10}{3}+m,-\frac{1}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{4}{3}+m,-\frac{1}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]+2\left(\left(1+3 m\right)\text{AppellF1}\left[\frac{3}{2},\frac{4}{3}+m,\frac{2}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]+\left(4+3 m\right)\text{AppellF1}\left[\frac{3}{2},\frac{7}{3}+m,-\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right)^2+$$

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

$$\left(2\left(\left(1+3 m\right)\text{AppellF1}\left[\frac{3}{2},\frac{7}{3}+m,\frac{2}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]+\left(7+3 m\right)\text{AppellF1}\left[\frac{3}{2},\frac{10}{3}+m,-\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+9\left(-\frac{1}{3}\left(-\frac{1}{3}-m\right)\text{AppellF1}\left[\frac{3}{2},\frac{7}{3}+m,\frac{2}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+\frac{1}{3}\left(\frac{7}{3}+m\right)\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{10}{3}+m,-\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)+2\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\Bigg((1+3 m)\left(-\frac{3}{5}\left(\frac{2}{3}-m\right)\mathrm{AppellF1}\left[\frac{5}{2},\frac{7}{3}+m,\frac{5}{3}-m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{3}{5}\left(\frac{7}{3}+m\right)\mathrm{AppellF1}\left[\frac{5}{2},\frac{10}{3}+m,\frac{2}{3}-m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+(7+3 m)$$
$$\left(-\frac{3}{5}\left(-\frac{1}{3}-m\right)\mathrm{AppellF1}\left[\frac{5}{2},\frac{10}{3}+m,\frac{2}{3}-m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{3}{5}\left(\frac{10}{3}+m\right)\mathrm{AppellF1}\left[\frac{5}{2},\frac{13}{3}+m,-\frac{1}{3}-m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{7}{3}+m,-\frac{1}{3}-m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$
$$2\Bigg((1+3 m)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{7}{3}+m,\frac{2}{3}-m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(7+3 m)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{10}{3}+m,-\frac{1}{3}-m,\frac{5}{2},\right.$$
$$\left.\left.\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 28: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 165 leaves, 6 steps):

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

Result (type 6, 5573 leaves):

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

$$(A+B\,\mathrm{Sec}[c+d x])\Big(B\,\mathrm{Sec}[c+d x]^{-\frac{1}{3}+m}+\frac{1}{2}A\,\mathrm{Sec}[c+d x]^{\frac{2}{3}+m}+$$

$$\mathrm{Cos}[2(c+d x)]\left(\frac{1}{2}A\,\mathrm{Sec}[c+d x]^{\frac{2}{3}+m}-\frac{1}{2}\,i\,A\,\mathrm{Sec}[c+d x]^{\frac{5}{3}+m}\mathrm{Sin}[c+d x]\right)+\frac{1}{2}\,i\,A$$

$$\mathrm{Sec}[c+d x]^{\frac{2}{3}+m}\mathrm{Sin}[2(c+d x)]+\mathrm{Sec}[c+d x]\Big(B\,\mathrm{Sec}[c+d x]^{\frac{2}{3}+m}\mathrm{Sin}[c+d x]^2+\mathrm{Sin}[c+d x]$$

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

$$\Big(-\Big(\Big(9(A+B)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\Big/$$

$$\Big(9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

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

$$(5+3m)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)$$

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

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

$$\Big(15\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

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

$$(5+3m)\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

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

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

$$2\left(\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^{\frac{2}{3}+m}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Sec}[c+d x]\right)^{\frac{2}{3}+m}\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\Big(-\Big(\Big(9(A+B)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\Big/$$

$$\Big(9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2$$

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

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+(5+3 m)\,\text{AppellF1}\Big[\frac{3}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{5}{2},$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$
$$\Big(5\,(A-B)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big/\Big(15\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+2\Big((-1+3 m)\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{7}{2},$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+(5+3 m)\,\text{AppellF1}\Big[\frac{5}{2},\frac{8}{3}+m,$$
$$\frac{1}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$
$$\frac{1}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^{\frac{2}{3}+m}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{\frac{2}{3}+m}$$
$$\Big(-\Big(\Big(9\,(A+B)\,\text{AppellF1}\Big[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\Big/$$
$$\Big(9\,\text{AppellF1}\Big[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+$$
$$2\Big((-1+3 m)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+(5+3 m)\,\text{AppellF1}\Big[\frac{3}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{5}{2},$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$
$$\Big(5\,(A-B)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big/\Big(15\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+2\Big((-1+3 m)\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{7}{2},$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+(5+3 m)\,\text{AppellF1}\Big[\frac{5}{2},\frac{8}{3}+m,$$
$$\frac{1}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$
$$\frac{1}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\,2\left(-\frac{1}{3}+m\right)\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{3}+m}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{\frac{2}{3}+m}$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\Big(-\Big(\Big(9\,(A+B)\,\text{AppellF1}\Big[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\Big/$$
$$\Big(9\,\text{AppellF1}\Big[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+$$

$$2\left(\left(-1+3m\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\left(5+3m\right)\text{AppellF1}\left[\frac{3}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)\Bigg)+$$

$$\left(5(A-B)\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big/\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\left(\left(-1+3m\right)\text{AppellF1}\left[\frac{5}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\left(5+3m\right)\text{AppellF1}\left[\frac{5}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Bigg)+$$

$$\frac{1}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}2\left(\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\right)^{-\frac{1}{3}+m}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\text{Sec}[c+dx]\right)^{\frac{2}{3}+m}$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]$$

$$\Bigg(-\Bigg(\Bigg(9(A+B)\left(-\frac{1}{3}\left(\frac{1}{3}-m\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{1}{3}\left(\frac{5}{3}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\Bigg)\Big/\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\left(\left(-1+3m\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\left(5+3m\right)\text{AppellF1}\left[\frac{3}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)+$$

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

$$\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\left(\left(-1+3m\right)\text{AppellF1}\left[\frac{5}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\left(5+3m\right)\text{AppellF1}\left[\frac{5}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)+\left(5(A-B)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right.$$

$$
\begin{aligned}
&\left(-\frac{3}{5}\left(\frac{1}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{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.\\
&\quad\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{3}{5}\left(\frac{5}{3}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{7}{2},\right.\\
&\quad\left.\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)\right)\Big/\\
&\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.\\
&\quad 2\left((-1+3 m)\text{AppellF1}\left[\frac{5}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\\
&\quad\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(5+3 m)\text{AppellF1}\left[\frac{5}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{7}{2},\right.\\
&\quad\left.\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\right)+\\
&\left(9(A+B)\text{AppellF1}\left[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.\\
&\quad\left(2\left((-1+3 m)\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+\right.\right.\right.\right.\\
&\quad\quad\left.\left.d x)\right]^2\right]+(5+3 m)\text{AppellF1}\left[\frac{3}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\\
&\quad\left.\left.-\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}\right.\\
&\quad\left(\frac{1}{3}-m\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\\
&\quad\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3}\left(\frac{5}{3}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{5}{2},\right.\\
&\quad\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)+\\
&\quad 2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left((-1+3 m)\left(-\frac{3}{5}\left(\frac{4}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},\frac{5}{3}+m,\frac{7}{3}-m,\right.\right.\right.\\
&\quad\quad\left.\frac{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.\\
&\quad\quad\left.\frac{1}{2}(c+d x)\right]+\frac{3}{5}\left(\frac{5}{3}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{8}{3}+m,\frac{4}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\\
&\quad\quad\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)+\\
&\quad\quad(5+3 m)\left(-\frac{3}{5}\left(\frac{1}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},\frac{8}{3}+m,\frac{4}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\\
&\quad\quad\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]+\\
&\quad\quad\frac{3}{5}\left(\frac{8}{3}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{11}{3}+m,\frac{1}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\\
&\quad\quad\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(9\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.
\end{aligned}
$$

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

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+\big(5+3\,m\big)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{8}{3}+m,\,\frac{1}{3}-m,\,\frac{5}{2},$$

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

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

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\Big(2\,\Big(\big(-1+3\,m\big)\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{3}+m,\,\frac{4}{3}-m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+\big(5+3\,m\big)\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{8}{3}+m,\,\frac{1}{3}-m,\,\frac{7}{2},$$

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

$$15\,\Big(-\frac{3}{5}\,\Big(\frac{1}{3}-m\Big)\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{3}+m,\,\frac{4}{3}-m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

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

$$\frac{3}{5}\,\Big(\frac{5}{3}+m\Big)\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{8}{3}+m,\,\frac{1}{3}-m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

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

$$2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\Big(\big(-1+3\,m\big)\,\Big(-\frac{5}{7}\,\Big(\frac{4}{3}-m\Big)\,\text{AppellF1}\Big[\frac{7}{2},\,\frac{5}{3}+m,\,\frac{7}{3}-m,$$

$$\frac{9}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[$$

$$\frac{1}{2}\,(c+d\,x)\Big]+\frac{5}{7}\,\Big(\frac{5}{3}+m\Big)\,\text{AppellF1}\Big[\frac{7}{2},\,\frac{8}{3}+m,\,\frac{4}{3}-m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

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

$$\big(5+3\,m\big)\,\Big(-\frac{5}{7}\,\Big(\frac{1}{3}-m\Big)\,\text{AppellF1}\Big[\frac{7}{2},\,\frac{8}{3}+m,\,\frac{4}{3}-m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

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

$$\frac{5}{7}\,\Big(\frac{8}{3}+m\Big)\,\text{AppellF1}\Big[\frac{7}{2},\,\frac{11}{3}+m,\,\frac{1}{3}-m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

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

$$\Big(15\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{5}{3}+m,\,\frac{1}{3}-m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+$$

$$2\,\Big(\big(-1+3\,m\big)\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{3}+m,\,\frac{4}{3}-m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+\big(5+3\,m\big)\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{8}{3}+m,\,\frac{1}{3}-m,\,\frac{7}{2},$$

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

$$\frac{1}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\,2\left(\frac{2}{3}+m\right)\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{3}+m}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{-\frac{1}{3}+m}\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$
$$\left(-\left(\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\right.\right.$$
$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left((-1+3m)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(5+3m)\,\text{AppellF1}\left[\frac{3}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{5}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$
$$\left(5\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big/$$
$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3}+m,\frac{1}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left((-1+3m)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3}+m,\frac{4}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(5+3m)\,\text{AppellF1}\left[\frac{5}{2},\frac{8}{3}+m,\frac{1}{3}-m,\frac{7}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)$$
$$\left(-\text{Cos}\left[\frac{1}{2}(c+d x)\right]\text{Sec}[c+d x]\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\right.$$
$$\left.\left.\left.\text{Sec}[c+d x]\,\text{Tan}[c+d x]\right)\right)\right)$$

Problem 29: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 165 leaves, 6 steps):

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

Result (type 6, 5573 leaves):

$$\left(2\left(\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{-\frac{2}{3}+m}\,(b\,\text{Sec}[c+d\,x])^{1/3}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Sec}[c+d\,x]\right)^{\frac{1}{3}+m}\right.$$
$$(A+B\,\text{Sec}[c+d\,x])\,\left(B\,\text{Sec}[c+d\,x]^{-\frac{2}{3}+m}+\frac{1}{2}\,A\,\text{Sec}[c+d\,x]^{\frac{1}{3}+m}+\right.$$
$$\text{Cos}[2\,(c+d\,x)]\,\left(\frac{1}{2}\,A\,\text{Sec}[c+d\,x]^{\frac{1}{3}+m}-\frac{1}{2}\,\text{i}\,A\,\text{Sec}[c+d\,x]^{\frac{4}{3}+m}\,\text{Sin}[c+d\,x]\right)+\frac{1}{2}\,\text{i}\,A$$
$$\text{Sec}[c+d\,x]^{\frac{1}{3}+m}\,\text{Sin}[2\,(c+d\,x)]+\text{Sec}[c+d\,x]\,\left(B\,\text{Sec}[c+d\,x]^{\frac{1}{3}+m}\,\text{Sin}[c+d\,x]^2+\text{Sin}[c+d\,x]\right.$$
$$\left.\left.\left(-\frac{1}{2}\,\text{i}\,A\,\text{Sec}[c+d\,x]^{\frac{1}{3}+m}+\frac{1}{2}\,A\,\text{Sec}[c+d\,x]^{\frac{1}{3}+m}\,\text{Sin}[2\,(c+d\,x)]\right)\right)\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$
$$\left(-\left(\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{4}{3}+m,\,\frac{2}{3}-m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\Big/\right.\right.$$
$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\,\frac{4}{3}+m,\,\frac{2}{3}-m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$2\left((-2+3\,m)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{4}{3}+m,\,\frac{5}{3}-m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$\left.(4+3\,m)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{7}{3}+m,\,\frac{2}{3}-m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+\left(5\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{4}{3}+m,\,\frac{2}{3}-m,\,\frac{5}{2},\right.\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/$$
$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\,\frac{4}{3}+m,\,\frac{2}{3}-m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$2\left((-2+3\,m)\,\text{AppellF1}\left[\frac{5}{2},\,\frac{4}{3}+m,\,\frac{5}{3}-m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$(4+3\,m)\,\text{AppellF1}\left[\frac{5}{2},\,\frac{7}{3}+m,\,\frac{2}{3}-m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\right)\Big/$$
$$\left(d\,(B+A\,\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]^{4/3}\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right.$$

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

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

$$\Bigg(-\Bigg(\Bigg(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{4}{3}+m,\,\frac{2}{3}-m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\Bigg)\Bigg/$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},\,\frac{4}{3}+m,\,\frac{2}{3}-m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+2$$

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

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

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

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

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Bigg)\Bigg/\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\,\frac{4}{3}+m,\,\frac{2}{3}-m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

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

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

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

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

$$\Bigg(-\Bigg(\Bigg(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{4}{3}+m,\,\frac{2}{3}-m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\Bigg)\Bigg/$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},\,\frac{4}{3}+m,\,\frac{2}{3}-m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

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

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

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

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

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Bigg)\Bigg/\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\,\frac{4}{3}+m,\,\frac{2}{3}-m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

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

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

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

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

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

$$\Big(-\Big(\Big(9\,(A+B)\ \text{AppellF1}\left[\frac{1}{2},\ \frac{4}{3}+m,\ \frac{2}{3}-m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\Big)\Big/$$

$$\Big(9\,\text{AppellF1}\left[\frac{1}{2},\ \frac{4}{3}+m,\ \frac{2}{3}-m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

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

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

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

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

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

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

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

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

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

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

$$\Big(-\Big(\Big(9\,(A+B)\,\Big(-\frac{1}{3}\left(\frac{2}{3}-m\right)\text{AppellF1}\Big[\frac{3}{2},\ \frac{4}{3}+m,\ \frac{5}{3}-m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,$$

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

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

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big)\Big)\Big/\Big(9\,\text{AppellF1}\Big[\frac{1}{2},\ \frac{4}{3}+m,\ \frac{2}{3}-m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,$$

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

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

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

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

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

$$\Big(15\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{4}{3}+m,\ \frac{2}{3}-m,\ \frac{5}{2},\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]+$$

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

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

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

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

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

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

$$\Big(15\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{4}{3}+m,\ \frac{2}{3}-m,\ \frac{5}{2},\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]+$$

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

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

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

$$\Big(9\ (A+B)\ \text{AppellF1}\Big[\frac{1}{2},\ \frac{4}{3}+m,\ \frac{2}{3}-m,\ \frac{3}{2},\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]$$

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

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

$$-\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]\Big)\ \text{Sec}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]+9\ \Big(-\frac{1}{3}$$

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

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

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

$$2\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\ \Big((-2+3\,m)\ \Big(-\frac{3}{5}\ \Big(\frac{5}{3}-m\Big)\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{4}{3}+m,\ \frac{8}{3}-m,$$

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

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

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)+$$
$$(4+3m)\left(-\frac{3}{5}\left(\frac{2}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{3}+m,\frac{5}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{3}{5}\left(\frac{7}{3}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{10}{3}+m,\frac{2}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big)\Big)\Big/$$
$$\Big(9\,\text{AppellF1}\left[\frac{1}{2},\frac{4}{3}+m,\frac{2}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$
$$2\Big((-2+3m)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3}+m,\frac{5}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+(4+3m)\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{3}+m,\frac{2}{3}-m,\frac{5}{2},\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)^2-$$
$$\Big(5\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3}+m,\frac{2}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big(2\Big((-2+3m)\,\text{AppellF1}\left[\frac{5}{2},\frac{4}{3}+m,\frac{5}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+(4+3m)\,\text{AppellF1}\left[\frac{5}{2},\frac{7}{3}+m,\frac{2}{3}-m,\frac{7}{2},\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$15\left(-\frac{3}{5}\left(\frac{2}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},\frac{4}{3}+m,\frac{5}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{3}{5}\left(\frac{4}{3}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{3}+m,\frac{2}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)+$$
$$2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big((-2+3m)\left(-\frac{5}{7}\left(\frac{5}{3}-m\right)\text{AppellF1}\left[\frac{7}{2},\frac{4}{3}+m,\frac{8}{3}-m,\right.\right.$$
$$\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\Big[$$
$$\frac{1}{2}(c+d x)\Big]+\frac{5}{7}\left(\frac{4}{3}+m\right)\text{AppellF1}\left[\frac{7}{2},\frac{7}{3}+m,\frac{5}{3}-m,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)+$$
$$(4+3m)\left(-\frac{5}{7}\left(\frac{2}{3}-m\right)\text{AppellF1}\left[\frac{7}{2},\frac{7}{3}+m,\frac{5}{3}-m,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$\frac{5}{7}\left(\frac{7}{3}+m\right)\text{AppellF1}\left[\frac{7}{2},\frac{10}{3}+m,\frac{2}{3}-m,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3}+m,\frac{2}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

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

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

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

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

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

$$\text{Tan}\Big[$$

$$\frac{1}{2}(c+d x)\Big]$$

$$\left(-\left(\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\frac{4}{3}+m,\frac{2}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\right.\right.$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{4}{3}+m,\frac{2}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

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

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

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

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

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

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{4}{3}+m,\frac{2}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

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

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

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

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

$$\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\Big)\Big)\Big)$$

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

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

Optimal (type 5, 173 leaves, 6 steps):

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

Result (type 6, 5557 leaves):

$$\Bigg(2\,\left(\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{-\frac{7}{3}+m}\,\text{Sec}[c+d\,x]^{1/3}\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Sec}[c+d\,x]\right)^{\frac{2}{3}+m}\,\left(A+B\,\text{Sec}[c+d\,x]\right)$$
$$\Bigg(B\,\text{Sec}[c+d\,x]^{-\frac{7}{3}+m}+\text{Cos}\left[2\,(c+d\,x)\right]\,\left(\frac{1}{2}\,A\,\text{Sec}[c+d\,x]^{-\frac{4}{3}+m}-\frac{1}{2}\,i\,A\,\text{Sec}[c+d\,x]^{-\frac{1}{3}+m}\,\text{Sin}[c+d\,x]\right)+$$
$$\text{Cos}[c+d\,x]^2\,\left(\frac{1}{2}\,A\,\text{Sec}[c+d\,x]^{\frac{2}{3}+m}+\frac{1}{2}\,i\,A\,\text{Sec}[c+d\,x]^{\frac{2}{3}+m}\,\text{Sin}\left[2\,(c+d\,x)\right]\right)+$$
$$\text{Cos}[c+d\,x]\,\Bigg(B\,\text{Sec}[c+d\,x]^{\frac{2}{3}+m}\,\text{Sin}[c+d\,x]^2+$$
$$\text{Sin}[c+d\,x]\,\left(-\frac{1}{2}\,i\,A\,\text{Sec}[c+d\,x]^{\frac{2}{3}+m}+\frac{1}{2}\,A\,\text{Sec}[c+d\,x]^{\frac{2}{3}+m}\,\text{Sin}\left[2\,(c+d\,x)\right]\right)\Bigg)\Bigg)$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$
$$\Bigg(-\Bigg(\Bigg(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\Bigg)\Bigg/$$
$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$
$$2\,\Bigg((-7+3\,m)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$
$$(-1+3\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\Bigg)$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Bigg)\Bigg)+\Bigg(5\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\right.$$
$$\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Bigg)\Bigg/$$

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(\left(-7+3\,m\right)\text{AppellF1}\left[\frac{5}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\left(-1+3\,m\right)\text{AppellF1}\left[\frac{5}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg/\Bigg(d\left(B+A\,\text{Cos}[c+d\,x]\right)\left(b\,\text{Sec}[c+d\,x]\right)^{4/3}$$

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

$$\Bigg(-\Bigg(\Bigg(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg)\Bigg/\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(\left(-7+3\,m\right)\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\left(-1+3\,m\right)\text{AppellF1}\left[\frac{3}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(5\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg/\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(\left(-7+3\,m\right)\text{AppellF1}\left[\frac{5}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\left(-1+3\,m\right)\text{AppellF1}\left[\frac{5}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)+$$

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

$$\Bigg(-\Bigg(\Bigg(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg)\Bigg/\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(\left(-7+3\,m\right)\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\left(-1+3\,m\right)\text{AppellF1}\left[\frac{3}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)+$$

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

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

$$\Big(15\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{1}{3}+m,\,\frac{7}{3}-m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

$$2\,\Big(\,(-7+3\,m)\,\text{AppellF1}\left[\frac{5}{2},\,-\frac{1}{3}+m,\,\frac{10}{3}-m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

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

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

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

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

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

$$\Big(-\Big(\Big(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{1}{3}+m,\,\frac{7}{3}-m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\Big)\Big/$$

$$\Big(9\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{1}{3}+m,\,\frac{7}{3}-m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

$$2\,\Big(\,(-7+3\,m)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{1}{3}+m,\,\frac{10}{3}-m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

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

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

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

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

$$\Big(15\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{1}{3}+m,\,\frac{7}{3}-m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

$$2\,\Big(\,(-7+3\,m)\,\text{AppellF1}\left[\frac{5}{2},\,-\frac{1}{3}+m,\,\frac{10}{3}-m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

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

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

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

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

$$\Big(-\Big(\Big(9\,(A+B)\,\left(-\frac{1}{3}\left(\frac{7}{3}-m\right)\text{AppellF1}\left[\frac{3}{2},\,-\frac{1}{3}+m,\,\frac{10}{3}-m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.$$

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

$$\left(-\frac{1}{3}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(9\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left((-7+3m)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(-1+3m)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{5}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$
$$\left(5\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\Big/$$
$$\left(15\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\right.$$
$$\left(\left(-7+3m\right)\text{AppellF1}\left[\frac{5}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$\left.(-1+3m)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+\left(5\,(A-B)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right.$$
$$\left(-\frac{3}{5}\left(\frac{7}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{3}{5}\left(-\frac{1}{3}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{7}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(15\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left((-7+3m)\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(-1+3m)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{7}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$
$$\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\left(2\left((-7+3m)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(-1+3m)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{5}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$9\left(-\frac{1}{3}\left(\frac{7}{3}-m\right)\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{1}{3}\left(-\frac{1}{3}+m\right)$$
$$\text{AppellF1}\left[\frac{3}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2$$
$$\left((-7+3m)\left(-\frac{3}{5}\left(\frac{10}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},-\frac{1}{3}+m,\frac{13}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+$$
$$\frac{3}{5}\left(-\frac{1}{3}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{2}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)+$$
$$(-1+3m)\left(-\frac{3}{5}\left(\frac{7}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},\frac{2}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+$$
$$\frac{3}{5}\left(\frac{2}{3}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{5}{3}+m,\frac{7}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\right)\right)\Big/$$
$$\left(9\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$
$$2\left((-7+3m)\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+(-1+3m)\text{AppellF1}\left[\frac{3}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{5}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2-$$
$$\left(5(A-B)\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\left(2\left((-7+3m)\text{AppellF1}\left[\frac{5}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+(-1+3m)\text{AppellF1}\left[\frac{5}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{7}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+$$
$$15\left(-\frac{3}{5}\left(\frac{7}{3}-m\right)\text{AppellF1}\left[\frac{5}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{3}{5}\left(-\frac{1}{3}+m\right)$$
$$\text{AppellF1}\left[\frac{5}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$

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

$$\Bigg(\left(-7+3 m\right)\left(-\frac{5}{7}\left(\frac{10}{3}-m\right) \text{AppellF1}\left[\frac{7}{2},-\frac{1}{3}+m,\frac{13}{3}-m,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

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

$$\frac{5}{7}\left(-\frac{1}{3}+m\right) \text{AppellF1}\left[\frac{7}{2},\frac{2}{3}+m,\frac{10}{3}-m,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

$$\left(-1+3 m\right)\left(-\frac{5}{7}\left(\frac{7}{3}-m\right) \text{AppellF1}\left[\frac{7}{2},\frac{2}{3}+m,\frac{10}{3}-m,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$

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

$$\frac{5}{7}\left(\frac{2}{3}+m\right) \text{AppellF1}\left[\frac{7}{2},\frac{5}{3}+m,\frac{7}{3}-m,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

$$\Bigg(15 \text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$2\Bigg(\left(-7+3 m\right) \text{AppellF1}\left[\frac{5}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

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

$$2\left(\frac{2}{3}+m\right)\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{7}{3}+m}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]\right)^{-\frac{1}{3}+m}$$

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

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

$$\Bigg(-\Bigg(\Bigg(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\Bigg/$$

$$\Bigg(9 \text{AppellF1}\left[\frac{1}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$2\Bigg(\left(-7+3 m\right) \text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

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

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

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big) \Big/ \Big(15\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3}+m,\frac{7}{3}-m,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\Big(\big(-7+3 m\big)\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{3}+m,\frac{10}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\big(-1+3 m\big)\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3}+m,\frac{7}{3}-m,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big(-\text{Cos}\left[\frac{1}{2}(c+d x)\right]\text{Sec}[c+d x]\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]\Big)\Big)\Big)$$

Problem 39: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 163 leaves, 6 steps):

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

Result (type 6, 4819 leaves):

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$
\begin{aligned}
&\frac{1}{\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{Sec}[c+d x]^{\frac{1}{2}+n} \\
&\Bigg(\Bigg((A-B)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,-\frac{1}{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] \\
&\quad\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Big/\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,-\frac{1}{2}-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right. \\
&\quad\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\Bigg((1+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+n,\frac{1}{2}-n,\frac{5}{2},\right. \\
&\quad\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(3+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\right. \\
&\quad\left.-\frac{1}{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)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)- \\
&\Bigg(2 B\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+n,-\frac{1}{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)\Big/ \\
&\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+n,-\frac{1}{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]+ \\
&\quad\Bigg((1+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{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]+ \\
&\quad(5+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+n,-\frac{1}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right. \\
&\quad\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)\Bigg)- \\
&\frac{1}{\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2} 6\left(\frac{1}{2}+n\right)\text{Sec}[c+d x]^{\frac{3}{2}+n}\,\text{Sin}[c+d x]\,\text{Tan}\left[\frac{1}{2}(c+d x)\right] \\
&\Bigg(\Bigg((A-B)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,-\frac{1}{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] \\
&\quad\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Big/\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,-\frac{1}{2}-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right. \\
&\quad\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\Bigg((1+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+n,\frac{1}{2}-n,\frac{5}{2},\right. \\
&\quad\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(3+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\right. \\
&\quad\left.-\frac{1}{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)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)- \\
&\Bigg(2 B\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+n,-\frac{1}{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)\Big/ \\
&\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+n,-\frac{1}{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]+ \\
&\quad\Bigg((1+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{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]+ \\
&\quad(5+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+n,-\frac{1}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right. \\
&\quad\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)\Bigg)-
\end{aligned}
$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$3\left(-\frac{1}{3}\left(-\frac{1}{2}-n\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3}\left(\frac{5}{2}+n\right)$$
$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+n,-\frac{1}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\left((1+2 n)\left(-\frac{3}{5}\left(\frac{1}{2}-n\right)\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+n,\frac{3}{2}-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{3}{5}\left(\frac{5}{2}+n\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+n,\frac{1}{2}-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+(5+2 n)$$
$$\left(-\frac{3}{5}\left(-\frac{1}{2}-n\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+n,\frac{1}{2}-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{3}{5}\left(\frac{7}{2}+n\right)\text{AppellF1}\left[\frac{5}{2},\frac{9}{2}+n,-\frac{1}{2}-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+n,-\frac{1}{2}-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$\left((1+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(5+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+n,-\frac{1}{2}-n,\frac{5}{2},$$
$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\right)\right)$$

Problem 40: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 163 leaves, 6 steps):

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

Result (type 6, 5543 leaves):

$$\left(2\left(\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{-\frac{1}{2}+n}\text{Sec}[c+d\,x]^{-n}\,(b\,\text{Sec}[c+d\,x])^n\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{\frac{1}{2}+n}\left(B\,\text{Sec}[c+d\,x]^{-\frac{1}{2}+n}+\frac{1}{2}\,A\,\text{Sec}[c+d\,x]^{\frac{1}{2}+n}+\right.$$
$$\text{Cos}[2\,(c+d\,x)]\left(\frac{1}{2}\,A\,\text{Sec}[c+d\,x]^{\frac{1}{2}+n}-\frac{1}{2}\,i\,A\,\text{Sec}[c+d\,x]^{\frac{3}{2}+n}\,\text{Sin}[c+d\,x]\right)+\frac{1}{2}\,i\,A$$
$$\text{Sec}[c+d\,x]^{\frac{1}{2}+n}\,\text{Sin}[2\,(c+d\,x)]+\text{Sec}[c+d\,x]\left(B\,\text{Sec}[c+d\,x]^{\frac{1}{2}+n}\,\text{Sin}[c+d\,x]^2+\text{Sin}[c+d\,x]\right.$$
$$\left.\left.\left(-\frac{1}{2}\,i\,A\,\text{Sec}[c+d\,x]^{\frac{1}{2}+n}+\frac{1}{2}\,A\,\text{Sec}[c+d\,x]^{\frac{1}{2}+n}\,\text{Sin}[2\,(c+d\,x)]\right)\right)\right)\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$
$$\left(-\left(\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{3}{2}+n,\,\frac{1}{2}-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\Big/\right.\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,\frac{3}{2}+n,\,\frac{1}{2}-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$\left((-1+2\,n)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2}+n,\,\frac{3}{2}-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$\left.(3+2\,n)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{5}{2}+n,\,\frac{1}{2}-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+\left(5\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2}+n,\,\frac{1}{2}-n,\,\frac{5}{2},\right.\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/$$
$$\left(5\,\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2}+n,\,\frac{1}{2}-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$\left((-1+2\,n)\,\text{AppellF1}\left[\frac{5}{2},\,\frac{3}{2}+n,\,\frac{3}{2}-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$\left.(3+2\,n)\,\text{AppellF1}\left[\frac{5}{2},\,\frac{5}{2}+n,\,\frac{1}{2}-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\right)\Big/\left(3\,d\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right.$$
$$\left(-\frac{1}{3\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2}\,2\left(\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{\frac{1}{2}+n}\right.$$

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

$$\left(-\left(\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\Big/\right.\right.$$

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

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

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

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

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

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

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

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

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

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

$$\left(-\left(\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\Big/\right.\right.$$

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

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

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

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

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

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

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

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

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

$$\frac{1}{3\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}2\left(-\frac{1}{2}+n\right)\left(\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{-\frac{1}{2}+n}$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{\frac{1}{2}+n}$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$
$$\left(-\left(\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\right.\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left(\left(-1+2\,n\right)\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+n,\frac{3}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left(3+2\,n\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+\left(5\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+n,\right.\right.$$
$$\left.\left.\frac{1}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big/$$
$$\left(5\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+n,\frac{1}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left(\left(-1+2\,n\right)\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+n,\frac{3}{2}-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+\left(3+2\,n\right)\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+n,\frac{1}{2}-n,\frac{7}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$

$$\frac{1}{3\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}2\left(\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{-\frac{1}{2}+n}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{\frac{1}{2}+n}$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$
$$\left(-\left(\left(9\,(A+B)\left(-\frac{1}{3}\left(\frac{1}{2}-n\right)\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+n,\frac{3}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}\left(\frac{3}{2}+n\right)$$
$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}-n,\frac{3}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+\left(\left(-1+2\,n\right)\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+n,\frac{3}{2}-n,\right.\right.$$
$$\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+\left(3+2\,n\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\right.$$
$$\left.\left.\frac{1}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)\Big)+$$

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\Big(9\ (A+B)\ \text{AppellF1}\Big[\frac{1}{2},\ \frac{3}{2}+n,\ \frac{1}{2}-n,\ \frac{3}{2},\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\Big[$$

$$\frac{1}{2}(c+d\,x)\Big]+\frac{5}{7}\left(\frac{3}{2}+n\right)\mathrm{AppellF1}\left[\frac{7}{2},\frac{5}{2}+n,\frac{3}{2}-n,\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$(3+2\,n)\left(-\frac{5}{7}\left(\frac{1}{2}-n\right)\mathrm{AppellF1}\left[\frac{7}{2},\frac{5}{2}+n,\frac{3}{2}-n,\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$

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

$$\frac{5}{7}\left(\frac{5}{2}+n\right)\text{AppellF1}\left[\frac{7}{2},\frac{7}{2}+n,\frac{1}{2}-n,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

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

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

$$\Bigg(-\Bigg(\Bigg(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\Bigg/$$

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

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

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

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

$$\text{Sec}[c+d\,x]\ \text{Tan}[c+d\,x]\Big)\Big)\Big)$$

Problem 42: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 163 leaves, 6 steps):

$$-\Big(\Big(2\,A\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{1}{4}(5-2n),\frac{1}{4}(9-2n),\text{Cos}[c+d\,x]^2\Big]\,(b\,\text{Sec}[c+d\,x])^n\,\text{Sin}[c+d\,x]\Big)\Big/\Big(d\,(5-2n)\,\text{Sec}[c+d\,x]^{5/2}\sqrt{\text{Sin}[c+d\,x]^2}\Big)\Big)-\Big(2\,B\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{1}{4}(3-2n),\frac{1}{4}(7-2n),\text{Cos}[c+d\,x]^2\Big]\,(b\,\text{Sec}[c+d\,x])^n\,\text{Sin}[c+d\,x]\Big)\Big/\Big(d\,(3-2n)\,\text{Sec}[c+d\,x]^{3/2}\sqrt{\text{Sin}[c+d\,x]^2}\Big)$$

Result (type 6, 5527 leaves):

$$\Big(2\left(\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\right)^{-\frac{5}{2}+n}\text{Sec}[c+d\,x]^{-n}\,(b\,\text{Sec}[c+d\,x])^n\left(\text{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Sec}[c+d\,x]\right)^{\frac{1}{2}+n}$$
$$\Big(B\,\text{Sec}[c+d\,x]^{-\frac{5}{2}+n}+\text{Cos}[2(c+d\,x)]\left(\frac{1}{2}A\,\text{Sec}[c+d\,x]^{-\frac{3}{2}+n}-\frac{1}{2}\,i\,A\,\text{Sec}[c+d\,x]^{-\frac{1}{2}+n}\,\text{Sin}[c+d\,x]\right)+$$
$$\text{Cos}[c+d\,x]^2\left(\frac{1}{2}A\,\text{Sec}[c+d\,x]^{\frac{1}{2}+n}+\frac{1}{2}\,i\,A\,\text{Sec}[c+d\,x]^{\frac{1}{2}+n}\,\text{Sin}[2(c+d\,x)]\right)+$$
$$\text{Cos}[c+d\,x]\Big(B\,\text{Sec}[c+d\,x]^{\frac{1}{2}+n}\,\text{Sin}[c+d\,x]^2+$$
$$\text{Sin}[c+d\,x]\left(-\frac{1}{2}\,i\,A\,\text{Sec}[c+d\,x]^{\frac{1}{2}+n}+\frac{1}{2}A\,\text{Sec}[c+d\,x]^{\frac{1}{2}+n}\,\text{Sin}[2(c+d\,x)]\right)\Big)\Big)$$
$$\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\left(-1+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\right)$$
$$\Big(-\Big(\Big(9\,(A+B)\,\text{AppellF1}\Big[\frac{1}{2},-\frac{1}{2}+n,\frac{5}{2}-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\Big/$$
$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-\frac{1}{2}+n,\frac{5}{2}-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+$$
$$\Big((-5+2n)\,\text{AppellF1}\Big[\frac{3}{2},-\frac{1}{2}+n,\frac{7}{2}-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+$$
$$(-1+2n)\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)$$
$$\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)\Big)+\Big(5\,(A-B)\,\text{AppellF1}\Big[\frac{3}{2},-\frac{1}{2}+n,\frac{5}{2}-n,$$
$$\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)\Big/$$

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

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

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

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

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

$$\Big(-\Big(\Big(9\,(A+B)\,\text{AppellF1}\Big[\frac{1}{2},\,-\frac{1}{2}+n,\,\frac{5}{2}-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\Big/$$

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

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

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

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

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

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

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

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

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

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

$$\Big(-\Big(\Big(9\,(A+B)\,\text{AppellF1}\Big[\frac{1}{2},\,-\frac{1}{2}+n,\,\frac{5}{2}-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\Big/$$

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

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

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

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

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

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

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

$$\left(-\left(\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}+n,\frac{5}{2}-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\right.\right.$$

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

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

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

$$\left(-\left(\left(9\,(A+B)\left(-\frac{1}{3}\left(\frac{5}{2}-n\right)\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}+n,\frac{7}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3}\left(-\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Big/\right.\right.$$

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

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

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

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

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

$$\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}+n,\frac{5}{2}-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

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

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

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

$$\text{Tan}[\tfrac{1}{2}(c+d x)]^2\ (((-5+2 n)\ (-\tfrac{3}{5}(\tfrac{7}{2}-n)\ \text{AppellF1}[\tfrac{5}{2},\ -\tfrac{1}{2}+n,\ \tfrac{9}{2}-n,$$

$$\tfrac{7}{2},\ \text{Tan}[\tfrac{1}{2}(c+d x)]^2,\ -\text{Tan}[\tfrac{1}{2}(c+d x)]^2]\ \text{Sec}[\tfrac{1}{2}(c+d x)]^2\ \text{Tan}[\tfrac{1}{2}$$

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

$$-\text{Tan}[\tfrac{1}{2}(c+d x)]^2]\ \text{Sec}[\tfrac{1}{2}(c+d x)]^2\ \text{Tan}[\tfrac{1}{2}(c+d x)]) +$$

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

$$-\text{Tan}[\tfrac{1}{2}(c+d x)]^2]\ \text{Sec}[\tfrac{1}{2}(c+d x)]^2\ \text{Tan}[\tfrac{1}{2}(c+d x)] +$$

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

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

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

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

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

$$-\text{Tan}[\tfrac{1}{2}(c+d x)]^2])\ \text{Tan}[\tfrac{1}{2}(c+d x)]^2)^2 -$$

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

$$\text{Tan}[\tfrac{1}{2}(c+d x)]^2$$

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

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

$$-\text{Tan}[\tfrac{1}{2}(c+d x)]^2])\ \text{Sec}[\tfrac{1}{2}(c+d x)]^2\ \text{Tan}[\tfrac{1}{2}(c+d x)] + 5\ (-\tfrac{3}{5}(\tfrac{5}{2}-n)$$

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

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

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

$$\text{Tan}[\tfrac{1}{2}(c+d x)]^2\ (((-5+2 n)\ (-\tfrac{5}{7}(\tfrac{7}{2}-n)\ \text{AppellF1}[\tfrac{7}{2},\ -\tfrac{1}{2}+n,\ \tfrac{9}{2}-n,$$

$$\tfrac{9}{2},\ \text{Tan}[\tfrac{1}{2}(c+d x)]^2,\ -\text{Tan}[\tfrac{1}{2}(c+d x)]^2]\ \text{Sec}[\tfrac{1}{2}(c+d x)]^2\ \text{Tan}[\tfrac{1}{2}$$

$$(c+dx)\Big] + \frac{5}{7}\left(-\frac{1}{2}+n\right) \text{AppellF1}\Big[\frac{7}{2}, \frac{1}{2}+n, \frac{7}{2}-n, \frac{9}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2,$$
$$-\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] \text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2 \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\Bigg) +$$
$$(-1+2n)\left(-\frac{5}{7}\left(\frac{5}{2}-n\right) \text{AppellF1}\Big[\frac{7}{2}, \frac{1}{2}+n, \frac{7}{2}-n, \frac{9}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2,\right.$$
$$-\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] \text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2 \text{Tan}\Big[\frac{1}{2}(c+dx)\Big] +$$
$$\frac{5}{7}\left(\frac{1}{2}+n\right) \text{AppellF1}\Big[\frac{7}{2}, \frac{3}{2}+n, \frac{5}{2}-n, \frac{9}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2,$$
$$\left.\left.\left.\left.-\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] \text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2 \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\right)\right)\right)\right) \Big/$$
$$\left(5\,\text{AppellF1}\Big[\frac{3}{2}, -\frac{1}{2}+n, \frac{5}{2}-n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] +\right.$$
$$\left((-5+2n) \text{AppellF1}\Big[\frac{5}{2}, -\frac{1}{2}+n, \frac{7}{2}-n, \frac{7}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] +\right.$$
$$(-1+2n) \text{AppellF1}\Big[\frac{5}{2}, \frac{1}{2}+n, \frac{5}{2}-n, \frac{7}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2,$$
$$\left.\left.-\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\right) \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\right)^2\Bigg) +$$
$$\frac{2}{3}\left(\frac{1}{2}+n\right)\left(\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2\right)^{-\frac{5}{2}+n}\left(\text{Cos}\Big[\frac{1}{2}(c+dx)\Big]^2 \text{Sec}[c+dx]\right)^{-\frac{1}{2}+n}$$
$$\text{Tan}\Big[$$
$$\frac{1}{2}(c+dx)\Big]$$
$$\left(-1+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\right)$$
$$\left(-\left(\left(9(A+B) \text{AppellF1}\Big[\frac{1}{2}, -\frac{1}{2}+n, \frac{5}{2}-n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\right)\Big/\right.\right.$$
$$\left(3\,\text{AppellF1}\Big[\frac{1}{2}, -\frac{1}{2}+n, \frac{5}{2}-n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] +\right.$$
$$\left((-5+2n) \text{AppellF1}\Big[\frac{3}{2}, -\frac{1}{2}+n, \frac{7}{2}-n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] +\right.$$
$$(-1+2n) \text{AppellF1}\Big[\frac{3}{2}, \frac{1}{2}+n, \frac{5}{2}-n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2,$$
$$\left.\left.\left.-\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\right) \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\right)\right) +$$
$$\left(5(A-B) \text{AppellF1}\Big[\frac{3}{2}, -\frac{1}{2}+n, \frac{5}{2}-n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\right.$$
$$\left.\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\right) \Big/$$
$$\left(5\,\text{AppellF1}\Big[\frac{3}{2}, -\frac{1}{2}+n, \frac{5}{2}-n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] +\right.$$
$$\left((-5+2n) \text{AppellF1}\Big[\frac{5}{2}, -\frac{1}{2}+n, \frac{7}{2}-n, \frac{7}{2}, \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] +\right.$$

$$(-1+2n)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+n,\frac{5}{2}-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)\Bigg)$$
$$\left(-\text{Cos}\left[\frac{1}{2}(c+dx)\right]\text{Sec}[c+dx]\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\text{Sec}[c+dx]\,\text{Tan}[c+dx]\right)\Bigg)\Bigg)$$

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

$$\int \text{Sec}[c+dx]^3\,(a+a\,\text{Sec}[c+dx])\,(A+B\,\text{Sec}[c+dx])\,dx$$

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

$$\frac{a\,(4A+3B)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{8d}+\frac{a\,(A+B)\,\text{Tan}[c+dx]}{d}+\frac{a\,(4A+3B)\,\text{Sec}[c+dx]\,\text{Tan}[c+dx]}{8d}+\frac{a\,B\,\text{Sec}[c+dx]^3\,\text{Tan}[c+dx]}{4d}+\frac{a\,(A+B)\,\text{Tan}[c+dx]^3}{3d}$$

Result (type 3, 403 leaves):

$$-\frac{a\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{2d}-\frac{3\,a\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{8d}+\frac{a\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{2d}+\frac{3\,a\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{8d}+\frac{a\,B}{16d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+\frac{a\,A}{4d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+\frac{3\,a\,B}{16d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}-\frac{a\,B}{16d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}-\frac{a\,A}{4d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}-\frac{3\,a\,B}{16d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+\frac{2\,a\,A\,\text{Tan}[c+dx]}{3d}+\frac{2\,a\,B\,\text{Tan}[c+dx]}{3d}+\frac{a\,A\,\text{Sec}[c+dx]^2\,\text{Tan}[c+dx]}{3d}+\frac{a\,B\,\text{Sec}[c+dx]^2\,\text{Tan}[c+dx]}{3d}$$

Problem 46: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+dx]\,(a+a\,\text{Sec}[c+dx])\,(A+B\,\text{Sec}[c+dx])\,dx$$

Optimal (type 3, 56 leaves, 5 steps):

$$\frac{a\,(2A+B)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{2d}+\frac{a\,(A+B)\,\text{Tan}[c+dx]}{d}+\frac{a\,B\,\text{Sec}[c+dx]\,\text{Tan}[c+dx]}{2d}$$

Result (type 3, 154 leaves):

$$\frac{1}{4 d}a\left(-2\,(2 A+B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right]+4 A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right]+2 B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right]+\frac{B}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right)^2}-\frac{B}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right)^2}+4\,(A+B)\,\text{Tan}[c+d x]\right)$$

Problem 47: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sec}[c+d x])\,(A+B\,\text{Sec}[c+d x])\,dx$$

Optimal (type 3, 32 leaves, 4 steps):

$$a A x+\frac{a\,(A+B)\,\text{ArcTanh}[\text{Sin}[c+d x]]}{d}+\frac{a B\,\text{Tan}[c+d x]}{d}$$

Result (type 3, 159 leaves):

$$a A x-\frac{a A\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}-\frac{a B\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{a A\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{a B\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{a B\,\text{Tan}[c+d x]}{d}$$

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

$$\int \text{Cos}[c+d x]\,(a+a\,\text{Sec}[c+d x])\,(A+B\,\text{Sec}[c+d x])\,dx$$

Optimal (type 3, 32 leaves, 3 steps):

$$a\,(A+B)\,x+\frac{a B\,\text{ArcTanh}[\text{Sin}[c+d x]]}{d}+\frac{a A\,\text{Sin}[c+d x]}{d}$$

Result (type 3, 104 leaves):

$$a A x+a B x-\frac{a B\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{a B\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{a A\,\text{Cos}[d x]\,\text{Sin}[c]}{d}+\frac{a A\,\text{Cos}[c]\,\text{Sin}[d x]}{d}$$

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

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

Optimal (type 3, 103 leaves, 6 steps):

$$\frac{a^2\,(3\,A+2\,B)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,d}+\frac{2\,a^2\,(3\,A+2\,B)\,\mathrm{Tan}[c+d\,x]}{3\,d}+\frac{a^2\,(3\,A+2\,B)\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{6\,d}+\frac{B\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\mathrm{Tan}[c+d\,x]}{3\,d}$$

Result (type 3, 993 leaves):

$$\left((-3 A-2 B) \operatorname{Cos}[c+d x]^3 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x])\right) \Big/ (8 d (B+A \operatorname{Cos}[c+d x]))+$$
$$\left((3 A+2 B) \operatorname{Cos}[c+d x]^3 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x])\right) \Big/ (8 d (B+A \operatorname{Cos}[c+d x]))+$$
$$\left(B \operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x]) \operatorname{Sin}\left[\frac{d x}{2}\right]\right) \Big/ \left(24 d (B+A \operatorname{Cos}[c+d x]) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3\right)+$$
$$\left(\operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x]) \left(3 A \operatorname{Cos}\left[\frac{c}{2}\right]+7 B \operatorname{Cos}\left[\frac{c}{2}\right]-3 A \operatorname{Sin}\left[\frac{c}{2}\right]-5 B \operatorname{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(48 d (B+A \operatorname{Cos}[c+d x]) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$
$$\left(\operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x]) \left(6 A \operatorname{Sin}\left[\frac{d x}{2}\right]+5 B \operatorname{Sin}\left[\frac{d x}{2}\right]\right)\right) \Big/ \left(12 d (B+A \operatorname{Cos}[c+d x]) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)+$$
$$\left(B \operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x]) \operatorname{Sin}\left[\frac{d x}{2}\right]\right) \Big/ \left(24 d (B+A \operatorname{Cos}[c+d x]) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3\right)+$$
$$\left(\operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x]) \left(-3 A \operatorname{Cos}\left[\frac{c}{2}\right]-7 B \operatorname{Cos}\left[\frac{c}{2}\right]-3 A \operatorname{Sin}\left[\frac{c}{2}\right]-5 B \operatorname{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(48 d (B+A \operatorname{Cos}[c+d x]) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$
$$\left(\operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x]) \left(6 A \operatorname{Sin}\left[\frac{d x}{2}\right]+5 B \operatorname{Sin}\left[\frac{d x}{2}\right]\right)\right) \Big/ \left(12 d (B+A \operatorname{Cos}[c+d x]) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)$$

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

$$\int (a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x]) \, dx$$

Optimal (type 3, 82 leaves, 5 steps):

$$a^2 A x + \frac{a^2 (4 A + 3 B) \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{2 d} + \frac{a^2 (2 A + 3 B) \operatorname{Tan}[c + d x]}{2 d} + \frac{B (a^2 + a^2 \operatorname{Sec}[c + d x]) \operatorname{Tan}[c + d x]}{2 d}$$

Result (type 3, 307 leaves):

$$\frac{1}{16 (B + A \operatorname{Cos}[c + d x])} a^2 \operatorname{Cos}[c + d x]^3 \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^4 (1 + \operatorname{Sec}[c + d x])^2 (A + B \operatorname{Sec}[c + d x]) \left(4 A x - \frac{2 (4 A + 3 B) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{d} + \frac{2 (4 A + 3 B) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{d} + \frac{B}{d \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} + \frac{4 (A + 2 B) \operatorname{Sin}\left[\frac{d x}{2}\right]}{d \left(\operatorname{Cos}\left[\frac{c}{2}\right] - \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)} - \frac{B}{d \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)^2} + \frac{4 (A + 2 B) \operatorname{Sin}\left[\frac{d x}{2}\right]}{d \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)}\right)$$

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

$$\int \operatorname{Cos}[c + d x] (a + a \operatorname{Sec}[c + d x])^2 (A + B \operatorname{Sec}[c + d x]) \, dx$$

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

$$a^2 (2 A + B) x + \frac{a^2 (A + 2 B) \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{d} + \frac{a^2 (A - B) \operatorname{Sin}[c + d x]}{d} + \frac{B (a^2 + a^2 \operatorname{Sec}[c + d x]) \operatorname{Sin}[c + d x]}{d}$$

Result (type 3, 258 leaves):

$$\left(a^2 \operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4 (1+\operatorname{Sec}[c+d x])^2\right.$$
$$(A+B \operatorname{Sec}[c+d x]) \left((2 A+B) x-\frac{(A+2 B) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{d}+\right.$$
$$\frac{(A+2 B) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{d}+\frac{A \operatorname{Cos}[d x] \operatorname{Sin}[c]}{d}+$$
$$\frac{A \operatorname{Cos}[c] \operatorname{Sin}[d x]}{d}+\frac{B \operatorname{Sin}\left[\frac{d x}{2}\right]}{d\left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+$$
$$\left.\left.\frac{B \operatorname{Sin}\left[\frac{d x}{2}\right]}{d\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right)\right) \Big/ (4 (B+A \operatorname{Cos}[c+d x]))$$

Problem 64: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x] (a+a \operatorname{Sec}[c+d x])^3 (A+B \operatorname{Sec}[c+d x]) \, dx$$

Optimal (type 3, 125 leaves, 10 steps):

$$\frac{5 a^3 (4 A+3 B) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}+$$
$$\frac{a^3 (4 A+3 B) \operatorname{Tan}[c+d x]}{d}+\frac{3 a^3 (4 A+3 B) \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{8 d}+$$
$$\frac{B (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Tan}[c+d x]}{4 d}+\frac{a^3 (4 A+3 B) \operatorname{Tan}[c+d x]^3}{12 d}$$

Result (type 3, 273 leaves):

$$-\frac{1}{1536 d} a^3 (1+\operatorname{Cos}[c+d x])^3 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^6 \operatorname{Sec}[c+d x]^4 \left(120 (4 A+3 B) \operatorname{Cos}[c+d x]^4\right.$$
$$\left(\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)-$$
$$\operatorname{Sec}[c] (-24 (11 A+9 B) \operatorname{Sin}[c]+(36 A+69 B) \operatorname{Sin}[d x]+36 A \operatorname{Sin}[2 c+d x]+$$
$$69 B \operatorname{Sin}[2 c+d x]+280 A \operatorname{Sin}[c+2 d x]+264 B \operatorname{Sin}[c+2 d x]-72 A \operatorname{Sin}[3 c+2 d x]-$$
$$24 B \operatorname{Sin}[3 c+2 d x]+36 A \operatorname{Sin}[2 c+3 d x]+45 B \operatorname{Sin}[2 c+3 d x]+36 A \operatorname{Sin}[4 c+3 d x]+$$
$$\left.45 B \operatorname{Sin}[4 c+3 d x]+88 A \operatorname{Sin}[3 c+4 d x]+72 B \operatorname{Sin}[3 c+4 d x])\right)$$

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

$$\int (a+a \operatorname{Sec}[c+d x])^3 (A+B \operatorname{Sec}[c+d x]) \, dx$$

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

$$a^3 A x + \frac{a^3 (7 A + 5 B) \text{ArcTanh}[\text{Sin}[c + d x]]}{2 d} + \frac{5 a^3 (A + B) \text{Tan}[c + d x]}{2 d} +$$
$$\frac{a B (a + a \text{Sec}[c + d x])^2 \text{Tan}[c + d x]}{3 d} + \frac{(3 A + 5 B) (a^3 + a^3 \text{Sec}[c + d x]) \text{Tan}[c + d x]}{6 d}$$

Result (type 3, 1056 leaves) :

$$\left(A\,x\,\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(8\,(B+A\,\text{Cos}[c+d\,x])\right)+$$

$$\left((-7\,A-5\,B)\,\text{Cos}[c+d\,x]^4\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\right.$$
$$\left.(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(16\,d\,(B+A\,\text{Cos}[c+d\,x])\right)+$$

$$\left((7\,A+5\,B)\,\text{Cos}[c+d\,x]^4\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\right.$$
$$\left.(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(16\,d\,(B+A\,\text{Cos}[c+d\,x])\right)+$$

$$\left(B\,\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(48\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$

$$\left(\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\right.$$
$$\left.\left(3\,A\,\text{Cos}\left[\frac{c}{2}\right]+10\,B\,\text{Cos}\left[\frac{c}{2}\right]-3\,A\,\text{Sin}\left[\frac{c}{2}\right]-8\,B\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(96\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$

$$\left(\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\right.$$
$$\left.(A+B\,\text{Sec}[c+d\,x])\left(9\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+11\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(24\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)+$$

$$\left(B\,\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(48\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$

$$\left(\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\right.$$
$$\left.\left(-3\,A\,\text{Cos}\left[\frac{c}{2}\right]-10\,B\,\text{Cos}\left[\frac{c}{2}\right]-3\,A\,\text{Sin}\left[\frac{c}{2}\right]-8\,B\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(96\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$

$$\left(\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\right.$$
$$\left.(A+B\,\text{Sec}[c+d\,x])\left(9\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+11\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$
$$\left(24\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)$$

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

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

Optimal (type 3, 108 leaves, 5 steps):

$$a^3\,\left(3\,A+B\right)\,x+\frac{a^3\,\left(6\,A+7\,B\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}-\frac{5\,a^3\,B\,\text{Sin}[c+d\,x]}{2\,d}+\frac{a\,B\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{2\,d}+\frac{\left(A+2\,B\right)\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{d}$$

Result (type 3, 335 leaves):

$$\frac{1}{32\,\left(B+A\,\text{Cos}[c+d\,x]\right)}a^3\,\text{Cos}[c+d\,x]^4\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^6\,\left(1+\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]\right)\left(4\,\left(3\,A+B\right)\,x-\frac{2\,\left(6\,A+7\,B\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]}{d}+\frac{2\,\left(6\,A+7\,B\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]}{d}+\frac{4\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{d}+\frac{4\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{d}+\frac{B}{d\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)^2}+\frac{4\,\left(A+3\,B\right)\,\text{Sin}\left[\frac{d\,x}{2}\right]}{d\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)}-\frac{B}{d\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)^2}+\frac{4\,\left(A+3\,B\right)\,\text{Sin}\left[\frac{d\,x}{2}\right]}{d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right)}\right)$$

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

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

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

$$\frac{1}{2}\,a^3\,\left(7\,A+6\,B\right)\,x+\frac{a^3\,\left(A+3\,B\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{d}+\frac{5\,a^3\,A\,\text{Sin}[c+d\,x]}{2\,d}+\frac{a\,A\,\text{Cos}[c+d\,x]\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{2\,d}-\frac{\left(A-2\,B\right)\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 3, 802 leaves):

$$\left((7A+6B)\,x\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/$$
$$\left(16\,(B+A\,\mathrm{Cos}[c+d\,x])\right)+$$
$$\left((-A-3B)\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\right.$$
$$\left.(a+a\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/\left(8\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\right)+$$
$$\left((A+3B)\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\right.$$
$$\left.(a+a\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/\left(8\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\right)+$$
$$\left((3A+B)\,\mathrm{Cos}[d\,x]\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sin}[c]\right)\Big/$$
$$\left(8\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\right)+$$
$$\left(A\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sin}[2\,c]\right)\Big/$$
$$\left(32\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\right)+$$
$$\left((3A+B)\,\mathrm{Cos}[c]\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sin}[d\,x]\right)\Big/$$
$$\left(8\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\right)+$$
$$\left(A\,\mathrm{Cos}[2\,c]\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sin}[2\,d\,x]\right)\Big/$$
$$\left(32\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\right)+$$
$$\left(B\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(8\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)+$$
$$\left(B\,\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(8\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)$$

Problem 74: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\mathrm{Sec}[c+d\,x])^4\,(A+B\,\mathrm{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 151 leaves, 7 steps):

$$a^4\,A\,x+\frac{a^4\,(48A+35B)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{8\,d}+$$
$$\frac{5\,a^4\,(8A+7B)\,\mathrm{Tan}[c+d\,x]}{8\,d}+\frac{a\,B\,(a+a\,\mathrm{Sec}[c+d\,x])^3\,\mathrm{Tan}[c+d\,x]}{4\,d}+$$
$$\frac{(4A+7B)\,\left(a^2+a^2\,\mathrm{Sec}[c+d\,x]\right)^2\,\mathrm{Tan}[c+d\,x]}{12\,d}+\frac{(32A+35B)\,\left(a^4+a^4\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Tan}[c+d\,x]}{24\,d}$$

Result (type 3, 326 leaves):

$$\frac{1}{3072\,d}a^4\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8(1+\text{Sec}[c+d\,x])^4$$
$$\left(-24\,(48\,A+35\,B)\,\text{Cos}[c+d\,x]^4\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)+\text{Sec}[c]\right.$$
$$(72\,A\,d\,x\,\text{Cos}[c]+48\,A\,d\,x\,\text{Cos}[c+2\,d\,x]+48\,A\,d\,x\,\text{Cos}[3\,c+2\,d\,x]+12\,A\,d\,x\,\text{Cos}[3\,c+4\,d\,x]+12\,A\,d\,x\,\text{Cos}[5\,c+4\,d\,x]-480\,A\,\text{Sin}[c]-480\,B\,\text{Sin}[c]+48\,A\,\text{Sin}[d\,x]+105\,B\,\text{Sin}[d\,x]+48\,A\,\text{Sin}[2\,c+d\,x]+105\,B\,\text{Sin}[2\,c+d\,x]+496\,A\,\text{Sin}[c+2\,d\,x]+544\,B\,\text{Sin}[c+2\,d\,x]-144\,A\,\text{Sin}[3\,c+2\,d\,x]-96\,B\,\text{Sin}[3\,c+2\,d\,x]+48\,A\,\text{Sin}[2\,c+3\,d\,x]+81\,B\,\text{Sin}[2\,c+3\,d\,x]+48\,A\,\text{Sin}[4\,c+3\,d\,x]+81\,B\,\text{Sin}[4\,c+3\,d\,x]+160\,A\,\text{Sin}[3\,c+4\,d\,x]+160\,B\,\text{Sin}[3\,c+4\,d\,x])\Big)$$

Problem 75: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 151 leaves, 6 steps):

$$a^4\,(4\,A+B)\,x+\frac{a^4\,(13\,A+12\,B)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}-\frac{5\,a^4\,(A+2\,B)\,\text{Sin}[c+d\,x]}{2\,d}+\frac{a\,B\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{3\,d}+\frac{(A+2\,B)\,(a^2+a^2\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{2\,d}+\frac{(9\,A+11\,B)\,(a^4+a^4\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 3, 1202 leaves):

$$\left((4\,A+B)\,x\,\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/(16\,(B+A\,\text{Cos}[c+d\,x]))+$$
$$\left((-13\,A-12\,B)\,\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/(32\,d\,(B+A\,\text{Cos}[c+d\,x]))+$$
$$\left((13\,A+12\,B)\,\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/(32\,d\,(B+A\,\text{Cos}[c+d\,x]))+$$
$$\left(A\,\text{Cos}[d\,x]\,\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sin}[c]\right)\Big/(16\,d\,(B+A\,\text{Cos}[c+d\,x]))+$$
$$\left(A\,\text{Cos}[c]\,\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sin}[d\,x]\right)\Big/(16\,d\,(B+A\,\text{Cos}[c+d\,x]))+$$
$$\left(B\,\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$

$$\left(96\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$

$$\left(\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right.$$

$$\left.\left(3\,A\,\text{Cos}\left[\frac{c}{2}\right]+13\,B\,\text{Cos}\left[\frac{c}{2}\right]-3\,A\,\text{Sin}\left[\frac{c}{2}\right]-11\,B\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$

$$\left(192\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$

$$\left(\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\right.$$

$$\left.(A+B\,\text{Sec}[c+d\,x])\left(3\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+5\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$

$$\left(12\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)+$$

$$\left(B\,\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$

$$\left(96\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$

$$\left(\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right.$$

$$\left.\left(-3\,A\,\text{Cos}\left[\frac{c}{2}\right]-13\,B\,\text{Cos}\left[\frac{c}{2}\right]-3\,A\,\text{Sin}\left[\frac{c}{2}\right]-11\,B\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$

$$\left(192\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$

$$\left(\text{Cos}[c+d\,x]^5\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,(a+a\,\text{Sec}[c+d\,x])^4\right.$$

$$\left.(A+B\,\text{Sec}[c+d\,x])\left(3\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+5\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\right)\Big/$$

$$\left(12\,d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)$$

Problem 76: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^2\,(a+a\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 160 leaves, 6 steps):

$$\frac{1}{2}\,a^4\,(13\,A+8\,B)\,x+\frac{a^4\,(8\,A+13\,B)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+$$

$$\frac{5\,a^4\,(A-B)\,\text{Sin}[c+d\,x]}{2\,d}+\frac{a\,A\,\text{Cos}[c+d\,x]\,(a+a\,\text{Sec}[c+d\,x])^3\,\text{Sin}[c+d\,x]}{2\,d}-$$

$$\frac{(A-B)\,\left(a^2+a^2\,\text{Sec}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{2\,d}+\frac{(A+6\,B)\,\left(a^4+a^4\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 3, 1018 leaves):

$$\left((13 A+8 B) x \operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x])\right) \Big/ (32 (B+A \operatorname{Cos}[c+d x]))+$$
$$\left((-8 A-13 B) \operatorname{Cos}[c+d x]^5 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x])\right) \Big/ (32 d (B+A \operatorname{Cos}[c+d x]))+$$
$$\left((8 A+13 B) \operatorname{Cos}[c+d x]^5 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x])\right) \Big/ (32 d (B+A \operatorname{Cos}[c+d x]))+$$
$$\left((4 A+B) \operatorname{Cos}[d x] \operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x]) \operatorname{Sin}[c]\right) \Big/ (16 d (B+A \operatorname{Cos}[c+d x]))+$$
$$\left(A \operatorname{Cos}[2 d x] \operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x]) \operatorname{Sin}[2 c]\right) \Big/ (64 d (B+A \operatorname{Cos}[c+d x]))+$$
$$\left((4 A+B) \operatorname{Cos}[c] \operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x]) \operatorname{Sin}[d x]\right) \Big/ (16 d (B+A \operatorname{Cos}[c+d x]))+$$
$$\left(A \operatorname{Cos}[2 c] \operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x]) \operatorname{Sin}[2 d x]\right) \Big/ (64 d (B+A \operatorname{Cos}[c+d x]))+$$
$$\frac{B \operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x])}{64 d (B+A \operatorname{Cos}[c+d x]) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2}+\left(\operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x]) \left(A \operatorname{Sin}\left[\frac{d x}{2}\right]+4 B \operatorname{Sin}\left[\frac{d x}{2}\right]\right)\right) \Big/$$
$$\left(16 d (B+A \operatorname{Cos}[c+d x]) \left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)-$$
$$\frac{B \operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x])}{64 d (B+A \operatorname{Cos}[c+d x]) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2}+$$
$$\left(\operatorname{Cos}[c+d x]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x]) \left(A \operatorname{Sin}\left[\frac{d x}{2}\right]+4 B \operatorname{Sin}\left[\frac{d x}{2}\right]\right)\right) \Big/$$
$$\left(16 d (B+A \operatorname{Cos}[c+d x]) \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)$$

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

$$\int \operatorname{Cos}[c+d x]^3 (a+a \operatorname{Sec}[c+d x])^4 (A+B \operatorname{Sec}[c+d x]) \, dx$$

Optimal (type 3, 165 leaves, 6 steps):

$$\frac{1}{2} a^4 (12 A + 13 B) x + \frac{a^4 (A + 4 B) \text{ArcTanh}[\text{Sin}[c + d x]]}{d} + \frac{5 a^4 (2 A + B) \text{Sin}[c + d x]}{2 d} + \frac{a A \text{Cos}[c + d x]^2 (a + a \text{Sec}[c + d x])^3 \text{Sin}[c + d x]}{3 d} + \frac{(2 A + B) \text{Cos}[c + d x] (a^2 + a^2 \text{Sec}[c + d x])^2 \text{Sin}[c + d x]}{2 d} - \frac{(8 A - 3 B) (a^4 + a^4 \text{Sec}[c + d x]) \text{Sin}[c + d x]}{6 d}$$

Result (type 3, 342 leaves):

$$\frac{1}{192 (B + A \text{Cos}[c + d x])} a^4 \text{Cos}[c + d x]^5 \text{Sec}\left[\frac{1}{2} (c + d x)\right]^8 (1 + \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x]) \left(72 A x + 78 B x - \frac{12 (A + 4 B) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{d} + \frac{12 (A + 4 B) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right]}{d} + \frac{3 (27 A + 16 B) \text{Cos}[d x] \text{Sin}[c]}{d} + \frac{3 (4 A + B) \text{Cos}[2 d x] \text{Sin}[2 c]}{d} + \frac{A \text{Cos}[3 d x] \text{Sin}[3 c]}{d} + \frac{3 (27 A + 16 B) \text{Cos}[c] \text{Sin}[d x]}{d} + \frac{3 (4 A + B) \text{Cos}[2 c] \text{Sin}[2 d x]}{d} + \frac{A \text{Cos}[3 c] \text{Sin}[3 d x]}{d} + \frac{12 B \text{Sin}\left[\frac{d x}{2}\right]}{d \left(\text{Cos}\left[\frac{c}{2}\right] - \text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)} + \frac{12 B \text{Sin}\left[\frac{d x}{2}\right]}{d \left(\text{Cos}\left[\frac{c}{2}\right] + \text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)}\right)$$

Problem 82: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c + d x]^4 (A + B \text{Sec}[c + d x])}{a + a \text{Sec}[c + d x]} \, dx$$

Optimal (type 3, 131 leaves, 6 steps):

$$\frac{3 (A - B) \text{ArcTanh}[\text{Sin}[c + d x]]}{2 a d} - \frac{(3 A - 4 B) \text{Tan}[c + d x]}{a d} + \frac{3 (A - B) \text{Sec}[c + d x] \text{Tan}[c + d x]}{2 a d} + \frac{(A - B) \text{Sec}[c + d x]^3 \text{Tan}[c + d x]}{d (a + a \text{Sec}[c + d x])} - \frac{(3 A - 4 B) \text{Tan}[c + d x]^3}{3 a d}$$

Result (type 3, 635 leaves):

$$\left(3\,(-A+B)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\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]\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/\left(d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])\right)-\left(3\,(-A+B)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\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]\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/\left(d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])\right)+\frac{1}{48\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])}\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\,(A+B\,\mathrm{Sec}[c+d\,x])\left(6\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+6\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-27\,A\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]+39\,B\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]+12\,A\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]-24\,B\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]+6\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-6\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+24\,A\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]-24\,B\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]-9\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+21\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]-9\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+9\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+9\,A\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]-9\,B\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]-3\,A\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]+7\,B\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]+3\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+3\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-3\,B\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+9\,A\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]-9\,B\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]-12\,A\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+16\,B\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]-6\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+10\,B\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-6\,A\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+6\,B\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]\right)$$

Problem 83: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sec}[c+d\,x]^3\,(A+B\,\mathrm{Sec}[c+d\,x])}{a+a\,\mathrm{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 108 leaves, 6 steps):

$$-\frac{(2\,A-3\,B)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,a\,d}+\frac{2\,(A-B)\,\mathrm{Tan}[c+d\,x]}{a\,d}-\frac{(2\,A-3\,B)\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{2\,a\,d}+\frac{(A-B)\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]}{d\,(a+a\,\mathrm{Sec}[c+d\,x])}$$

Result (type 3, 671 leaves):

$$\left((2A-3B)\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\,(A+B\,\text{Sec}[c+dx])\right)\Big/$$
$$\left(d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])\right)+$$
$$\left((-2A+3B)\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\,(A+B\,\text{Sec}[c+dx])\right)\Big/$$
$$\left(d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])\right)-$$
$$\frac{2\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,(A+B\,\text{Sec}[c+dx])\,\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]+B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])}+$$
$$\left(B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\,(A+B\,\text{Sec}[c+dx])\right)\Big/$$
$$\left(2d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])\,\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)^2\right)-$$
$$\left(2\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\,(A+B\,\text{Sec}[c+dx])\,\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]+B\,\text{Sin}\left[\frac{dx}{2}\right]\right)\right)\Big/$$
$$\left(d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)\right)-$$
$$\left(B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\,(A+B\,\text{Sec}[c+dx])\right)\Big/$$
$$\left(2d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])\,\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)^2\right)-$$
$$\left(2\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\,(A+B\,\text{Sec}[c+dx])\,\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]+B\,\text{Sin}\left[\frac{dx}{2}\right]\right)\right)\Big/$$
$$\left(d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)\right)$$

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

$$\int \frac{\text{Sec}[c+dx]^2\,(A+B\,\text{Sec}[c+dx])}{a+a\,\text{Sec}[c+dx]}\,dx$$

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

$$\frac{(A-B)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{a\,d}+\frac{B\,\text{Tan}[c+dx]}{a\,d}-\frac{(A-B)\,\text{Tan}[c+dx]}{d\,(a+a\,\text{Sec}[c+dx])}$$

Result (type 3, 224 leaves):

$$\left(2\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]\,(A+B\,\text{Sec}[c+dx])\,\left((-A+B)\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sin}\left[\frac{dx}{2}\right]+\text{Cos}\left[\frac{1}{2}(c+dx)\right]\,\left(-(A-B)\right.\right.\right.$$
$$\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)+$$
$$(B\,\text{Sin}[dx])\Big/\left(\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\right.$$
$$\left.\left.\left.\left.\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\right)\right)\right)\Big/$$
$$\left(a\,d\,(B+A\,\text{Cos}[c+dx])\,(1+\text{Sec}[c+dx])\right)$$

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

$$\int \frac{\text{Sec}[c+d x]\,(A+B\,\text{Sec}[c+d x])}{a+a\,\text{Sec}[c+d x]}\,dx$$

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

$$\frac{B\,\text{ArcTanh}[\text{Sin}[c+d x]]}{a d}+\frac{(A-B)\,\text{Tan}[c+d x]}{d\,(a+a\,\text{Sec}[c+d x])}$$

Result (type 3, 109 leaves):

$$\left(2\,\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]\,\left(B\,\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right]\right)+(A-B)\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sin}\left[\frac{d x}{2}\right]\right)\right)\Big/\left(a d\,(1+\text{Cos}[c+d x])\right)$$

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

$$\int \frac{A+B\,\text{Sec}[c+d x]}{a+a\,\text{Sec}[c+d x]}\,dx$$

Optimal (type 3, 35 leaves, 2 steps):

$$\frac{A x}{a}-\frac{(A-B)\,\text{Tan}[c+d x]}{d\,(a+a\,\text{Sec}[c+d x])}$$

Result (type 3, 72 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(A d x\,\text{Cos}\left[\frac{d x}{2}\right]+A d x\,\text{Cos}\left[c+\frac{d x}{2}\right]+2\,(-A+B)\,\text{Sin}\left[\frac{d x}{2}\right]\right)\right)\Big/\left(a d\,(1+\text{Cos}[c+d x])\right)$$

Problem 88: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2\,(A+B\,\text{Sec}[c+d x])}{a+a\,\text{Sec}[c+d x]}\,dx$$

Optimal (type 3, 98 leaves, 5 steps):

$$\frac{(3 A-2 B)\,x}{2 a}-\frac{2\,(A-B)\,\text{Sin}[c+d x]}{a d}+\frac{(3 A-2 B)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{2 a d}-\frac{(A-B)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{d\,(a+a\,\text{Sec}[c+d x])}$$

Result (type 3, 197 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\right.$$
$$\left(4\,(3\,A-2\,B)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+4\,(3\,A-2\,B)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-20\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+20\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-4\,A\right.$$
$$\text{Sin}\left[c+\frac{d\,x}{2}\right]+4\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-3\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+4\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-3\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$\left.\left.4\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]\right)\right)\Big/\left(8\,a\,d\,(1+\text{Cos}[c+d\,x])\right)$$

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

$$\int\frac{\text{Cos}[c+d\,x]^3\,(A+B\,\text{Sec}[c+d\,x])}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 122 leaves, 6 steps):

$$-\frac{3\,(A-B)\,x}{2\,a}+\frac{(4\,A-3\,B)\,\text{Sin}[c+d\,x]}{a\,d}-\frac{3\,(A-B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a\,d}-$$
$$\frac{(A-B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Sec}[c+d\,x])}-\frac{(4\,A-3\,B)\,\text{Sin}[c+d\,x]^3}{3\,a\,d}$$

Result (type 3, 249 leaves):

$$\frac{1}{24\,a\,d\,(1+\text{Cos}[c+d\,x])}$$
$$\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\left(-36\,(A-B)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-36\,(A-B)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+69\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-\right.$$
$$60\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+21\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-12\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+18\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-9\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$18\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-9\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-2\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+3\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$\left.2\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+3\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]\right)$$

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

$$\int\frac{\text{Sec}[c+d\,x]^5\,(A+B\,\text{Sec}[c+d\,x])}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 3, 179 leaves, 7 steps):

$$\frac{(7\,A-10\,B)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,a^2\,d}-\frac{4\,(2\,A-3\,B)\,\text{Tan}[c+d\,x]}{a^2\,d}+$$
$$\frac{(7\,A-10\,B)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,a^2\,d}+\frac{(7\,A-10\,B)\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{3\,a^2\,d\,(1+\text{Sec}[c+d\,x])}+$$
$$\frac{(A-B)\,\text{Sec}[c+d\,x]^4\,\text{Tan}[c+d\,x]}{3\,d\,(a+a\,\text{Sec}[c+d\,x])^2}-\frac{4\,(2\,A-3\,B)\,\text{Tan}[c+d\,x]^3}{3\,a^2\,d}$$

Result (type 3, 764 leaves):

$$\left(2 \left(-7 A+10 B\right) \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] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]\right)\right) \Big/ \left(d \left(B+A \text{Cos}[c+d x]\right) \left(a+a \text{Sec}[c+d x]\right)^2\right) - \left(2 \left(-7 A+10 B\right) \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] \text{Sec}[c+d x] \left(A+B \text{Sec}[c+d x]\right)\right) \Big/ \left(d \left(B+A \text{Cos}[c+d x]\right) \left(a+a \text{Sec}[c+d x]\right)^2\right) + \frac{1}{96 d \left(B+A \text{Cos}[c+d x]\right) \left(a+a \text{Sec}[c+d x]\right)^2} \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]^4 \left(A+B \text{Sec}[c+d x]\right) \left(45 A \text{Sin}\left[\frac{d x}{2}\right]-6 B \text{Sin}\left[\frac{d x}{2}\right]-201 A \text{Sin}\left[\frac{3 d x}{2}\right]+310 B \text{Sin}\left[\frac{3 d x}{2}\right]+195 A \text{Sin}\left[c-\frac{d x}{2}\right]-306 B \text{Sin}\left[c-\frac{d x}{2}\right]-51 A \text{Sin}\left[c+\frac{d x}{2}\right]+42 B \text{Sin}\left[c+\frac{d x}{2}\right]+189 A \text{Sin}\left[2 c+\frac{d x}{2}\right]-270 B \text{Sin}\left[2 c+\frac{d x}{2}\right]-A \text{Sin}\left[c+\frac{3 d x}{2}\right]+50 B \text{Sin}\left[c+\frac{3 d x}{2}\right]-81 A \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+90 B \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+119 A \text{Sin}\left[3 c+\frac{3 d x}{2}\right]-170 B \text{Sin}\left[3 c+\frac{3 d x}{2}\right]-129 A \text{Sin}\left[c+\frac{5 d x}{2}\right]+198 B \text{Sin}\left[c+\frac{5 d x}{2}\right]-9 A \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+42 B \text{Sin}\left[2 c+\frac{5 d x}{2}\right]-57 A \text{Sin}\left[3 c+\frac{5 d x}{2}\right]+66 B \text{Sin}\left[3 c+\frac{5 d x}{2}\right]+63 A \text{Sin}\left[4 c+\frac{5 d x}{2}\right]-90 B \text{Sin}\left[4 c+\frac{5 d x}{2}\right]-75 A \text{Sin}\left[2 c+\frac{7 d x}{2}\right]+114 B \text{Sin}\left[2 c+\frac{7 d x}{2}\right]-15 A \text{Sin}\left[3 c+\frac{7 d x}{2}\right]+36 B \text{Sin}\left[3 c+\frac{7 d x}{2}\right]-39 A \text{Sin}\left[4 c+\frac{7 d x}{2}\right]+48 B \text{Sin}\left[4 c+\frac{7 d x}{2}\right]+21 A \text{Sin}\left[5 c+\frac{7 d x}{2}\right]-30 B \text{Sin}\left[5 c+\frac{7 d x}{2}\right]-32 A \text{Sin}\left[3 c+\frac{9 d x}{2}\right]+48 B \text{Sin}\left[3 c+\frac{9 d x}{2}\right]-12 A \text{Sin}\left[4 c+\frac{9 d x}{2}\right]+22 B \text{Sin}\left[4 c+\frac{9 d x}{2}\right]-20 A \text{Sin}\left[5 c+\frac{9 d x}{2}\right]+26 B \text{Sin}\left[5 c+\frac{9 d x}{2}\right]\right)$$

Problem 91: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 156 leaves, 7 steps):

$$-\frac{(4 A-7 B) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 a^2 d}+\frac{2 \left(5 A-8 B\right) \text{Tan}[c+d x]}{3 a^2 d}-\frac{(4 A-7 B) \text{Sec}[c+d x] \text{Tan}[c+d x]}{2 a^2 d}+\frac{\left(5 A-8 B\right) \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{3 a^2 d \left(1+\text{Sec}[c+d x]\right)}+\frac{(A-B) \text{Sec}[c+d x]^3 \text{Tan}[c+d x]}{3 d \left(a+a \text{Sec}[c+d x]\right)^2}$$

Result (type 3, 652 leaves):

$$-\left(\left(2\,(-4\,A+7\,B)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.\right.$$
$$\left.\left.\mathrm{Sec}[c+d\,x]\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/\left(d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)\right)+$$
$$\left(2\,(-4\,A+7\,B)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/$$
$$\left(d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)+$$
$$\frac{1}{48\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2}$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,(A+B\,\mathrm{Sec}[c+d\,x])$$
$$\left(-14\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+14\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+64\,A\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]-97\,B\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]-84\,A\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]+126\,B\right.$$
$$\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]+42\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-42\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-56\,A\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]+98\,B\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]-$$
$$6\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+3\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+34\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-37\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$36\,A\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+63\,B\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+48\,A\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]-75\,B\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]+$$
$$6\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-15\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+30\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-39\,B\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-$$
$$12\,A\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+21\,B\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+20\,A\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]-32\,B\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+$$
$$\left.6\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-12\,B\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+14\,A\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-20\,B\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]\right)$$

Problem 92: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sec}[c+d\,x]^3\,(A+B\,\mathrm{Sec}[c+d\,x])}{(a+a\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 3, 108 leaves, 6 steps):

$$\frac{(A-2\,B)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{a^2\,d}-\frac{(A-4\,B)\,\mathrm{Tan}[c+d\,x]}{3\,a^2\,d}-$$
$$\frac{(A-2\,B)\,\mathrm{Tan}[c+d\,x]}{a^2\,d\,(1+\mathrm{Sec}[c+d\,x])}+\frac{(A-B)\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]}{3\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^2}$$

Result (type 3, 292 leaves):

$$\frac{1}{3 a^2 d \left(B + A \operatorname{Cos}[c + d x]\right) \left(1 + \operatorname{Sec}[c + d x]\right)^2} 2 \operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] \operatorname{Sec}[c + d x] \left(A + B \operatorname{Sec}[c + d x]\right) \left((-A + B) \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sin}\left[\frac{d x}{2}\right] - 2 (4 A - 7 B) \operatorname{Cos}\left[\frac{1}{2} (c + d x)\right]^2 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sin}\left[\frac{d x}{2}\right] + \operatorname{Cos}\left[\frac{1}{2} (c + d x)\right]^3 \left(-6 (A - 2 B) \left(\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right] - \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right]\right) + \left(6 B \operatorname{Sin}[d x]\right) \Big/ \left(\left(\operatorname{Cos}\left[\frac{c}{2}\right] - \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right)\right)\right) - (A - B) \operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] \operatorname{Tan}\left[\frac{c}{2}\right]\right)$$

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

$$\int \frac{\operatorname{Sec}[c + d x]^2 \left(A + B \operatorname{Sec}[c + d x]\right)}{\left(a + a \operatorname{Sec}[c + d x]\right)^2} \, dx$$

Optimal (type 3, 79 leaves, 4 steps):

$$\frac{B \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{a^2 d} + \frac{(2 A - 5 B) \operatorname{Tan}[c + d x]}{3 a^2 d \left(1 + \operatorname{Sec}[c + d x]\right)} - \frac{(A - B) \operatorname{Tan}[c + d x]}{3 d \left(a + a \operatorname{Sec}[c + d x]\right)^2}$$

Result (type 3, 169 leaves):

$$-\left(\left(2 \operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] \left(6 B \operatorname{Cos}\left[\frac{1}{2} (c + d x)\right]^3 \left(\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right] - \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c + d x)\right]\right]\right) + (-A + B) \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sin}\left[\frac{d x}{2}\right] - 2 (A - 4 B) \operatorname{Cos}\left[\frac{1}{2} (c + d x)\right]^2 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sin}\left[\frac{d x}{2}\right] - (A - B) \operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] \operatorname{Tan}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(3 a^2 d \left(1 + \operatorname{Cos}[c + d x]\right)^2\right)\right)$$

Problem 95: Result more than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Sec}[c + d x]}{\left(a + a \operatorname{Sec}[c + d x]\right)^2} \, dx$$

Optimal (type 3, 70 leaves, 3 steps):

$$\frac{A x}{a^2} - \frac{(4 A - B) \operatorname{Tan}[c + d x]}{3 a^2 d \left(1 + \operatorname{Sec}[c + d x]\right)} - \frac{(A - B) \operatorname{Tan}[c + d x]}{3 d \left(a + a \operatorname{Sec}[c + d x]\right)^2}$$

Result (type 3, 153 leaves):

$$\frac{1}{24\,a^2\,d}\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$
$$\left(9\,A\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+9\,A\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+3\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+3\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-\right.$$
$$18\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+6\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+12\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-$$
$$\left.6\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-10\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+4\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]\right)$$

Problem 96: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]\,(A+B\,\text{Sec}[c+d\,x])}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 3, 98 leaves, 5 steps):

$$-\frac{(2\,A-B)\,x}{a^2}+\frac{2\,(5\,A-2\,B)\,\text{Sin}[c+d\,x]}{3\,a^2\,d}-\frac{(2\,A-B)\,\text{Sin}[c+d\,x]}{a^2\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A-B)\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Sec}[c+d\,x])^2}$$

Result (type 3, 245 leaves):

$$\frac{1}{12\,a^2\,d\,(1+\text{Cos}[c+d\,x])^2}$$
$$\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(-18\,(2\,A-B)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-18\,(2\,A-B)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-\right.$$
$$12\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+6\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-12\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+6\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$66\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-36\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-30\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+24\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+41\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-$$
$$\left.20\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+9\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+3\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+3\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]\right)$$

Problem 97: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^2\,(A+B\,\text{Sec}[c+d\,x])}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 3, 143 leaves, 6 steps):

$$\frac{(7\,A-4\,B)\,x}{2\,a^2}-\frac{2\,(8\,A-5\,B)\,\text{Sin}[c+d\,x]}{3\,a^2\,d}+\frac{(7\,A-4\,B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a^2\,d}-$$
$$\frac{(8\,A-5\,B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A-B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Sec}[c+d\,x])^2}$$

Result (type 3, 315 leaves):

$$\frac{1}{48\,a^2\,d\,\left(1+\text{Cos}[c+d\,x]\right)^2}\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(36\,(7\,A-4\,B)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+36\,(7\,A-4\,B)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+\right.$$
$$84\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-48\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+84\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$48\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-381\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+264\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+147\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-$$
$$120\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-239\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+164\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-63\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$36\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-15\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+12\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$\left.15\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+12\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+3\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+3\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]\right)$$

Problem 98: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 170 leaves, 7 steps):

$$-\frac{(10\,A-7\,B)\,x}{2\,a^2}+\frac{4\,(3\,A-2\,B)\,\text{Sin}[c+d\,x]}{a^2\,d}-\frac{(10\,A-7\,B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a^2\,d}-\frac{(10\,A-7\,B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,\left(1+\text{Sec}[c+d\,x]\right)}-\frac{(A-B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{3\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-\frac{4\,(3\,A-2\,B)\,\text{Sin}[c+d\,x]^3}{3\,a^2\,d}$$

Result (type 3, 369 leaves):

$$\frac{1}{48\,a^2\,d\,\left(1+\text{Cos}[c+d\,x]\right)^2}\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\left(-36\,(10\,A-7\,B)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-36\,(10\,A-7\,B)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-120\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+84\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-120\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+84\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+516\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-381\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-156\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+147\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+342\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-239\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+118\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-63\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+30\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-15\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+30\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-15\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-3\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+3\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-3\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+3\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

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

$$\int \frac{\text{Sec}[c+d\,x]^5\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 3, 202 leaves, 8 steps):

$$-\frac{(6\,A-13\,B)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,a^3\,d}+\frac{8\,(9\,A-19\,B)\,\text{Tan}[c+d\,x]}{15\,a^3\,d}-\frac{(6\,A-13\,B)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,a^3\,d}+\frac{(A-B)\,\text{Sec}[c+d\,x]^4\,\text{Tan}[c+d\,x]}{5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}+\frac{(6\,A-11\,B)\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{15\,a\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+\frac{4\,(9\,A-19\,B)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{15\,d\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}$$

Result (type 3, 768 leaves):

$$-\left(\left(4\,(-6\,A+13\,B)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]^2\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/\left(d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\right)\right)+$$

$$\left(4\,(-6\,A+13\,B)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]^2\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/\left(d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3\right)+$$

$$\frac{1}{480\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^4\,(A+B\,\mathrm{Sec}[c+d\,x])$$

$$\left(-870\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+1235\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+1830\,A\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]-3805\,B\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]-2094\,A\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]+\right.$$
$$4329\,B\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]+1314\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-1989\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-1650\,A\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]+$$
$$3575\,B\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]-450\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+475\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+1230\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$2005\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-1050\,A\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+2275\,B\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+$$
$$1278\,A\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]-2673\,B\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]-90\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-105\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$918\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-1593\,B\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-450\,A\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+$$
$$975\,B\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+630\,A\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]-1325\,B\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+$$
$$60\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-255\,B\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+480\,A\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-875\,B\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-$$
$$90\,A\,\mathrm{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]+195\,B\,\mathrm{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]+144\,A\,\mathrm{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]-304\,B\,\mathrm{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]+$$
$$\left.30\,A\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-90\,B\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+114\,A\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]-214\,B\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

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

$$\int \frac{\mathrm{Sec}[c+d\,x]^4\,(A+B\,\mathrm{Sec}[c+d\,x])}{(a+a\,\mathrm{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 156 leaves, 7 steps):

$$\frac{(A-3\,B)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{a^3\,d}-\frac{(7\,A-27\,B)\,\mathrm{Tan}[c+d\,x]}{15\,a^3\,d}+$$
$$\frac{(A-B)\,\mathrm{Sec}[c+d\,x]^3\,\mathrm{Tan}[c+d\,x]}{5\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^3}+\frac{(4\,A-9\,B)\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]}{15\,a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^2}-\frac{(A-3\,B)\,\mathrm{Tan}[c+d\,x]}{d\,(a^3+a^3\,\mathrm{Sec}[c+d\,x])}$$

Result (type 3, 642 leaves):

$$\left(8\,(-A+3\,B)\,\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]^2\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(d\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)-\left(8\,(-A+3\,B)\,\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]^2\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(d\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)+\frac{1}{120\,d\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3}\,\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\,(A+B\,\text{Sec}[c+d\,x])\left(160\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-255\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-167\,A\,\text{Sin}\left[\frac{3\,d\,x}{2}\right]+567\,B\,\text{Sin}\left[\frac{3\,d\,x}{2}\right]+170\,A\,\text{Sin}\left[c-\frac{d\,x}{2}\right]-600\,B\,\text{Sin}\left[c-\frac{d\,x}{2}\right]-170\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+375\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+160\,A\,\text{Sin}\left[2\,c+\frac{d\,x}{2}\right]-480\,B\,\text{Sin}\left[2\,c+\frac{d\,x}{2}\right]+75\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-60\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-167\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+402\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+75\,A\,\text{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]-225\,B\,\text{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]-95\,A\,\text{Sin}\left[c+\frac{5\,d\,x}{2}\right]+315\,B\,\text{Sin}\left[c+\frac{5\,d\,x}{2}\right]+15\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+30\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-95\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+240\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+15\,A\,\text{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]-45\,B\,\text{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]-22\,A\,\text{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+72\,B\,\text{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]+15\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-22\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+57\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]\right)$$

Problem 104: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d\,x]}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 3, 108 leaves, 4 steps):

$$\frac{A\,x}{a^3}-\frac{(A-B)\,\text{Tan}[c+d\,x]}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^3}-\frac{(7\,A-2\,B)\,\text{Tan}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^2}-\frac{2\,(11\,A-B)\,\text{Tan}[c+d\,x]}{15\,d\,(a^3+a^3\,\text{Sec}[c+d\,x])}$$

Result (type 3, 241 leaves):

$$\frac{1}{480\,a^3\,d}\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\left(150\,A\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+150\,A\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+75\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+75\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+15\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+15\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-370\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+80\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+270\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-60\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-230\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+40\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+90\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-30\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-64\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+14\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]\right)$$

Problem 105: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]\,(A+B\operatorname{Sec}[c+d x])}{(a+a\operatorname{Sec}[c+d x])^3}\,dx$$

Optimal (type 3, 136 leaves, 6 steps):

$$-\frac{(3A-B)\,x}{a^3}+\frac{2\,(36A-11B)\operatorname{Sin}[c+d x]}{15a^3 d}-\frac{(A-B)\operatorname{Sin}[c+d x]}{5d\,(a+a\operatorname{Sec}[c+d x])^3}-\frac{(9A-4B)\operatorname{Sin}[c+d x]}{15ad\,(a+a\operatorname{Sec}[c+d x])^2}-\frac{(3A-B)\operatorname{Sin}[c+d x]}{d\,(a^3+a^3\operatorname{Sec}[c+d x])}$$

Result (type 3, 365 leaves):

$$\frac{1}{120a^3 d\,(1+\operatorname{Cos}[c+d x])^3}\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\operatorname{Sec}\left[\frac{c}{2}\right]\Big(-300(3A-B)\,d x\operatorname{Cos}\left[\frac{d x}{2}\right]-300(3A-B)\,d x\operatorname{Cos}\left[c+\frac{d x}{2}\right]-$$
$$450 A d x\operatorname{Cos}\left[c+\frac{3dx}{2}\right]+150 B d x\operatorname{Cos}\left[c+\frac{3dx}{2}\right]-450 A d x\operatorname{Cos}\left[2c+\frac{3dx}{2}\right]+$$
$$150 B d x\operatorname{Cos}\left[2c+\frac{3dx}{2}\right]-90 A d x\operatorname{Cos}\left[2c+\frac{5dx}{2}\right]+30 B d x\operatorname{Cos}\left[2c+\frac{5dx}{2}\right]-$$
$$90 A d x\operatorname{Cos}\left[3c+\frac{5dx}{2}\right]+30 B d x\operatorname{Cos}\left[3c+\frac{5dx}{2}\right]+1755 A\operatorname{Sin}\left[\frac{dx}{2}\right]-740 B\operatorname{Sin}\left[\frac{dx}{2}\right]-$$
$$1125 A\operatorname{Sin}\left[c+\frac{dx}{2}\right]+540 B\operatorname{Sin}\left[c+\frac{dx}{2}\right]+1215 A\operatorname{Sin}\left[c+\frac{3dx}{2}\right]-460 B\operatorname{Sin}\left[c+\frac{3dx}{2}\right]-$$
$$225 A\operatorname{Sin}\left[2c+\frac{3dx}{2}\right]+180 B\operatorname{Sin}\left[2c+\frac{3dx}{2}\right]+363 A\operatorname{Sin}\left[2c+\frac{5dx}{2}\right]-$$
$$128 B\operatorname{Sin}\left[2c+\frac{5dx}{2}\right]+75 A\operatorname{Sin}\left[3c+\frac{5dx}{2}\right]+15 A\operatorname{Sin}\left[3c+\frac{7dx}{2}\right]+15 A\operatorname{Sin}\left[4c+\frac{7dx}{2}\right]\Big)$$

Problem 106: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]^2\,(A+B\operatorname{Sec}[c+d x])}{(a+a\operatorname{Sec}[c+d x])^3}\,dx$$

Optimal (type 3, 187 leaves, 7 steps):

$$\frac{(13A-6B)\,x}{2a^3}-\frac{8\,(19A-9B)\operatorname{Sin}[c+d x]}{15a^3 d}+\frac{(13A-6B)\operatorname{Cos}[c+d x]\operatorname{Sin}[c+d x]}{2a^3 d}-\frac{(A-B)\operatorname{Cos}[c+d x]\operatorname{Sin}[c+d x]}{5d\,(a+a\operatorname{Sec}[c+d x])^3}-\frac{(11A-6B)\operatorname{Cos}[c+d x]\operatorname{Sin}[c+d x]}{15ad\,(a+a\operatorname{Sec}[c+d x])^2}-\frac{4\,(19A-9B)\operatorname{Cos}[c+d x]\operatorname{Sin}[c+d x]}{15d\,(a^3+a^3\operatorname{Sec}[c+d x])}$$

Result (type 3, 435 leaves):

$$\frac{1}{480\,a^3\,d\,\left(1+\text{Cos}[c+d\,x]\right)^3}\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(600\,(13\,A-6\,B)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+600\,(13\,A-6\,B)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+\right.$$
$$3900\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-1800\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+3900\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$1800\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+780\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]-360\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$780\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-360\,B\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-12\,760\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+7020\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+$$
$$7560\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-4500\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-9230\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+4860\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$930\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-900\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-2782\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+1452\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$750\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+300\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-105\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+60\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-$$
$$\left.105\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+60\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+15\,A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+15\,A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

Problem 107: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 218 leaves, 8 steps):

$$-\frac{(23\,A-13\,B)\,x}{2\,a^3}+\frac{4\,(34\,A-19\,B)\,\text{Sin}[c+d\,x]}{5\,a^3\,d}-\frac{(23\,A-13\,B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a^3\,d}-$$
$$\frac{(A-B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}-\frac{(13\,A-8\,B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{15\,a\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-$$
$$\frac{(23\,A-13\,B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{3\,d\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}-\frac{4\,(34\,A-19\,B)\,\text{Sin}[c+d\,x]^3}{15\,a^3\,d}$$

Result (type 3, 491 leaves):

$$\frac{1}{480\,a^3\,d\,\left(1+\mathrm{Cos}[c+d\,x]\right)^3}\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\mathrm{Sec}\left[\frac{c}{2}\right]\left(-600\,(23\,A-13\,B)\,d\,x\,\mathrm{Cos}\left[\frac{d\,x}{2}\right]-600\,(23\,A-13\,B)\,d\,x\,\mathrm{Cos}\left[c+\frac{d\,x}{2}\right]-\right.$$
$$6900\,A\,d\,x\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]+3900\,B\,d\,x\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]-6900\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$3900\,B\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-1380\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+780\,B\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$1380\,A\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+780\,B\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+20\,410\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-12\,760\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-$$
$$11\,110\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+7560\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]+15\,380\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]-9230\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]-$$
$$380\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+930\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+4777\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-2782\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$1625\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-750\,B\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+230\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-105\,B\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+$$
$$230\,A\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-105\,B\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-20\,A\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+15\,B\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-$$
$$\left.20\,A\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+15\,B\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+5\,A\,\mathrm{Sin}\left[5\,c+\frac{11\,d\,x}{2}\right]+5\,A\,\mathrm{Sin}\left[6\,c+\frac{11\,d\,x}{2}\right]\right)$$

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

$$\int\frac{\mathrm{Sec}[c+d\,x]^6\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)}{\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4}\,dx$$

Optimal (type 3, 238 leaves, 9 steps):

$$-\frac{(8\,A-21\,B)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,a^4\,d}+$$
$$\frac{8\,(83\,A-216\,B)\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d}-\frac{(8\,A-21\,B)\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{2\,a^4\,d}+$$
$$\frac{(52\,A-129\,B)\,\mathrm{Sec}[c+d\,x]^3\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d\,\left(1+\mathrm{Sec}[c+d\,x]\right)^2}+\frac{4\,(83\,A-216\,B)\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d\,\left(1+\mathrm{Sec}[c+d\,x]\right)}+$$
$$\frac{(A-B)\,\mathrm{Sec}[c+d\,x]^5\,\mathrm{Tan}[c+d\,x]}{7\,d\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^4}+\frac{(A-2\,B)\,\mathrm{Sec}[c+d\,x]^4\,\mathrm{Tan}[c+d\,x]}{5\,a\,d\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3}$$

Result (type 3, 880 leaves):

$$-\left(\left(8\,(-8\,A+21\,B)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\right.\right.$$

$$\left.\left.\mathrm{Sec}[c+d\,x]^3\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/\left(d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^4\right)\right)+$$

$$\left(8\,(-8\,A+21\,B)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^8\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]^3\right.$$

$$\left.(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/\left(d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^4\right)+$$

$$\frac{1}{6720\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^4}$$

$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^5\,(A+B\,\mathrm{Sec}[c+d\,x])$$

$$\left(-38\,668\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+73\,206\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+64\,384\,A\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]-166\,668\,B\,\mathrm{Sin}\left[\frac{3\,d\,x}{2}\right]-\right.$$

$$70\,896\,A\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]+183\,162\,B\,\mathrm{Sin}\left[c-\frac{d\,x}{2}\right]+50\,316\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-100\,842\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-$$

$$59\,248\,A\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]+155\,526\,B\,\mathrm{Sin}\left[2\,c+\frac{d\,x}{2}\right]-22\,820\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$

$$37\,380\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+48\,004\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-101\,148\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$

$$39\,200\,A\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+102\,900\,B\,\mathrm{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+46\,032\,A\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]-$$

$$119\,364\,B\,\mathrm{Sin}\left[c+\frac{5\,d\,x}{2}\right]-8750\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+8820\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$

$$35\,742\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-78\,204\,B\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-$$

$$19\,040\,A\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+49\,980\,B\,\mathrm{Sin}\left[4\,c+\frac{5\,d\,x}{2}\right]+24\,664\,A\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]-$$

$$64\,053\,B\,\mathrm{Sin}\left[2\,c+\frac{7\,d\,x}{2}\right]-1050\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-3885\,B\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+$$

$$19\,834\,A\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-44\,733\,B\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-5880\,A\,\mathrm{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]+$$

$$15\,435\,B\,\mathrm{Sin}\left[5\,c+\frac{7\,d\,x}{2}\right]+8456\,A\,\mathrm{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]-21\,987\,B\,\mathrm{Sin}\left[3\,c+\frac{9\,d\,x}{2}\right]+$$

$$630\,A\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-3675\,B\,\mathrm{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+6986\,A\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]-$$

$$16\,107\,B\,\mathrm{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]-840\,A\,\mathrm{Sin}\left[6\,c+\frac{9\,d\,x}{2}\right]+2205\,B\,\mathrm{Sin}\left[6\,c+\frac{9\,d\,x}{2}\right]+$$

$$1328\,A\,\mathrm{Sin}\left[4\,c+\frac{11\,d\,x}{2}\right]-3456\,B\,\mathrm{Sin}\left[4\,c+\frac{11\,d\,x}{2}\right]+210\,A\,\mathrm{Sin}\left[5\,c+\frac{11\,d\,x}{2}\right]-$$

$$\left.840\,B\,\mathrm{Sin}\left[5\,c+\frac{11\,d\,x}{2}\right]+1118\,A\,\mathrm{Sin}\left[6\,c+\frac{11\,d\,x}{2}\right]-2616\,B\,\mathrm{Sin}\left[6\,c+\frac{11\,d\,x}{2}\right]\right)$$

Problem 109: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[c+d x]^5 \,(A+B\,\mathrm{Sec}[c+d x])}{(a+a\,\mathrm{Sec}[c+d x])^4}\,dx$$

Optimal (type 3, 194 leaves, 8 steps):

$$\frac{(A-4B)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d x]]}{a^4 d}-\frac{(55A-244B)\,\mathrm{Tan}[c+d x]}{105 a^4 d}+\frac{(25A-88B)\,\mathrm{Sec}[c+d x]^2\,\mathrm{Tan}[c+d x]}{105 a^4 d\,(1+\mathrm{Sec}[c+d x])^2}-\frac{(A-4B)\,\mathrm{Tan}[c+d x]}{a^4 d\,(1+\mathrm{Sec}[c+d x])}+\frac{(A-B)\,\mathrm{Sec}[c+d x]^4\,\mathrm{Tan}[c+d x]}{7 d\,(a+a\,\mathrm{Sec}[c+d x])^4}+\frac{(5A-12B)\,\mathrm{Sec}[c+d x]^3\,\mathrm{Tan}[c+d x]}{35 a d\,(a+a\,\mathrm{Sec}[c+d x])^3}$$

Result (type 3, 754 leaves):

$$\left(16\,(-A+4B)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]\mathrm{Sec}[c+d x]^3\,(A+B\,\mathrm{Sec}[c+d x])\right)\Big/\left(d\,(B+A\,\mathrm{Cos}[c+d x])\,(a+a\,\mathrm{Sec}[c+d x])^4\right)-$$
$$\left(16\,(-A+4B)\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]\mathrm{Sec}[c+d x]^3\,(A+B\,\mathrm{Sec}[c+d x])\right)\Big/\left(d\,(B+A\,\mathrm{Cos}[c+d x])\,(a+a\,\mathrm{Sec}[c+d x])^4\right)+$$
$$\frac{1}{1680\,d\,(B+A\,\mathrm{Cos}[c+d x])\,(a+a\,\mathrm{Sec}[c+d x])^4}\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c]\,\mathrm{Sec}[c+d x]^4$$
$$(A+B\,\mathrm{Sec}[c+d x])\left(4165\,A\,\mathrm{Sin}\left[\frac{d x}{2}\right]-10780\,B\,\mathrm{Sin}\left[\frac{d x}{2}\right]-4445\,A\,\mathrm{Sin}\left[\frac{3 d x}{2}\right]+\right.$$
$$18788\,B\,\mathrm{Sin}\left[\frac{3 d x}{2}\right]+4795\,A\,\mathrm{Sin}\left[c-\frac{d x}{2}\right]-20524\,B\,\mathrm{Sin}\left[c-\frac{d x}{2}\right]-4795\,A\,\mathrm{Sin}\left[c+\frac{d x}{2}\right]+$$
$$14644\,B\,\mathrm{Sin}\left[c+\frac{d x}{2}\right]+4165\,A\,\mathrm{Sin}\left[2c+\frac{d x}{2}\right]-16660\,B\,\mathrm{Sin}\left[2c+\frac{d x}{2}\right]+2275\,A\,\mathrm{Sin}\left[c+\frac{3 d x}{2}\right]-$$
$$4690\,B\,\mathrm{Sin}\left[c+\frac{3 d x}{2}\right]-4445\,A\,\mathrm{Sin}\left[2c+\frac{3 d x}{2}\right]+14378\,B\,\mathrm{Sin}\left[2c+\frac{3 d x}{2}\right]+$$
$$2275\,A\,\mathrm{Sin}\left[3c+\frac{3 d x}{2}\right]-9100\,B\,\mathrm{Sin}\left[3c+\frac{3 d x}{2}\right]-2785\,A\,\mathrm{Sin}\left[c+\frac{5 d x}{2}\right]+$$
$$11668\,B\,\mathrm{Sin}\left[c+\frac{5 d x}{2}\right]+735\,A\,\mathrm{Sin}\left[2c+\frac{5 d x}{2}\right]-630\,B\,\mathrm{Sin}\left[2c+\frac{5 d x}{2}\right]-$$
$$2785\,A\,\mathrm{Sin}\left[3c+\frac{5 d x}{2}\right]+9358\,B\,\mathrm{Sin}\left[3c+\frac{5 d x}{2}\right]+735\,A\,\mathrm{Sin}\left[4c+\frac{5 d x}{2}\right]-$$
$$2940\,B\,\mathrm{Sin}\left[4c+\frac{5 d x}{2}\right]-1015\,A\,\mathrm{Sin}\left[2c+\frac{7 d x}{2}\right]+4228\,B\,\mathrm{Sin}\left[2c+\frac{7 d x}{2}\right]+$$
$$105\,A\,\mathrm{Sin}\left[3c+\frac{7 d x}{2}\right]+315\,B\,\mathrm{Sin}\left[3c+\frac{7 d x}{2}\right]-1015\,A\,\mathrm{Sin}\left[4c+\frac{7 d x}{2}\right]+$$
$$3493\,B\,\mathrm{Sin}\left[4c+\frac{7 d x}{2}\right]+105\,A\,\mathrm{Sin}\left[5c+\frac{7 d x}{2}\right]-420\,B\,\mathrm{Sin}\left[5c+\frac{7 d x}{2}\right]-160\,A\,\mathrm{Sin}\left[3c+\frac{9 d x}{2}\right]+$$
$$\left.664\,B\,\mathrm{Sin}\left[3c+\frac{9 d x}{2}\right]+105\,B\,\mathrm{Sin}\left[4c+\frac{9 d x}{2}\right]-160\,A\,\mathrm{Sin}\left[5c+\frac{9 d x}{2}\right]+559\,B\,\mathrm{Sin}\left[5c+\frac{9 d x}{2}\right]\right)$$

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

$$\int \frac{A+B\,\mathrm{Sec}[c+d\,x]}{(a+a\,\mathrm{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 3, 138 leaves, 5 steps):

$$\frac{A\,x}{a^4}-\frac{(55\,A-6\,B)\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d\,(1+\mathrm{Sec}[c+d\,x])^2}-\frac{2\,(80\,A-3\,B)\,\mathrm{Tan}[c+d\,x]}{105\,a^4\,d\,(1+\mathrm{Sec}[c+d\,x])}-\frac{(A-B)\,\mathrm{Tan}[c+d\,x]}{7\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^4}-\frac{(10\,A-3\,B)\,\mathrm{Tan}[c+d\,x]}{35\,a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^3}$$

Result (type 3, 329 leaves):

$$\frac{1}{13\,440\,a^4\,d}\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^7\left(3675\,A\,d\,x\,\mathrm{Cos}\left[\frac{d\,x}{2}\right]+3675\,A\,d\,x\,\mathrm{Cos}\left[c+\frac{d\,x}{2}\right]+2205\,A\,d\,x\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]+\right.$$
$$2205\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+735\,A\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+735\,A\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+$$
$$105\,A\,d\,x\,\mathrm{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]+105\,A\,d\,x\,\mathrm{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right]-9940\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+1260\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+$$
$$8260\,A\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-1260\,B\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-7140\,A\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+882\,B\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+$$
$$3780\,A\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-630\,B\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-2800\,A\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+294\,B\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$\left.840\,A\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-210\,B\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-520\,A\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+72\,B\,\mathrm{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]\right)$$

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

$$\int \frac{\mathrm{Cos}[c+d\,x]\,(A+B\,\mathrm{Sec}[c+d\,x])}{(a+a\,\mathrm{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 3, 166 leaves, 7 steps):

$$-\frac{(4\,A-B)\,x}{a^4}+\frac{8\,(83\,A-20\,B)\,\mathrm{Sin}[c+d\,x]}{105\,a^4\,d}-\frac{(88\,A-25\,B)\,\mathrm{Sin}[c+d\,x]}{105\,a^4\,d\,(1+\mathrm{Sec}[c+d\,x])^2}-\frac{(4\,A-B)\,\mathrm{Sin}[c+d\,x]}{a^4\,d\,(1+\mathrm{Sec}[c+d\,x])}-\frac{(A-B)\,\mathrm{Sin}[c+d\,x]}{7\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^4}-\frac{(12\,A-5\,B)\,\mathrm{Sin}[c+d\,x]}{35\,a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^3}$$

Result (type 3, 485 leaves):

$$\frac{1}{1680\, a^4\, d\, (1+\text{Cos}[c+d\,x])^4}\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}\left[\frac{c}{2}\right]\left(-7350\,(4\,A-B)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-7350\,(4\,A-B)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-\right.$$
$$17640\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+4410\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-17640\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$4410\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-5880\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+1470\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$5880\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+1470\,B\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-840\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]+$$
$$210\,B\,d\,x\,\text{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]-840\,A\,d\,x\,\text{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right]+210\,B\,d\,x\,\text{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right]+$$
$$60830\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-19880\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-46130\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+16520\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+$$
$$46116\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-14280\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-18060\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$7560\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+19292\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-5600\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$2100\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+1680\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+3791\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-$$
$$\left.1040\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+735\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+105\,A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+105\,A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]\right)$$

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

$$\int\frac{\text{Cos}[c+d\,x]^2\,(A+B\,\text{Sec}[c+d\,x])}{(a+a\,\text{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 3, 223 leaves, 8 steps):

$$\frac{(21\,A-8\,B)\,x}{2\,a^4}-\frac{8\,(216\,A-83\,B)\,\text{Sin}[c+d\,x]}{105\,a^4\,d}+\frac{(21\,A-8\,B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a^4\,d}-$$
$$\frac{(129\,A-52\,B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{105\,a^4\,d\,(1+\text{Sec}[c+d\,x])^2}-\frac{4\,(216\,A-83\,B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{105\,a^4\,d\,(1+\text{Sec}[c+d\,x])}-$$
$$\frac{(A-B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{7\,d\,(a+a\,\text{Sec}[c+d\,x])^4}-\frac{(2\,A-B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{5\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^3}$$

Result (type 3, 555 leaves):

$$\frac{1}{6720\,a^4\,d\,(1+\text{Cos}[c+d\,x])^4}$$
$$\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}\left[\frac{c}{2}\right]\left(14\,700\,(21\,A-8\,B)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]+14\,700\,(21\,A-8\,B)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+\right.$$
$$185\,220\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-70\,560\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+185\,220\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$70\,560\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+61\,740\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]-23\,520\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$61\,740\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-23\,520\,B\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+8820\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]-$$
$$3360\,B\,d\,x\,\text{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]+8820\,A\,d\,x\,\text{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right]-3360\,B\,d\,x\,\text{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right]-$$
$$539\,490\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+243\,320\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]+386\,190\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-184\,520\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-$$
$$422\,478\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+184\,464\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+132\,930\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$
$$72\,240\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-181\,461\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+77\,168\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$3675\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-8400\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]-36\,003\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+$$
$$15\,164\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-9555\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+2940\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-$$
$$945\,A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+420\,B\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-945\,A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+$$
$$\left.420\,B\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]+105\,A\,\text{Sin}\left[5\,c+\frac{11\,d\,x}{2}\right]+105\,A\,\text{Sin}\left[6\,c+\frac{11\,d\,x}{2}\right]\right)$$

Problem 117: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^3\,(A+B\,\text{Sec}[c+d\,x])}{(a+a\,\text{Sec}[c+d\,x])^4}\,dx$$

Optimal (type 3, 256 leaves, 9 steps):

$$-\frac{(44\,A-21\,B)\,x}{2\,a^4}+\frac{8\,(227\,A-108\,B)\,\text{Sin}[c+d\,x]}{35\,a^4\,d}-$$
$$\frac{(44\,A-21\,B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a^4\,d}-\frac{(178\,A-87\,B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{105\,a^4\,d\,(1+\text{Sec}[c+d\,x])^2}-$$
$$\frac{(44\,A-21\,B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{3\,a^4\,d\,(1+\text{Sec}[c+d\,x])}-\frac{(A-B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{7\,d\,(a+a\,\text{Sec}[c+d\,x])^4}-$$
$$\frac{(16\,A-9\,B)\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{35\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^3}-\frac{8\,(227\,A-108\,B)\,\text{Sin}[c+d\,x]^3}{105\,a^4\,d}$$

Result (type 3, 611 leaves):

$$\frac{1}{6720\, a^4\, d\, (1+\text{Cos}[c+d\, x])^4}$$

$$\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}\left[\frac{c}{2}\right]\left(-14700\,(44\,A-21\,B)\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-14700\,(44\,A-21\,B)\,d\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-\right.$$
$$388080\,A\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+185220\,B\,d\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-388080\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$185220\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-129360\,A\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+61740\,B\,d\,x\,\text{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]-$$
$$129360\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+61740\,B\,d\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-18480\,A\,d\,x\,\text{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]+$$
$$8820\,B\,d\,x\,\text{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]-18480\,A\,d\,x\,\text{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right]+8820\,B\,d\,x\,\text{Cos}\left[4\,c+\frac{7\,d\,x}{2}\right]+$$
$$1010660\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]-539490\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]-687260\,A\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+386190\,B\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+$$
$$814107\,A\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-422478\,B\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-204645\,A\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$132930\,B\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+357609\,A\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-181461\,B\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+$$
$$18025\,A\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+3675\,B\,\text{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]+72522\,A\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]-$$
$$36003\,B\,\text{Sin}\left[3\,c+\frac{7\,d\,x}{2}\right]+24010\,A\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]-9555\,B\,\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]+$$
$$2310\,A\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]-945\,B\,\text{Sin}\left[4\,c+\frac{9\,d\,x}{2}\right]+2310\,A\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]-$$
$$945\,B\,\text{Sin}\left[5\,c+\frac{9\,d\,x}{2}\right]-175\,A\,\text{Sin}\left[5\,c+\frac{11\,d\,x}{2}\right]+105\,B\,\text{Sin}\left[5\,c+\frac{11\,d\,x}{2}\right]-$$
$$\left.175\,A\,\text{Sin}\left[6\,c+\frac{11\,d\,x}{2}\right]+105\,B\,\text{Sin}\left[6\,c+\frac{11\,d\,x}{2}\right]+35\,A\,\text{Sin}\left[6\,c+\frac{13\,d\,x}{2}\right]+35\,A\,\text{Sin}\left[7\,c+\frac{13\,d\,x}{2}\right]\right)$$

Problem 122: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{a+a\,\text{Sec}[c+d\,x]}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 66 leaves, 4 steps):

$$\frac{2\sqrt{a}\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a\,B\,\text{Tan}[c+d\,x]}{d\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 407 leaves):

$$-\frac{1}{d\,(B+A\,\mathrm{Cos}[c+d\,x])}8\left(-3-2\sqrt{2}\right)A\,\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4$$

$$\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\mathrm{EllipticPi}\left[-3+2\sqrt{2},-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]}$$

$$\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}\,(A+B\,\mathrm{Sec}[c+d\,x])\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+$$

$$\left(2\,B\,\mathrm{Cos}[c+d\,x]\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big/$$
$$(d\,(B+A\,\mathrm{Cos}[c+d\,x]))$$

Problem 123: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,(A+B\,\mathrm{Sec}[c+d\,x])\,dx$$

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

$$\frac{\sqrt{a}\,(A+2\,B)\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{d}+\frac{a\,A\,\mathrm{Sin}[c+d\,x]}{d\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 4, 396 leaves):

$$\frac{1}{d}\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a(1+\mathrm{Sec}[c+dx])}\left(-\frac{1}{2}A\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]+\frac{1}{2}A\,\mathrm{Sin}\left[\frac{3}{2}(c+dx)\right]\right)-$$

$$\frac{1}{d}4\left(-3-2\sqrt{2}\right)(A+2B)\,\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]}}$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]\right)$$

$$\left(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\mathrm{EllipticPi}\left[-3+2\sqrt{2},-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]\right)\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]}$$

$$\mathrm{Sec}[c+dx]\sqrt{a(1+\mathrm{Sec}[c+dx])}\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}$$

Problem 124: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+dx]^2\sqrt{a+a\,\mathrm{Sec}[c+dx]}\,(A+B\,\mathrm{Sec}[c+dx])\,dx$$

Optimal (type 3, 117 leaves, 4 steps):

$$\frac{\sqrt{a}\,(3A+4B)\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+dx]}{\sqrt{a+a\,\mathrm{Sec}[c+dx]}}\right]}{4d}+\frac{a\,(3A+4B)\,\mathrm{Sin}[c+dx]}{4d\sqrt{a+a\,\mathrm{Sec}[c+dx]}}+\frac{a\,A\,\mathrm{Cos}[c+dx]\,\mathrm{Sin}[c+dx]}{2d\sqrt{a+a\,\mathrm{Sec}[c+dx]}}$$

Result (type 4, 418 leaves):

$$\frac{1}{d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a(1+\text{Sec}[c+d x])}$$
$$\left(-\frac{1}{8}(A+4 B)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{4}(A+2 B)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{8}A\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)+$$
$$\frac{1}{d}\left(2+\frac{3}{\sqrt{2}}\right)(3 A+4 B)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]}$$
$$\text{Sec}[c+d x]\sqrt{a(1+\text{Sec}[c+d x])}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 125: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3\sqrt{a+a\,\text{Sec}[c+d x]}\,(A+B\,\text{Sec}[c+d x])\,dx$$

Optimal (type 3, 160 leaves, 5 steps):

$$\frac{\sqrt{a}\,(5 A+6 B)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{8 d}+\frac{a\,(5 A+6 B)\,\text{Sin}[c+d x]}{8 d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$
$$\frac{a\,(5 A+6 B)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{12 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a A\,\text{Cos}[c+d x]^2\,\text{Sin}[c+d x]}{3 d\sqrt{a+a\,\text{Sec}[c+d x]}}$$

Result (type 4, 443 leaves):

$$\frac{1}{d}\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}\left(-\frac{1}{48}(11\,A+6\,B)\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{12}(4\,A+3\,B)\,\mathrm{Sin}\left[\frac{3}{2}(c+d\,x)\right]+\frac{1}{16}(A+2\,B)\,\mathrm{Sin}\left[\frac{5}{2}(c+d\,x)\right]+\frac{1}{24}A\,\mathrm{Sin}\left[\frac{7}{2}(c+d\,x)\right]\right)+$$

$$\frac{1}{d}\left(1+\frac{3}{2\sqrt{2}}\right)(5\,A+6\,B)\,\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\mathrm{EllipticPi}\left[-3+2\sqrt{2},-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}\;\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]$$

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

Problem 126: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^4\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,(A+B\,\mathrm{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 203 leaves, 6 steps):

$$\frac{5\sqrt{a}\,(7\,A+8\,B)\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{64\,d}+\frac{5\,a\,(7\,A+8\,B)\,\mathrm{Sin}[c+d\,x]}{64\,d\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+\frac{5\,a\,(7\,A+8\,B)\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{96\,d\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+\frac{a\,(7\,A+8\,B)\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{Sin}[c+d\,x]}{24\,d\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+\frac{a\,A\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Sin}[c+d\,x]}{4\,d\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 4, 465 leaves):

$$\frac{1}{d}\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a(1+\mathrm{Sec}[c+d x])}\left(-\frac{1}{384}(41 A+88 B)\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{48}(11 A+16 B)\,\mathrm{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{128}(15 A+8 B)\,\mathrm{Sin}\left[\frac{5}{2}(c+d x)\right]+\frac{1}{48}(A+2 B)\,\mathrm{Sin}\left[\frac{7}{2}(c+d x)\right]+\frac{1}{64}A\,\mathrm{Sin}\left[\frac{9}{2}(c+d x)\right]\right)+$$

$$\frac{1}{\left(-64+48\sqrt{2}\right)d}5(7 A+8 B)\,\mathrm{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\mathrm{EllipticPi}\left[-3+2\sqrt{2},-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\;\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]$$

$$\mathrm{Sec}[c+d x]\sqrt{a(1+\mathrm{Sec}[c+d x])}\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 130: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int(a+a\,\mathrm{Sec}[c+d x])^{3/2}(A+B\,\mathrm{Sec}[c+d x])\,dx$$

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

$$\frac{2 a^{3/2} A\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d x]}{\sqrt{a+a\,\mathrm{Sec}[c+d x]}}\right]}{d}+\frac{2 a^2(3 A+4 B)\,\mathrm{Tan}[c+d x]}{3 d\sqrt{a+a\,\mathrm{Sec}[c+d x]}}+\frac{2 a B\sqrt{a+a\,\mathrm{Sec}[c+d x]}\,\mathrm{Tan}[c+d x]}{3 d}$$

Result (type 4, 460 leaves):

$$\left(\text{Cos}[c+d\,x]^2\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{3/2}\,(A+B\,\text{Sec}[c+d\,x])\right.$$
$$\left.\left(\frac{1}{3}\,(3\,A+5\,B)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{3}\,B\,\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/\left(d\,(B+A\,\text{Cos}[c+d\,x])\right)-$$
$$\frac{1}{d\,(B+A\,\text{Cos}[c+d\,x])}\,4\,\left(-3-2\,\sqrt{2}\right)\,A\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}\,\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$
$$\text{Cos}[c+d\,x]\,\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$
$$\left(a\,(1+\text{Sec}[c+d\,x])\right)^{3/2}\,(A+B\,\text{Sec}[c+d\,x])\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$

Problem 131: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 103 leaves, 4 steps):

$$\frac{a^{3/2}\,(3\,A+2\,B)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+$$
$$\frac{a^2\,(A-2\,B)\,\text{Sin}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{2\,a\,B\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\,\text{Sin}[c+d\,x]}{d}$$

Result (type 4, 408 leaves):

$$\frac{1}{d}\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}$$
$$\left(\frac{1}{4}(-A+4\,B)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{4}A\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]\right)-$$
$$\frac{1}{d}2\left(-3-2\sqrt{2}\right)(3\,A+2\,B)\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3$$
$$\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

Problem 132: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 119 leaves, 4 steps):

$$\frac{a^{3/2}(7\,A+12\,B)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{4\,d}+$$
$$\frac{a^2\,(5\,A+4\,B)\,\text{Sin}[c+d\,x]}{4\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,A\,\text{Cos}[c+d\,x]\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 428 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 (a(1+\text{Sec}[c+d x]))^{3/2}$$
$$\left(-\frac{1}{16}(5 A+4 B)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{8}(3 A+2 B)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{16}A\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)+$$
$$\frac{1}{d}\left(1+\frac{3}{2\sqrt{2}}\right)(7 A+12 B)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 (a(1+\text{Sec}[c+d x]))^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 133: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 164 leaves, 5 steps):

$$\frac{a^{3/2}(11 A+14 B)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{8 d}+\frac{a^2(11 A+14 B)\,\text{Sin}[c+d x]}{8 d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$
$$\frac{a^2(7 A+6 B)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{12 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a A\,\text{Cos}[c+d x]^2\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{3 d}$$

Result (type 4, 450 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 (a (1+\text{Sec}[c+d x]))^{3/2}$$
$$\left(-\frac{1}{96}(17 A+30 B)\ \text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{24}(7 A+9 B)\ \text{Sin}\left[\frac{3}{2}(c+d x)\right]+\right.$$
$$\left.\frac{1}{32}(3 A+2 B)\ \text{Sin}\left[\frac{5}{2}(c+d x)\right]+\frac{1}{48} A\ \text{Sin}\left[\frac{7}{2}(c+d x)\right]\right)+$$
$$\frac{1}{8 d}\left(4+3\sqrt{2}\right)(11 A+14 B)\ \text{Cos}\left[\frac{1}{4}(c+d x)\right]^4 \sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]+\right.$$
$$\left.2\ \text{EllipticPi}\left[-3+2\sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 (a (1+\text{Sec}[c+d x]))^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 134: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 209 leaves, 6 steps):

$$\frac{a^{3/2}(75 A+88 B)\ \text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+a\ \text{Sec}[c+d x]}}\right]}{64 d}+$$
$$\frac{a^2 (75 A+88 B)\ \text{Sin}[c+d x]}{64 d \sqrt{a+a\ \text{Sec}[c+d x]}}+\frac{a^2 (75 A+88 B)\ \text{Cos}[c+d x]\ \text{Sin}[c+d x]}{96 d \sqrt{a+a\ \text{Sec}[c+d x]}}+$$
$$\frac{a^2 (9 A+8 B)\ \text{Cos}[c+d x]^2\ \text{Sin}[c+d x]}{24 d \sqrt{a+a\ \text{Sec}[c+d x]}}+\frac{a A\ \text{Cos}[c+d x]^3 \sqrt{a+a\ \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{4 d}$$

Result (type 4, 471 leaves):

$$\frac{1}{d}\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}$$
$$\left(-\frac{1}{768}(129\,A+136\,B)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{96}(27\,A+28\,B)\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+\right.$$
$$\left.\frac{1}{256}(23\,A+24\,B)\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+\frac{1}{96}(3\,A+2\,B)\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]+\frac{1}{128}A\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]\right)+$$
$$\frac{1}{64\,d}\left(4+3\sqrt{2}\right)(75\,A+88\,B)\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

Problem 138: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 142 leaves, 6 steps):

$$\frac{2\,a^{5/2}\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a^3\,(35\,A+32\,B)\,\text{Tan}[c+d\,x]}{15\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,a^2\,(5\,A+8\,B)\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{15\,d}+\frac{2\,a\,B\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Tan}[c+d\,x]}{5\,d}$$

Result (type 4, 501 leaves):

$$\left(\text{Cos}[c+d\,x]^3\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\,(A+B\,\text{Sec}[c+d\,x])\right.$$
$$\left(\frac{1}{30}\,(40\,A+43\,B)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{10}\,B\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$
$$\left.\left.\frac{1}{30}\,\text{Sec}[c+d\,x]\,\left(5\,A\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+14\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\right)\Big/\left(d\,(B+A\,\text{Cos}[c+d\,x])\right)-$$
$$\frac{1}{d\,(B+A\,\text{Cos}[c+d\,x])}\,2\,\left(-3-2\,\sqrt{2}\right)\,A\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}\,\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$
$$\text{Cos}[c+d\,x]^2\,\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$
$$\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\,(A+B\,\text{Sec}[c+d\,x])\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$

Problem 139: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 143 leaves, 5 steps):

$$\frac{a^{5/2}\,(5\,A+2\,B)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}-\frac{a^3\,(3\,A+14\,B)\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,a^2\,(A+2\,B)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d}+\frac{2\,a\,B\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 434 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]^2\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\text{Sec}[c+d x]))^{5/2}$$
$$\left(\frac{1}{24}(9A+32B)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{6}B\,\text{Sec}[c+d x]\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{8}A\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)+$$
$$\frac{1}{d}\left(2+\frac{3}{\sqrt{2}}\right)(5A+2B)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Cos}[c+d x]$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\text{Sec}[c+d x]))^{5/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 140: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2 (a+a\,\text{Sec}[c+d x])^{5/2} (A+B\,\text{Sec}[c+d x])\,dx$$

Optimal (type 3, 154 leaves, 5 steps):

$$\frac{a^{5/2}(19A+20B)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{4d}+\frac{a^3(9A-4B)\,\text{Sin}[c+d x]}{4d\sqrt{a+a\,\text{Sec}[c+d x]}}-$$
$$\frac{a^2(A-4B)\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{2d}+\frac{a A\,\text{Cos}[c+d x](a+a\,\text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{2d}$$

Result (type 4, 437 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]^2 \,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\text{Sec}[c+d x]))^{5/2} \left(\frac{3}{32}(-3 A+4 B) \,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{16}(5 A+2 B) \,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\frac{1}{32} A \,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)+$$

$$\frac{1}{8 d}\left(4+3 \sqrt{2}\right)(19 A+20 B) \,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4 \sqrt{\frac{7-5 \sqrt{2}+\left(10-7 \sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]+\right.$$

$$\left.2 \,\text{EllipticPi}\left[-3+2 \sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

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

Problem 141: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3 (a+a \,\text{Sec}[c+d x])^{5/2} (A+B \,\text{Sec}[c+d x]) \, dx$$

Optimal (type 3, 164 leaves, 5 steps):

$$\frac{a^{5/2}(25 A+38 B) \,\text{ArcTan}\left[\frac{\sqrt{a} \,\text{Tan}[c+d x]}{\sqrt{a+a \,\text{Sec}[c+d x]}}\right]}{8 d}+\frac{a^3 (49 A+54 B) \,\text{Sin}[c+d x]}{24 d \sqrt{a+a \,\text{Sec}[c+d x]}}+$$

$$\frac{a^2 (3 A+2 B) \,\text{Cos}[c+d x] \sqrt{a+a \,\text{Sec}[c+d x]} \,\text{Sin}[c+d x]}{4 d}+$$

$$\frac{a A \,\text{Cos}[c+d x]^2 (a+a \,\text{Sec}[c+d x])^{3/2} \,\text{Sin}[c+d x]}{3 d}$$

Result (type 4, 458 leaves):

$$\frac{1}{d}\text{Cos}[c+d\,x]^2\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}$$
$$\left(-\frac{1}{192}\,(47\,A+54\,B)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{48}\,(16\,A+15\,B)\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+\right.$$
$$\left.\frac{1}{64}\,(5\,A+2\,B)\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+\frac{1}{96}\,A\,\text{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]\right)+$$
$$\frac{1}{8\,d}\left(2+\frac{3}{\sqrt{2}}\right)\,(25\,A+38\,B)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Cos}[c+d\,x]$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\Bigg/$$
$$\left(\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\right)$$

Problem 142: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^4\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 209 leaves, 6 steps):

$$\frac{a^{5/2}\,(163\,A+200\,B)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{64\,d}+$$
$$\frac{a^3\,(163\,A+200\,B)\,\text{Sin}[c+d\,x]}{64\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,(95\,A+104\,B)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{96\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(11\,A+8\,B)\,\text{Cos}[c+d\,x]^2\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,d}+$$
$$\frac{a\,A\,\text{Cos}[c+d\,x]^3\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{4\,d}$$

Result (type 4, 479 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]^2\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}$$
$$\left(-\frac{(265 A+376 B)\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{1536}+\frac{1}{192}(55 A+64 B)\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\right.$$
$$\left.\frac{1}{512}(47 A+40 B)\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]+\frac{1}{192}(5 A+2 B)\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]+\frac{1}{256}A\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]\right)+$$
$$\frac{1}{64 d}\left(2+\frac{3}{\sqrt{2}}\right)(163 A+200 B)\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Cos}[c+d x]$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 143: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 254 leaves, 7 steps):

$$\frac{a^{5/2}\left(283 A+326 B\right) \text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{128 d}+\frac{a^3\left(283 A+326 B\right) \text{Sin}[c+d x]}{128 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{a^3\left(283 A+326 B\right) \text{Cos}[c+d x] \text{Sin}[c+d x]}{192 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{a^3\left(157 A+170 B\right) \text{Cos}[c+d x]^2 \text{Sin}[c+d x]}{240 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{a^2\left(13 A+10 B\right) \text{Cos}[c+d x]^3 \sqrt{a+a \text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{40 d}+\frac{a A \text{Cos}[c+d x]^4\left(a+a \text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]}{5 d}$$

Result (type 4, 500 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]^2 \text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(-\frac{\left(2309 A+2650 B\right) \text{Sin}\left[\frac{1}{2}\left(c+d x\right)\right]}{15360}+\frac{\left(509 A+550 B\right) \text{Sin}\left[\frac{3}{2}\left(c+d x\right)\right]}{1920}+\frac{\left(95 A+94 B\right) \text{Sin}\left[\frac{5}{2}\left(c+d x\right)\right]}{1024}+\frac{1}{960}\left(32 A+25 B\right) \text{Sin}\left[\frac{7}{2}\left(c+d x\right)\right]+\frac{1}{512}\left(5 A+2 B\right) \text{Sin}\left[\frac{9}{2}\left(c+d x\right)\right]+\frac{1}{640} A \text{Sin}\left[\frac{11}{2}\left(c+d x\right)\right]\right)+$$

$$\frac{1}{256 d}\left(4+3\sqrt{2}\right)\left(283 A+326 B\right) \text{Cos}\left[\frac{1}{4}\left(c+d x\right)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]}{1+\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]+2 \text{EllipticPi}\left[-3+2\sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]\right) \text{Sec}\left[\frac{1}{4}\left(c+d x\right)\right]^2}$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]\right) \text{Sec}\left[\frac{1}{4}\left(c+d x\right)\right]^2}$$

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

Problem 162: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[c+d\,x]^2\,(A+B\,\mathrm{Sec}[c+d\,x])}{(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}}\,dx$$

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

$$\frac{(5\,A+19\,B)\,\mathrm{ArcTan}\Big[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\Big]}{16\,\sqrt{2}\,a^{5/2}\,d}-\frac{(A-B)\,\mathrm{Tan}[c+d\,x]}{4\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}}+\frac{(5\,A-13\,B)\,\mathrm{Tan}[c+d\,x]}{16\,a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}}$$

Result (type 3, 256 leaves):

$$\left((5\,A+19\,B)\,\mathrm{ArcSin}\Big[\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\,\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]^4\,\sqrt{\frac{\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}\,\mathrm{Sec}[c+d\,x]^{5/2}\right.$$
$$\left.\sqrt{1+\mathrm{Sec}[c+d\,x]}\right)\Big/\left(4\,d\,\sqrt{\mathrm{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2}\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}\right)+$$
$$\left(\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]^5\,\mathrm{Sec}[c+d\,x]^3\,\left(-\frac{1}{2}\,(-A+9\,B)\,\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\right.\right.$$
$$\frac{1}{2}\,\mathrm{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^4\,\left(-A\,\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]+B\,\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\right)+\frac{1}{4}\,\mathrm{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2$$
$$\left.\left.\left(3\,A\,\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]+5\,B\,\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\right)\right)\right)\Big/\left(d\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}\right)$$

Problem 163: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[c+d\,x]\,(A+B\,\mathrm{Sec}[c+d\,x])}{(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}}\,dx$$

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

$$\frac{(3\,A+5\,B)\,\mathrm{ArcTan}\Big[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\Big]}{16\,\sqrt{2}\,a^{5/2}\,d}+\frac{(A-B)\,\mathrm{Tan}[c+d\,x]}{4\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}}+\frac{(3\,A+5\,B)\,\mathrm{Tan}[c+d\,x]}{16\,a\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}}$$

Result (type 3, 298 leaves):

$$\left((3A+5B)\,\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]^4 \sqrt{\frac{\mathrm{Cos}[c+dx]}{1+\mathrm{Cos}[c+dx]}}\,\mathrm{Sec}[c+dx]^{3/2}\sqrt{1+\mathrm{Sec}[c+dx]}\,(A+B\,\mathrm{Sec}[c+dx])\right)\Big/ \left(4d\,(B+A\,\mathrm{Cos}[c+dx])\sqrt{\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2}\,(a\,(1+\mathrm{Sec}[c+dx]))^{5/2}\right)+$$

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

Problem 164: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\mathrm{Sec}[c+dx]}{(a+a\,\mathrm{Sec}[c+dx])^{5/2}}\,dx$$

Optimal (type 3, 164 leaves, 7 steps):

$$\frac{2A\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+dx]}{\sqrt{a+a\,\mathrm{Sec}[c+dx]}}\right]}{a^{5/2}d}-\frac{(43A-3B)\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+dx]}{\sqrt{2}\sqrt{a+a\,\mathrm{Sec}[c+dx]}}\right]}{16\sqrt{2}\,a^{5/2}d}-\frac{(A-B)\,\mathrm{Tan}[c+dx]}{4d\,(a+a\,\mathrm{Sec}[c+dx])^{5/2}}-\frac{(11A-3B)\,\mathrm{Tan}[c+dx]}{16ad\,(a+a\,\mathrm{Sec}[c+dx])^{3/2}}$$

Result (type 3, 343 leaves):

$$\left(\left(\left((-43\,A+3\,B)\,\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+32\,\sqrt{2}\,A\,\text{ArcTan}\left[\frac{\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}}\right]\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^4\right.\right.$$

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

$$\left(4\,d\,(B+A\,\text{Cos}[c+d\,x])\,\sqrt{\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)+$$

$$\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^2\,(A+B\,\text{Sec}[c+d\,x])\,\left(\frac{1}{2}\,(-15\,A+7\,B)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.\right.$$

$$\frac{1}{4}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(19\,A\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-11\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+$$

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

$$\left(d\,(B+A\,\text{Cos}[c+d\,x])\,\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)$$

Problem 167: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{A+A\,\text{Sec}[c+d\,x]}{\sqrt{a-a\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 89 leaves, 5 steps):

$$\frac{2\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\,\text{Tan}[c+d\,x]}{\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,\,d}-\frac{2\,\sqrt{2}\,\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\,\text{Tan}[c+d\,x]}{\sqrt{2}\,\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,\,d}$$

Result (type 3, 176 leaves):

$$-\left(\left(A\,\left(-1+e^{i\,(c+d\,x)}\right)\,\left(\sqrt{2}\,\,d\,x+i\,\sqrt{2}\,\,\text{ArcSinh}\left[e^{i\,(c+d\,x)}\right]+4\,i\,\text{Log}\left[1-e^{i\,(c+d\,x)}\right]+\right.\right.\right.$$

$$\left.\left.i\,\sqrt{2}\,\,\text{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\right]-4\,i\,\text{Log}\left[1+e^{i\,(c+d\,x)}+\sqrt{2}\,\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\right]\right)\right)\Big/$$

$$\left.\left(\sqrt{2}\,\,d\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\,\sqrt{a-a\,\text{Sec}[c+d\,x]}\,\right)\right)$$

Problem 168: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]\,\,(A+A\,\text{Sec}[c+d\,x])}{\sqrt{a-a\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 115 leaves, 6 steps):

$$\frac{3\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}-\frac{2\,\sqrt{2}\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{2}\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{A\,\text{Sin}[c+d\,x]}{d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 382 leaves):

$$A\left(\left(e^{-\frac{1}{2}i\,(c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\left(1+\text{Cos}[c+d\,x]\right)\left(-3\,i\,d\,x+3\,\text{ArcSinh}\left[e^{i\,(c+d\,x)}\right]+4\,\sqrt{2}\,\text{Log}\left[1-e^{i\,(c+d\,x)}\right]+3\,\text{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]-4\,\sqrt{2}\,\text{Log}\left[1+e^{i\,(c+d\,x)}+\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\sqrt{\text{Sec}[c+d\,x]}\,\text{Tan}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\Big/\left(2\,\sqrt{2}\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}\right)+\left(\left(1+\text{Cos}[c+d\,x]\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\text{Sec}[c+d\,x]\left(\frac{\text{Cos}\left[\frac{c}{2}\right]\text{Cos}\left[\frac{d\,x}{2}\right]}{2\,d}+\frac{\text{Cos}\left[\frac{3\,c}{2}\right]\text{Cos}\left[\frac{3\,d\,x}{2}\right]}{2\,d}-\frac{\text{Sin}\left[\frac{c}{2}\right]\text{Sin}\left[\frac{d\,x}{2}\right]}{2\,d}-\frac{\text{Sin}\left[\frac{3\,c}{2}\right]\text{Sin}\left[\frac{3\,d\,x}{2}\right]}{2\,d}\right)\text{Tan}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\Big/\left(\sqrt{a-a\,\text{Sec}[c+d\,x]}\right)\right)$$

Problem 169: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^2\,\left(A+A\,\text{Sec}[c+d\,x]\right)}{\sqrt{a-a\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 155 leaves, 7 steps):

$$\frac{11\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{4\,\sqrt{a}\,d}-\frac{2\,\sqrt{2}\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{2}\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{5\,A\,\text{Sin}[c+d\,x]}{4\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}+\frac{A\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 332 leaves):

$$\frac{1}{8\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}A\,e^{-i\,(c+d\,x)}\left(7+6\,e^{-i\,(c+d\,x)}+7\,e^{i\,(c+d\,x)}+e^{-2\,i\,(c+d\,x)}+6\,e^{2\,i\,(c+d\,x)}+e^{3\,i\,(c+d\,x)}-11\,i\,d\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;x+11\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{ArcSinh}\left[e^{i\,(c+d\,x)}\right]+16\,\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Log}\left[1-e^{i\,(c+d\,x)}\right]+11\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]-16\,\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Log}\left[1+e^{i\,(c+d\,x)}+\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]\right)\text{Sec}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+i\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]$$

Problem 170: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Cos}[c+d\,x]^3\,(A+A\,\text{Sec}[c+d\,x])}{\sqrt{a-a\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 192 leaves, 8 steps):

$$\frac{23\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{8\,\sqrt{a}\,d}-\frac{2\,\sqrt{2}\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{2}\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{9\,A\,\text{Sin}[c+d\,x]}{8\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}+\frac{7\,A\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{12\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}+\frac{A\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 362 leaves):

$$\frac{1}{48\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}A\,e^{-i\,(c+d\,x)}\left(47+40\,e^{-i\,(c+d\,x)}+47\,e^{i\,(c+d\,x)}+9\,e^{-2\,i\,(c+d\,x)}+40\,e^{2\,i\,(c+d\,x)}+2\,e^{-3\,i\,(c+d\,x)}+9\,e^{3\,i\,(c+d\,x)}+2\,e^{4\,i\,(c+d\,x)}-69\,i\,d\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;x+69\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{ArcSinh}\left[e^{i\,(c+d\,x)}\right]+96\,\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Log}\left[1-e^{i\,(c+d\,x)}\right]+69\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]-96\,\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Log}\left[1+e^{i\,(c+d\,x)}+\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]\right)\text{Sec}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+i\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]$$

Problem 171: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 116 leaves, 6 steps):

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

Result (type 3, 265 leaves):

$$\frac{1}{d\,(a-a\,\text{Sec}[c+d\,x])^{3/2}}\,A\left(\sqrt{2}\,e^{-\frac{1}{2}\,i\,(c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\left(2\,i\,d\,x-2\,\text{ArcSinh}\left[e^{i\,(c+d\,x)}\right]-3\,\sqrt{2}\,\text{Log}\left[1-e^{i\,(c+d\,x)}\right]-2\,\text{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]+3\,\sqrt{2}\,\text{Log}\left[1+e^{i\,(c+d\,x)}+\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]\right)-\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]\right)\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\sqrt{\text{Sec}[c+d\,x]}\right)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$

Problem 172: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Cos}[c+d\,x]\,(A+A\,\text{Sec}[c+d\,x])}{(a-a\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 146 leaves, 7 steps):

$$\frac{5\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{a^{3/2}\,d}-\frac{7\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{2}\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{2}\,a^{3/2}\,d}-\frac{A\,\text{Sin}[c+d\,x]}{d\,(a-a\,\text{Sec}[c+d\,x])^{3/2}}+\frac{2\,A\,\text{Sin}[c+d\,x]}{a\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 281 leaves):

$$\frac{1}{d\,(a-a\,\text{Sec}[c+d\,x])^{3/2}}\,A\left(\sqrt{2}\,e^{-\frac{1}{2}\,i\,(c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\left(5\,i\,d\,x-5\,\text{ArcSinh}\left[e^{i\,(c+d\,x)}\right]-7\,\sqrt{2}\,\text{Log}\left[1-e^{i\,(c+d\,x)}\right]-5\,\text{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]+7\,\sqrt{2}\,\text{Log}\left[1+e^{i\,(c+d\,x)}+\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]\right)+\frac{1}{2}\left(-2\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-3\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]+\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]\right)\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\sqrt{\text{Sec}[c+d\,x]}\right)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$

Problem 173: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cos}[c+d x]^2 (A+A \text{Sec}[c+d x])}{(a-a \text{Sec}[c+d x])^{3/2}} \, dx$$

Optimal (type 3, 194 leaves, 8 steps):

$$\frac{31 A \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{a-a \text{Sec}[c+d x]}}\right]}{4 a^{3/2} d}-\frac{11 A \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{2} \sqrt{a-a \text{Sec}[c+d x]}}\right]}{\sqrt{2} a^{3/2} d}-\frac{A \text{Cos}[c+d x] \text{Sin}[c+d x]}{d (a-a \text{Sec}[c+d x])^{3/2}}+\frac{13 A \text{Sin}[c+d x]}{4 a d \sqrt{a-a \text{Sec}[c+d x]}}+\frac{3 A \text{Cos}[c+d x] \text{Sin}[c+d x]}{2 a d \sqrt{a-a \text{Sec}[c+d x]}}$$

Result (type 3, 296 leaves):

$$\frac{1}{4 d (a-a \text{Sec}[c+d x])^{3/2}} A \left(\sqrt{2} e^{-\frac{1}{2} i (c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \sqrt{1+e^{2 i (c+d x)}} \left(31 i d x-31 \text{ArcSinh}\left[e^{i (c+d x)}\right]-44 \sqrt{2} \text{Log}\left[1-e^{i (c+d x)}\right]-31 \text{Log}\left[1+\sqrt{1+e^{2 i (c+d x)}}\right]+44 \sqrt{2} \text{Log}\left[1+e^{i (c+d x)}+\sqrt{2} \sqrt{1+e^{2 i (c+d x)}}\right]\right)+\frac{1}{2} \left(-9 \text{Cos}\left[\frac{1}{2} (c+d x)\right]-16 \text{Cos}\left[\frac{3}{2} (c+d x)\right]+8 \text{Cos}\left[\frac{5}{2} (c+d x)\right]+\text{Cos}\left[\frac{7}{2} (c+d x)\right]\right) \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2 \sqrt{\text{Sec}[c+d x]}\right) \text{Sec}[c+d x]^{3/2} \text{Sin}\left[\frac{1}{2} (c+d x)\right]^3$$

Problem 174: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cos}[c+d x]^3 (A+A \text{Sec}[c+d x])}{(a-a \text{Sec}[c+d x])^{3/2}} \, dx$$

Optimal (type 3, 236 leaves, 9 steps):

$$\frac{85 A \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{a-a \text{Sec}[c+d x]}}\right]}{8 a^{3/2} d}-\frac{15 A \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{2} \sqrt{a-a \text{Sec}[c+d x]}}\right]}{\sqrt{2} a^{3/2} d}-\frac{A \text{Cos}[c+d x]^2 \text{Sin}[c+d x]}{d (a-a \text{Sec}[c+d x])^{3/2}}+\frac{35 A \text{Sin}[c+d x]}{8 a d \sqrt{a-a \text{Sec}[c+d x]}}+\frac{25 A \text{Cos}[c+d x] \text{Sin}[c+d x]}{12 a d \sqrt{a-a \text{Sec}[c+d x]}}+\frac{4 A \text{Cos}[c+d x]^2 \text{Sin}[c+d x]}{3 a d \sqrt{a-a \text{Sec}[c+d x]}}$$

Result (type 3, 314 leaves):

$$\left(A\left(-\frac{1}{d}5\sqrt{2}\,e^{-\frac{1}{2}i(c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}\left(-17\,i\,d\,x+17\,\text{ArcSinh}\left[e^{i(c+dx)}\right]+24\sqrt{2}\,\text{Log}\left[1-e^{i(c+dx)}\right]+17\,\text{Log}\left[1+\sqrt{1+e^{2i(c+dx)}}\right]-24\sqrt{2}\,\text{Log}\left[1+e^{i(c+dx)}+\sqrt{2}\sqrt{1+e^{2i(c+dx)}}\right]\right)+\frac{1}{6d}\left(-61\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]-120\,\text{Cos}\left[\frac{3}{2}(c+dx)\right]+72\,\text{Cos}\left[\frac{5}{2}(c+dx)\right]+11\,\text{Cos}\left[\frac{7}{2}(c+dx)\right]+2\,\text{Cos}\left[\frac{9}{2}(c+dx)\right]\right)\text{Csc}\left[\frac{1}{2}(c+dx)\right]^2\sqrt{\text{Sec}[c+dx]}\right)\text{Sec}[c+dx]^{3/2}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]^3\right)\Big/\left(8\,(a-a\,\text{Sec}[c+dx])^{3/2}\right)$$

Problem 175: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{A+A\,\text{Sec}[c+dx]}{(a-a\,\text{Sec}[c+dx])^{5/2}}\,dx$$

Optimal (type 3, 152 leaves, 7 steps):

$$\frac{2\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a-a\,\text{Sec}[c+dx]}}\right]}{a^{5/2}\,d}-\frac{23\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{2}\sqrt{a-a\,\text{Sec}[c+dx]}}\right]}{8\sqrt{2}\,a^{5/2}\,d}-\frac{A\,\text{Tan}[c+dx]}{2d\,(a-a\,\text{Sec}[c+dx])^{5/2}}-\frac{7\,A\,\text{Tan}[c+dx]}{8\,a\,d\,(a-a\,\text{Sec}[c+dx])^{3/2}}$$

Result (type 3, 421 leaves):

$$A\left(\left(e^{-\frac{1}{2}i(c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}\right.\right.$$
$$\left(-16\,i\,d\,x+16\,\text{ArcSinh}\left[e^{i(c+dx)}\right]+23\sqrt{2}\,\text{Log}\left[1-e^{i(c+dx)}\right]+\right.$$
$$\left.16\,\text{Log}\left[1+\sqrt{1+e^{2i(c+dx)}}\right]-23\sqrt{2}\,\text{Log}\left[1+e^{i(c+dx)}+\sqrt{2}\sqrt{1+e^{2i(c+dx)}}\right]\right)$$
$$\left.\text{Sec}[c+dx]^{5/2}\,\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\right)\Big/\left(2\sqrt{2}\,d\,(a-a\,\text{Sec}[c+dx])^{5/2}\right)+$$
$$\left(\text{Sec}[c+dx]^3\left(-\frac{11\,\text{Cos}\left[\frac{c}{2}\right]\text{Cos}\left[\frac{dx}{2}\right]}{d}+\frac{15\,\text{Cot}\left[\frac{c}{2}\right]\text{Csc}\left[\frac{c}{2}+\frac{dx}{2}\right]}{2d}-\frac{\text{Cot}\left[\frac{c}{2}\right]\text{Csc}\left[\frac{c}{2}+\frac{dx}{2}\right]^3}{d}-\right.\right.$$
$$\left.\frac{15\,\text{Csc}\left[\frac{c}{2}\right]\text{Csc}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Sin}\left[\frac{dx}{2}\right]}{2d}+\frac{\text{Csc}\left[\frac{c}{2}\right]\text{Csc}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Sin}\left[\frac{dx}{2}\right]}{d}+\frac{11\,\text{Sin}\left[\frac{c}{2}\right]\text{Sin}\left[\frac{dx}{2}\right]}{d}\right)$$
$$\left.\left.\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\right)\Big/(a-a\,\text{Sec}[c+dx])^{5/2}\right)$$

Problem 176: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Cos}[c+dx]\,(A+A\,\text{Sec}[c+dx])}{(a-a\,\text{Sec}[c+dx])^{5/2}}\,dx$$

Optimal (type 3, 184 leaves, 8 steps):

$$\frac{7\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a-a\,\text{Sec}[c+dx]}}\right]}{a^{5/2}\,d}-\frac{79\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{2}\sqrt{a-a\,\text{Sec}[c+dx]}}\right]}{8\sqrt{2}\,a^{5/2}\,d}-$$
$$\frac{A\,\text{Sin}[c+dx]}{2d\,(a-a\,\text{Sec}[c+dx])^{5/2}}-\frac{11\,A\,\text{Sin}[c+dx]}{8\,a\,d\,(a-a\,\text{Sec}[c+dx])^{3/2}}+\frac{23\,A\,\text{Sin}[c+dx]}{8\,a^2\,d\sqrt{a-a\,\text{Sec}[c+dx]}}$$

Result (type 3, 298 leaves):

$$\frac{1}{4\,d\,\left(a-a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}}A\left(\sqrt{2}\,e^{-\frac{1}{2}i\,(c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\right.$$
$$\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\left(-56\,i\,d\,x+56\,\mathrm{ArcSinh}\left[e^{i\,(c+d\,x)}\right]+79\,\sqrt{2}\,\mathrm{Log}\left[1-e^{i\,(c+d\,x)}\right]+\right.$$
$$\left.56\,\mathrm{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]-79\,\sqrt{2}\,\mathrm{Log}\left[1+e^{i\,(c+d\,x)}+\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]\right)+$$
$$\frac{1}{4}\left(-12\,\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+23\,\mathrm{Cos}\left[\frac{3}{2}(c+d\,x)\right]-31\,\mathrm{Cos}\left[\frac{5}{2}(c+d\,x)\right]+4\,\mathrm{Cos}\left[\frac{7}{2}(c+d\,x)\right]\right)$$
$$\left.\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4\sqrt{\mathrm{Sec}[c+d\,x]}\right)\mathrm{Sec}[c+d\,x]^{5/2}\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]^5$$

Problem 177: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\mathrm{Cos}[c+d\,x]^2\,\left(A+A\,\mathrm{Sec}[c+d\,x]\right)}{\left(a-a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 236 leaves, 9 steps):

$$\frac{59\,A\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a-a\,\mathrm{Sec}[c+d\,x]}}\right]}{4\,a^{5/2}\,d}-\frac{167\,A\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{2}\,\sqrt{a-a\,\mathrm{Sec}[c+d\,x]}}\right]}{8\,\sqrt{2}\,a^{5/2}\,d}-\frac{A\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{2\,d\,\left(a-a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}}-$$
$$\frac{15\,A\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{8\,a\,d\,\left(a-a\,\mathrm{Sec}[c+d\,x]\right)^{3/2}}+\frac{49\,A\,\mathrm{Sin}[c+d\,x]}{8\,a^2\,d\,\sqrt{a-a\,\mathrm{Sec}[c+d\,x]}}+\frac{23\,A\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{8\,a^2\,d\,\sqrt{a-a\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 3, 308 leaves):

$$\frac{1}{4\,d\,\left(a-a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}}A\left(\sqrt{2}\,e^{-\frac{1}{2}i\,(c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\right.$$
$$\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\left(-118\,i\,d\,x+118\,\mathrm{ArcSinh}\left[e^{i\,(c+d\,x)}\right]+167\,\sqrt{2}\,\mathrm{Log}\left[1-e^{i\,(c+d\,x)}\right]+\right.$$
$$\left.118\,\mathrm{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]-167\,\sqrt{2}\,\mathrm{Log}\left[1+e^{i\,(c+d\,x)}+\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]\right)+$$
$$\frac{1}{4}\left(-19\,\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+54\,\mathrm{Cos}\left[\frac{3}{2}(c+d\,x)\right]-62\,\mathrm{Cos}\left[\frac{5}{2}(c+d\,x)\right]+10\,\mathrm{Cos}\left[\frac{7}{2}(c+d\,x)\right]+\right.$$
$$\left.\left.\mathrm{Cos}\left[\frac{9}{2}(c+d\,x)\right]\right)\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4\sqrt{\mathrm{Sec}[c+d\,x]}\right)\mathrm{Sec}[c+d\,x]^{5/2}\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]^5$$

Problem 178: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\mathrm{Cos}[c+d\,x]^3\,\left(A+A\,\mathrm{Sec}[c+d\,x]\right)}{\left(a-a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 280 leaves, 10 steps):

$$\frac{203\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{8\,a^{5/2}\,d}-\frac{287\,A\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{2}\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}\right]}{8\,\sqrt{2}\,a^{5/2}\,d}-$$
$$\frac{A\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{2\,d\,(a-a\,\text{Sec}[c+d\,x])^{5/2}}-\frac{19\,A\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{8\,a\,d\,(a-a\,\text{Sec}[c+d\,x])^{3/2}}+\frac{21\,A\,\text{Sin}[c+d\,x]}{2\,a^2\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{119\,A\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{24\,a^2\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}+\frac{77\,A\,\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{24\,a^2\,d\,\sqrt{a-a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 323 leaves):

$$\frac{1}{12\,d\,(a-a\,\text{Sec}[c+d\,x])^{5/2}}A\left(21\,\sqrt{2}\,e^{-\frac{1}{2}\,i\,(c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\right.$$
$$\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\Big(-29\,i\,d\,x+29\,\text{ArcSinh}\left[e^{i\,(c+d\,x)}\right]+41\,\sqrt{2}\,\text{Log}\left[1-e^{i\,(c+d\,x)}\right]+$$
$$29\,\text{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]-41\,\sqrt{2}\,\text{Log}\left[1+e^{i\,(c+d\,x)}+\sqrt{2}\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]\Big)+$$
$$\frac{1}{8}\left(-173\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+575\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]-625\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]+\right.$$
$$\left.112\,\text{Cos}\left[\frac{7}{2}\,(c+d\,x)\right]+13\,\text{Cos}\left[\frac{9}{2}\,(c+d\,x)\right]+2\,\text{Cos}\left[\frac{11}{2}\,(c+d\,x)\right]\right)$$
$$\left.\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\sqrt{\text{Sec}[c+d\,x]}\right)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$

Problem 186: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 234 leaves, 9 steps):

$$-\frac{1}{5\,d}4\,a^2\,(4\,A+3\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{1}{21\,d}4\,a^2\,(7\,A+6\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}+$$
$$\frac{4\,a^2\,(4\,A+3\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{5\,d}+\frac{4\,a^2\,(7\,A+6\,B)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{21\,d}+$$
$$\frac{2\,a^2\,(7\,A+9\,B)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{35\,d}+\frac{2\,B\,\text{Sec}[c+d\,x]^{5/2}\,(a^2+a^2\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]}{7\,d}$$

Result (type 5, 731 leaves):

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

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

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

$$\left(2 B\sqrt{\text{Cos}[c+d x]}\, \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a\,\text{Sec}[c+d x]\right)^2 \left(A+B\,\text{Sec}[c+d x]\right)\right) \Big/ \left(7 d\left(B+A\,\text{Cos}[c+d x]\right) \text{Sec}[c+d x]^{5/2}\right) +$$

$$\left(\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a\,\text{Sec}[c+d x]\right)^2 \left(A+B\,\text{Sec}[c+d x]\right) \left(\frac{(4A+3B)\,\text{Cos}[d x]\,\text{Csc}[c]}{5 d}+\frac{B\,\text{Sec}[c]\,\text{Sec}[c+d x]^3\,\text{Sin}[d x]}{14 d}+\frac{\text{Sec}[c]\,\text{Sec}[c+d x]^2\left(5 B\,\text{Sin}[c]+7 A\,\text{Sin}[d x]+14 B\,\text{Sin}[d x]\right)}{70 d}+\frac{1}{210 d}\text{Sec}[c]\,\text{Sec}[c+d x]\left(21 A\,\text{Sin}[c]+42 B\,\text{Sin}[c]+70 A\,\text{Sin}[d x]+60 B\,\text{Sin}[d x]\right)+\frac{(7A+6B)\,\text{Tan}[c]}{21 d}\right)\right) \Big/ \left(\left(B+A\,\text{Cos}[c+d x]\right) \text{Sec}[c+d x]^{5/2}\right)$$

Problem 187: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 199 leaves, 8 steps):

$$-\frac{1}{5d}4a^2(5A+4B)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}+\frac{4a^2(2A+B)\sqrt{\text{Cos}[c+dx]}\ \text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}}{3d}+\frac{4a^2(5A+4B)\sqrt{\text{Sec}[c+dx]}\ \text{Sin}[c+dx]}{5d}+\frac{2a^2(5A+7B)\text{Sec}[c+dx]^{3/2}\text{Sin}[c+dx]}{15d}+\frac{2B\,\text{Sec}[c+dx]^{3/2}\left(a^2+a^2\text{Sec}[c+dx]\right)\text{Sin}[c+dx]}{5d}$$

Result (type 5, 685 leaves):

$$-\left(\left(A e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\ \text{Cos}[c+dx]^3\text{Csc}[c]\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+B\,\text{Sec}[c+dx]\right)\right)\Big/\left(\sqrt{2}\,d\left(B+A\,\text{Cos}[c+dx]\right)\right)\right)-$$

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

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

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

$$\left(\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\left(a+a\,\text{Sec}[c+dx]\right)^2\left(A+B\,\text{Sec}[c+dx]\right)\left(\frac{(5A+4B)\text{Cos}[dx]\,\text{Csc}[c]}{5d}+\frac{B\,\text{Sec}[c]\,\text{Sec}[c+dx]^2\,\text{Sin}[dx]}{10d}+\frac{\text{Sec}[c]\,\text{Sec}[c+dx]\left(3B\,\text{Sin}[c]+5A\,\text{Sin}[dx]+10B\,\text{Sin}[dx]\right)}{30d}+\frac{(A+2B)\,\text{Tan}[c]}{6d}\right)\right)\Big/\left(\left(B+A\,\text{Cos}[c+dx]\right)\text{Sec}[c+dx]^{5/2}\right)$$

Problem 188: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])}{\sqrt{\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 160 leaves, 7 steps):

$$-\frac{4\,a^2\,B\,\sqrt{\mathrm{Cos}[c+d\,x]}\ \mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{d}+\frac{1}{3\,d}$$
$$4\,a^2\,(3\,A+2\,B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\ \mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\,+$$
$$\frac{2\,a^2\,(3\,A+5\,B)\,\sqrt{\mathrm{Sec}[c+d\,x]}\ \mathrm{Sin}[c+d\,x]}{3\,d}+\frac{2\,B\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(a^2+a^2\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 313 leaves):

$$\frac{1}{12\,d\,(B+A\,\mathrm{Cos}[c+d\,x])}\,a^2\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,(1+\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])$$
$$\left(-\frac{1}{-1+e^{2\,i\,c}}4\,i\,\sqrt{2}\,e^{-i\,(c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}[c+d\,x]^3\,\left(3\,B\,\left(1+e^{2\,i\,(c+d\,x)}\right)+3\,B\,\left(-1+e^{2\,i\,c}\right)\right.\right.$$
$$\sqrt{1+e^{2\,i\,(c+d\,x)}}\ \mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]+(3\,A+2\,B)\,e^{i\,(c+d\,x)}$$
$$\left.\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\ \mathrm{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{2},\,\frac{5}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)+\frac{1}{\mathrm{Sec}[c+d\,x]^{5/2}}$$
$$\left.(-3\,(-A-4\,B+A\,\mathrm{Cos}[2\,c])\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}[c]+6\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]+2\,B\,\mathrm{Tan}[c+d\,x])\right)$$

Problem 189: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 158 leaves, 7 steps):

$$\frac{4\,a^2\,A\,\sqrt{\mathrm{Cos}[c+d\,x]}\ \mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{d}+\frac{1}{3\,d}$$
$$4\,a^2\,(2\,A+3\,B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\ \mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\,-$$
$$\frac{2\,a^2\,(A-3\,B)\,\sqrt{\mathrm{Sec}[c+d\,x]}\ \mathrm{Sin}[c+d\,x]}{3\,d}+\frac{2\,A\,\left(a^2+a^2\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}$$

Result (type 5, 183 leaves):

$$\left(a^2 \left(\text{Cos}\left[\frac{c}{2}\right] - i\,\text{Sin}\left[\frac{c}{2}\right]\right) \left(-i\,\text{Cos}\left[\frac{c}{2}\right] + \text{Sin}\left[\frac{c}{2}\right]\right)\right.$$
$$\left(12\,A - \frac{24\,A\,\text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2\,i\,(c+d\,x)}\right]}{\sqrt{1 + e^{2\,i\,(c+d\,x)}}} + \right.$$
$$\frac{8\,(2\,A + 3\,B)\,e^{i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{2}, \frac{5}{4}, -e^{2\,i\,(c+d\,x)}\right]}{\sqrt{1 + e^{2\,i\,(c+d\,x)}}} +$$
$$\left.\left. 2\,i\,A\,\text{Sin}[c + d\,x] + 6\,i\,B\,\text{Tan}[c + d\,x]\right)\right) \Big/ \left(3\,d\,\sqrt{\text{Sec}[c + d\,x]}\right)$$

Problem 190: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a\,\text{Sec}[c + d\,x])^2\,(A + B\,\text{Sec}[c + d\,x])}{\text{Sec}[c + d\,x]^{5/2}}\,dx$$

Optimal (type 4, 166 leaves, 7 steps):

$$\frac{1}{5\,d} 4\,a^2\,(4\,A + 5\,B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x), 2\right]\,\sqrt{\text{Sec}[c + d\,x]} +$$
$$\frac{4\,a^2\,(A + 2\,B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x), 2\right]\,\sqrt{\text{Sec}[c + d\,x]}}{3\,d} +$$
$$\frac{2\,a^2\,(7\,A + 5\,B)\,\text{Sin}[c + d\,x]}{15\,d\,\sqrt{\text{Sec}[c + d\,x]}} + \frac{2\,A\,\left(a^2 + a^2\,\text{Sec}[c + d\,x]\right)\,\text{Sin}[c + d\,x]}{5\,d\,\text{Sec}[c + d\,x]^{3/2}}$$

Result (type 5, 155 leaves):

$$\frac{1}{30\,d} a^2\,\sqrt{\text{Sec}[c + d\,x]}\,\left(40\,(A + 2\,B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x), 2\right] + \right.$$
$$24\,i\,(4\,A + 5\,B)\,e^{-i\,(c+d\,x)}\,\sqrt{1 + e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2\,i\,(c+d\,x)}\right] +$$
$$\left. 2\,\text{Cos}[c + d\,x]\,\left(-12\,i\,(4\,A + 5\,B) + 10\,(2\,A + B)\,\text{Sin}[c + d\,x] + 3\,A\,\text{Sin}[2\,(c + d\,x)]\right)\right)$$

Problem 191: Result unnecessarily involves higher level functions.

$$\int \frac{(a + a\,\text{Sec}[c + d\,x])^2\,(A + B\,\text{Sec}[c + d\,x])}{\text{Sec}[c + d\,x]^{7/2}}\,dx$$

Optimal (type 4, 201 leaves, 8 steps):

$$\frac{1}{5\,d} 4\,a^2\,(3\,A + 4\,B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x), 2\right]\,\sqrt{\text{Sec}[c + d\,x]} +$$
$$\frac{1}{21\,d} 4\,a^2\,(6\,A + 7\,B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x), 2\right]\,\sqrt{\text{Sec}[c + d\,x]} +$$
$$\frac{2\,a^2\,(9\,A + 7\,B)\,\text{Sin}[c + d\,x]}{35\,d\,\text{Sec}[c + d\,x]^{3/2}} + \frac{4\,a^2\,(6\,A + 7\,B)\,\text{Sin}[c + d\,x]}{21\,d\,\sqrt{\text{Sec}[c + d\,x]}} + \frac{2\,A\,\left(a^2 + a^2\,\text{Sec}[c + d\,x]\right)\,\text{Sin}[c + d\,x]}{7\,d\,\text{Sec}[c + d\,x]^{5/2}}$$

Result (type 5, 207 leaves):

$$\frac{1}{420\, d} a^2 e^{-i (2 c+d x)} \sqrt{\operatorname{Sec}[c+d x]} \left(80 (6 A+7 B) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]+ 336\, i (3 A+4 B) e^{-i (c+d x)} \sqrt{1+e^{2 i (c+d x)}} \operatorname{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (c+d x)}\right]+ 2 \operatorname{Cos}[c+d x] \left(-504\, i A-672\, i B+5 (51 A+56 B) \operatorname{Sin}[c+d x]+ 42 (2 A+B) \operatorname{Sin}[2 (c+d x)]+15 A \operatorname{Sin}[3 (c+d x)]\right)\right) (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])$$

Problem 192: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x])}{\operatorname{Sec}[c+d x]^{9/2}} \, dx$$

Optimal (type 4, 234 leaves, 9 steps):

$$\frac{1}{15\, d} 4 a^2 (8 A+9 B) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\operatorname{Sec}[c+d x]}+ \frac{1}{21\, d} 4 a^2 (5 A+6 B) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\operatorname{Sec}[c+d x]}+ \frac{2 a^2 (11 A+9 B) \operatorname{Sin}[c+d x]}{63\, d \operatorname{Sec}[c+d x]^{5/2}}+\frac{4 a^2 (8 A+9 B) \operatorname{Sin}[c+d x]}{45\, d \operatorname{Sec}[c+d x]^{3/2}}+ \frac{4 a^2 (5 A+6 B) \operatorname{Sin}[c+d x]}{21\, d \sqrt{\operatorname{Sec}[c+d x]}}+\frac{2 A \left(a^2+a^2 \operatorname{Sec}[c+d x]\right) \operatorname{Sin}[c+d x]}{9\, d \operatorname{Sec}[c+d x]^{7/2}}$$

Result (type 5, 231 leaves):

$$\frac{1}{2520\, d} a^2 e^{-i (2 c+d x)} \sqrt{\operatorname{Sec}[c+d x]} \left(480 (5 A+6 B) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]+ 672\, i (8 A+9 B) e^{-i (c+d x)} \sqrt{1+e^{2 i (c+d x)}} \operatorname{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (c+d x)}\right]+ 2 \operatorname{Cos}[c+d x] \left(-2688\, i A-3024\, i B+30 (46 A+51 B) \operatorname{Sin}[c+d x]+ 14 (37 A+36 B) \operatorname{Sin}[2 (c+d x)]+180 A \operatorname{Sin}[3 (c+d x)]+ 90 B \operatorname{Sin}[3 (c+d x)]+35 A \operatorname{Sin}[4 (c+d x)]\right)\right) (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])$$

Problem 193: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x]^{3/2} (a+a \operatorname{Sec}[c+d x])^3 (A+B \operatorname{Sec}[c+d x]) \, dx$$

Optimal (type 4, 277 leaves, 10 steps):

$$-\frac{1}{15\,d}4\,a^3\,(21\,A+17\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{1}{21\,d}4\,a^3\,(13\,A+11\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$
$$\frac{4\,a^3\,(21\,A+17\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\,\text{Sin}[c+d\,x]}{15\,d}+$$
$$\frac{4\,a^3\,(13\,A+11\,B)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{21\,d}+\frac{4\,a^3\,(24\,A+23\,B)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{105\,d}+$$
$$\frac{2\,a\,B\,\text{Sec}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^2\,\text{Sin}[c+d\,x]}{9\,d}+$$
$$\frac{2\,(9\,A+13\,B)\,\text{Sec}[c+d\,x]^{5/2}\,(a^3+a^3\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]}{63\,d}$$

Result (type 5, 773 leaves) :

$$-\left(\left(\left(7\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\right.\right.\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]\right)\right)\Big/\left(10\,\sqrt{2}\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\right)\right)-$$
$$\left(17\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]\right)\right)\Big/\left(30\,\sqrt{2}\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\right)+$$
$$\left(13\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]\right)\right)\Big/\left(42\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c+d\,x]^{7/2}\right)+$$
$$\left(11\,B\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]\right)\right)\Big/\left(42\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c+d\,x]^{7/2}\right)+$$
$$\left(\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]\right)\right.$$
$$\left(\frac{(21\,A+17\,B)\,\text{Cos}[d\,x]\,\text{Csc}[c]}{30\,d}+\frac{B\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^4\,\text{Sin}[d\,x]}{36\,d}+\right.$$
$$\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\left(7\,B\,\text{Sin}[c]+9\,A\,\text{Sin}[d\,x]+27\,B\,\text{Sin}[d\,x]\right)}{252\,d}+\frac{1}{1260\,d}$$
$$\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\left(45\,A\,\text{Sin}[c]+135\,B\,\text{Sin}[c]+189\,A\,\text{Sin}[d\,x]+238\,B\,\text{Sin}[d\,x]\right)+$$
$$\frac{1}{1260\,d}\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(189\,A\,\text{Sin}[c]+238\,B\,\text{Sin}[c]+390\,A\,\text{Sin}[d\,x]+330\,B\,\text{Sin}[d\,x]\right)+$$
$$\left.\left.\frac{(13\,A+11\,B)\,\text{Tan}[c]}{42\,d}\right)\right)\Big/\left(\left(B+A\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c+d\,x]^{7/2}\right)$$

Problem 194: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 244 leaves, 9 steps):

$$-\frac{1}{5\,d}4\,a^3\,\left(9\,A+7\,B\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$

$$\frac{1}{21\,d}4\,a^3\,\left(21\,A+13\,B\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\,+$$

$$\frac{4\,a^3\,\left(9\,A+7\,B\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\,\text{Sin}[c+d\,x]}{5\,d}+\frac{4\,a^3\,\left(42\,A+41\,B\right)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{105\,d}+$$

$$\frac{2\,a\,B\,\text{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\text{Sin}[c+d\,x]}{7\,d}+$$

$$\frac{2\,\left(7\,A+11\,B\right)\,\text{Sec}[c+d\,x]^{3/2}\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{35\,d}$$

Result (type 5, 731 leaves) :

$$-\left(\left(9\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\right.\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(10\,\sqrt{2}\,d\,(B+A\,\text{Cos}[c+d\,x])\right)\right)-$$
$$\left(7\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}[c+d\,x]^4\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(10\,\sqrt{2}\,d\,(B+A\,\text{Cos}[c+d\,x])\right)+$$
$$\left(A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\right.$$
$$\left.(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(2\,d\,(B+A\,\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]^{7/2}\right)+$$
$$\left(13\,B\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\right.$$
$$\left.(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(42\,d\,(B+A\,\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]^{7/2}\right)+$$
$$\left(\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\right.$$
$$\left(\frac{(9\,A+7\,B)\,\text{Cos}[d\,x]\,\text{Csc}[c]}{10\,d}+\frac{B\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\text{Sin}[d\,x]}{28\,d}+\right.$$
$$\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,(5\,B\,\text{Sin}[c]+7\,A\,\text{Sin}[d\,x]+21\,B\,\text{Sin}[d\,x])}{140\,d}+\frac{1}{420\,d}$$
$$\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(21\,A\,\text{Sin}[c]+63\,B\,\text{Sin}[c]+105\,A\,\text{Sin}[d\,x]+130\,B\,\text{Sin}[d\,x])+$$
$$\left.\left.\frac{(21\,A+26\,B)\,\text{Tan}[c]}{84\,d}\right)\right)\Big/\left((B+A\,\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]^{7/2}\right)$$

Problem 195: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])}{\sqrt{\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 211 leaves, 8 steps):

$$-\frac{1}{5d}4a^3(5A+9B)\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\mathrm{Sec}[c+dx]}+\frac{1}{3d}4a^3(5A+3B)\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\mathrm{Sec}[c+dx]}+\frac{4a^3(20A+21B)\sqrt{\mathrm{Sec}[c+dx]}\ \mathrm{Sin}[c+dx]}{15d}+\frac{2aB\sqrt{\mathrm{Sec}[c+dx]}\ (a+a\,\mathrm{Sec}[c+dx])^2\,\mathrm{Sin}[c+dx]}{5d}+\frac{2(5A+9B)\sqrt{\mathrm{Sec}[c+dx]}\ (a^3+a^3\,\mathrm{Sec}[c+dx])\,\mathrm{Sin}[c+dx]}{15d}$$

Result (type 5, 257 leaves):

$$\frac{1}{30d}a^3 e^{-i(2c+dx)}\mathrm{Sec}[c+dx]^{5/2}\Big(90\,i A\,\mathrm{Cos}[c+dx]+162\,i B\,\mathrm{Cos}[c+dx]+30\,i A\,\mathrm{Cos}[3(c+dx)]+54\,i B\,\mathrm{Cos}[3(c+dx)]+40(5A+3B)\mathrm{Cos}[c+dx]^{5/2}\mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]-6\,i(5A+9B)e^{-3i(c+dx)}\left(1+e^{2i(c+dx)}\right)^{5/2}\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]+45A\,\mathrm{Sin}[c+dx]+66B\,\mathrm{Sin}[c+dx]+10A\,\mathrm{Sin}[2(c+dx)]+30B\,\mathrm{Sin}[2(c+dx)]+45A\,\mathrm{Sin}[3(c+dx)]+54B\,\mathrm{Sin}[3(c+dx)]\Big)\,(\mathrm{Cos}[2c+dx]+i\,\mathrm{Sin}[2c+dx])$$

Problem 196: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 199 leaves, 8 steps):

$$\frac{4a^3(A-B)\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\mathrm{Sec}[c+dx]}}{d}+\frac{20a^3(A+B)\sqrt{\mathrm{Cos}[c+dx]}\ \mathrm{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\mathrm{Sec}[c+dx]}}{3d}+\frac{4a^3(A+4B)\sqrt{\mathrm{Sec}[c+dx]}\ \mathrm{Sin}[c+dx]}{3d}+\frac{2aA(a+a\,\mathrm{Sec}[c+dx])^2\,\mathrm{Sin}[c+dx]}{3d\sqrt{\mathrm{Sec}[c+dx]}}-\frac{2(A-B)\sqrt{\mathrm{Sec}[c+dx]}\ (a^3+a^3\,\mathrm{Sec}[c+dx])\,\mathrm{Sin}[c+dx]}{3d}$$

Result (type 5, 226 leaves):

$$\frac{1}{6 d} a^3 e^{-i (2 c+d x)} \operatorname{Sec}[c+d x]^{3/2} \left(-12 i A+12 i B-12 i A \operatorname{Cos}\left[2 \left(c+d x\right)\right]+\right.$$
$$12 i B \operatorname{Cos}\left[2 \left(c+d x\right)\right]+40 (A+B) \operatorname{Cos}[c+d x]^{3/2} \operatorname{EllipticF}\left[\frac{1}{2} \left(c+d x\right), 2\right]+$$
$$12 i (A-B) e^{-2 i (c+d x)} \left(1+e^{2 i (c+d x)}\right)^{3/2} \operatorname{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (c+d x)}\right]+$$
$$A \operatorname{Sin}[c+d x]+4 B \operatorname{Sin}[c+d x]+6 A \operatorname{Sin}\left[2 \left(c+d x\right)\right]+$$
$$\left.18 B \operatorname{Sin}\left[2 \left(c+d x\right)\right]+A \operatorname{Sin}\left[3 \left(c+d x\right)\right]\right) \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)$$

Problem 197: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+a \operatorname{Sec}[c+d x]\right)^3 \left(A+B \operatorname{Sec}[c+d x]\right)}{\operatorname{Sec}[c+d x]^{5/2}} \, dx$$

Optimal (type 4, 211 leaves, 8 steps):

$$\frac{1}{5 d} 4 a^3 \left(9 A+5 B\right) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2} \left(c+d x\right), 2\right] \sqrt{\operatorname{Sec}[c+d x]}+$$
$$\frac{1}{3 d} 4 a^3 \left(3 A+5 B\right) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticF}\left[\frac{1}{2} \left(c+d x\right), 2\right] \sqrt{\operatorname{Sec}[c+d x]}-$$
$$\frac{4 a^3 (6 A-5 B) \sqrt{\operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{15 d}+\frac{2 a A \left(a+a \operatorname{Sec}[c+d x]\right)^2 \operatorname{Sin}[c+d x]}{5 d \operatorname{Sec}[c+d x]^{3/2}}+$$
$$\frac{2 \left(9 A+5 B\right) \left(a^3+a^3 \operatorname{Sec}[c+d x]\right) \operatorname{Sin}[c+d x]}{15 d \sqrt{\operatorname{Sec}[c+d x]}}$$

Result (type 5, 220 leaves):

$$\frac{1}{30 d} a^3 e^{-i (2 c+d x)} \sqrt{\operatorname{Sec}[c+d x]} \left(-216 i A \operatorname{Cos}[c+d x]-\right.$$
$$120 i B \operatorname{Cos}[c+d x]+40 \left(3 A+5 B\right) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticF}\left[\frac{1}{2} \left(c+d x\right), 2\right]+$$
$$24 i \left(9 A+5 B\right) e^{-i (c+d x)} \sqrt{1+e^{2 i (c+d x)}} \operatorname{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (c+d x)}\right]+$$
$$3 A \operatorname{Sin}[c+d x]+60 B \operatorname{Sin}[c+d x]+30 A \operatorname{Sin}\left[2 \left(c+d x\right)\right]+$$
$$\left.10 B \operatorname{Sin}\left[2 \left(c+d x\right)\right]+3 A \operatorname{Sin}\left[3 \left(c+d x\right)\right]\right) \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)$$

Problem 198: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+a \operatorname{Sec}[c+d x]\right)^3 \left(A+B \operatorname{Sec}[c+d x]\right)}{\operatorname{Sec}[c+d x]^{7/2}} \, dx$$

Optimal (type 4, 211 leaves, 8 steps):

$$\frac{1}{5 d}4 a^3 (7 A+9 B) \sqrt{\text{Cos}[c+d x]} \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+$$
$$\frac{1}{21 d}4 a^3 (13 A+21 B) \sqrt{\text{Cos}[c+d x]} \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+$$
$$\frac{4 a^3 (41 A+42 B) \text{Sin}[c+d x]}{105 d \sqrt{\text{Sec}[c+d x]}}+\frac{2 a A (a+a \text{Sec}[c+d x])^2 \text{Sin}[c+d x]}{7 d \text{Sec}[c+d x]^{5/2}}+$$
$$\frac{2 (11 A+7 B) \left(a^3+a^3 \text{Sec}[c+d x]\right) \text{Sin}[c+d x]}{35 d \text{Sec}[c+d x]^{3/2}}$$

Result (type 5, 208 leaves):

$$\frac{1}{420 d}a^3 e^{-i (2 c+d x)} \sqrt{\text{Sec}[c+d x]} \left(80 (13 A+21 B) \sqrt{\text{Cos}[c+d x]} \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]+\right.$$
$$336 i (7 A+9 B) e^{-i (c+d x)} \sqrt{1+e^{2 i (c+d x)}} \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]+$$
$$2 \text{Cos}[c+d x] (-168 i (7 A+9 B)+5 (107 A+84 B) \text{Sin}[c+d x]+$$
$$\left.42 (3 A+B) \text{Sin}[2 (c+d x)]+15 A \text{Sin}[3 (c+d x)])\right) (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])$$

Problem 199: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a \text{Sec}[c+d x])^3 (A+B \text{Sec}[c+d x])}{\text{Sec}[c+d x]^{9/2}} \, dx$$

Optimal (type 4, 244 leaves, 9 steps):

$$\frac{1}{15 d}4 a^3 (17 A+21 B) \sqrt{\text{Cos}[c+d x]} \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+$$
$$\frac{1}{21 d}4 a^3 (11 A+13 B) \sqrt{\text{Cos}[c+d x]} \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \sqrt{\text{Sec}[c+d x]}+$$
$$\frac{4 a^3 (23 A+24 B) \text{Sin}[c+d x]}{105 d \text{Sec}[c+d x]^{3/2}}+\frac{4 a^3 (11 A+13 B) \text{Sin}[c+d x]}{21 d \sqrt{\text{Sec}[c+d x]}}+$$
$$\frac{2 a A (a+a \text{Sec}[c+d x])^2 \text{Sin}[c+d x]}{9 d \text{Sec}[c+d x]^{7/2}}+\frac{2 (13 A+9 B) \left(a^3+a^3 \text{Sec}[c+d x]\right) \text{Sin}[c+d x]}{63 d \text{Sec}[c+d x]^{5/2}}$$

Result (type 5, 197 leaves):

$$\frac{1}{2520 d}$$
$$a^3 \sqrt{\text{Sec}[c+d x]} \left(480 (11 A+13 B) \sqrt{\text{Cos}[c+d x]} \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]+672 i (17 A+21 B)\right.$$
$$e^{-i (c+d x)} \sqrt{1+e^{2 i (c+d x)}} \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+d x)}\right]+2 \text{Cos}[c+d x]$$
$$(-5712 i A-7056 i B+30 (97 A+107 B) \text{Sin}[c+d x]+14 (73 A+54 B) \text{Sin}[2 (c+d x)]+$$
$$\left.270 A \text{Sin}[3 (c+d x)]+90 B \text{Sin}[3 (c+d x)]+35 A \text{Sin}[4 (c+d x)])\right)$$

Problem 200: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{(a + a\,\text{Sec}[c + d\,x])^3\,(A + B\,\text{Sec}[c + d\,x])}{\text{Sec}[c + d\,x]^{11/2}}\,dx$$

Optimal (type 4, 277 leaves, 10 steps):

$$\frac{1}{15\,d}4\,a^3\,(15\,A + 17\,B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]} + \frac{1}{231\,d}4\,a^3\,(105\,A + 121\,B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]\,\sqrt{\text{Sec}[c + d\,x]} + \frac{20\,a^3\,(21\,A + 22\,B)\,\text{Sin}[c + d\,x]}{693\,d\,\text{Sec}[c + d\,x]^{5/2}} + \frac{4\,a^3\,(15\,A + 17\,B)\,\text{Sin}[c + d\,x]}{45\,d\,\text{Sec}[c + d\,x]^{3/2}} + \frac{4\,a^3\,(105\,A + 121\,B)\,\text{Sin}[c + d\,x]}{231\,d\,\sqrt{\text{Sec}[c + d\,x]}} + \frac{2\,a\,A\,(a + a\,\text{Sec}[c + d\,x])^2\,\text{Sin}[c + d\,x]}{11\,d\,\text{Sec}[c + d\,x]^{9/2}} + \frac{2\,(15\,A + 11\,B)\,(a^3 + a^3\,\text{Sec}[c + d\,x])\,\text{Sin}[c + d\,x]}{99\,d\,\text{Sec}[c + d\,x]^{7/2}}$$

Result (type 5, 864 leaves):

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

$$\left(17 B e^{-i (2 c+d x)} \sqrt{\frac{e^{i (c+d x)}}{1+e^{2 i (c+d x)}}} \operatorname{Cos}[c+d x]^4 \operatorname{Csc}[c] \left(1+e^{2 i (c+d x)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+d x)}} \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (c+d x)}\right]\right) \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 (A+B \operatorname{Sec}[c+d x])\right) \Big/ \left(30 \sqrt{2}\, d\, (B+A \operatorname{Cos}[c+d x])\right)+$$

$$\left(5 A \sqrt{\operatorname{Cos}[c+d x]} \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 (A+B \operatorname{Sec}[c+d x])\right) \Big/ \left(22 d (B+A \operatorname{Cos}[c+d x]) \operatorname{Sec}[c+d x]^{7/2}\right)+$$

$$\left(11 B \sqrt{\operatorname{Cos}[c+d x]} \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 (A+B \operatorname{Sec}[c+d x])\right) \Big/ \left(42 d (B+A \operatorname{Cos}[c+d x]) \operatorname{Sec}[c+d x]^{7/2}\right)+$$

$$\frac{1}{(B+A \operatorname{Cos}[c+d x]) \operatorname{Sec}[c+d x]^{7/2}} \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 (A+B \operatorname{Sec}[c+d x]) \left(-\frac{1}{2880 d} (645 A+743 B+795 A \operatorname{Cos}[2 c]+889 B \operatorname{Cos}[2 c]) \operatorname{Cos}[d x] \operatorname{Csc}[c]+\frac{(4473 A+4664 B) \operatorname{Cos}[2 d x] \operatorname{Sin}[2 c]}{29568 d}+\frac{(165 A+151 B) \operatorname{Cos}[3 d x] \operatorname{Sin}[3 c]}{2880 d}+\frac{(49 A+33 B) \operatorname{Cos}[4 d x] \operatorname{Sin}[4 c]}{2464 d}+\frac{(3 A+B) \operatorname{Cos}[5 d x] \operatorname{Sin}[5 c]}{576 d}+\frac{A \operatorname{Cos}[6 d x] \operatorname{Sin}[6 c]}{1408 d}+\frac{(795 A+889 B) \operatorname{Cos}[c] \operatorname{Sin}[d x]}{1440 d}+\frac{(4473 A+4664 B) \operatorname{Cos}[2 c] \operatorname{Sin}[2 d x]}{29568 d}+\frac{(165 A+151 B) \operatorname{Cos}[3 c] \operatorname{Sin}[3 d x]}{2880 d}+\frac{(49 A+33 B) \operatorname{Cos}[4 c] \operatorname{Sin}[4 d x]}{2464 d}+\frac{(3 A+B) \operatorname{Cos}[5 c] \operatorname{Sin}[5 d x]}{576 d}+\frac{A \operatorname{Cos}[6 c] \operatorname{Sin}[6 d x]}{1408 d}\right)$$

Problem 201: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[c+d\,x]^{7/2}\,(A+B\,\mathrm{Sec}[c+d\,x])}{a+a\,\mathrm{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 229 leaves, 9 steps):

$$\frac{3\,(5\,A-7\,B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{5\,a\,d}+\frac{5\,(A-B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{3\,a\,d}-\frac{3\,(5\,A-7\,B)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{5\,a\,d}+\frac{5\,(A-B)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{3\,a\,d}-\frac{(5\,A-7\,B)\,\mathrm{Sec}[c+d\,x]^{5/2}\,\mathrm{Sin}[c+d\,x]}{5\,a\,d}+\frac{(A-B)\,\mathrm{Sec}[c+d\,x]^{7/2}\,\mathrm{Sin}[c+d\,x]}{d\,(a+a\,\mathrm{Sec}[c+d\,x])}$$

Result (type 5, 794 leaves):

$$\left(3\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\right)\Big/\left(\sqrt{2}\,\,d\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)-$$
$$\left(21\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\right)\Big/\left(5\,\sqrt{2}\,\,d\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)+$$
$$\left(5\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{\mathrm{Cos}[c+d\,x]}\,\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$
$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Sin}[c]\right)\Big/\left(3\,d\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)-$$
$$\left(5\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{\mathrm{Cos}[c+d\,x]}\,\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$
$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Sin}[c]\right)\Big/\left(3\,d\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)+$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\sqrt{\mathrm{Sec}[c+d\,x]}\,\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\right.$$
$$\left(\frac{3\,(-5\,A+7\,B)\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]}{5\,d}-\frac{(-A+B)\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c]\,\left(-\mathrm{Sin}\left[\frac{c}{2}\right]+5\,\mathrm{Sin}\left[\frac{3\,c}{2}\right]\right)}{3\,d}-\right.$$
$$\frac{2\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(-A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\frac{4\,B\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Sin}[d\,x]}{5\,d}+$$
$$\left.\left.\frac{4\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,\left(3\,B\,\mathrm{Sin}[c]+5\,A\,\mathrm{Sin}[d\,x]-5\,B\,\mathrm{Sin}[d\,x]\right)}{15\,d}\right)\right)\Big/$$
$$\left(\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)$$

Problem 202: Result unnecessarily involves higher level functions.

$$\int\frac{\mathrm{Sec}[c+d\,x]^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)}{a+a\,\mathrm{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 192 leaves, 8 steps):

$$-\frac{3\,(A-B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}}{a\,d}-\frac{(3\,A-5\,B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}}{3\,a\,d}+\frac{3\,(A-B)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{a\,d}-\frac{(3\,A-5\,B)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,a\,d}+\frac{(A-B)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 5, 371 leaves):

$$-\frac{1}{3\,a\,d\,\left(1+e^{2\,i\,(c+d\,x)}\right)\,(B+A\,\text{Cos}[c+d\,x])\,(1+\text{Sec}[c+d\,x])}\,e^{-\frac{3}{2}\,i\,(c+d\,x)}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\Bigg(\left(3\,A-5\,B\right)\,e^{i\,(c+d\,x)}\,\left(1+e^{i\,(c+d\,x)}+e^{2\,i\,(c+d\,x)}+e^{3\,i\,(c+d\,x)}\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]-i\,\Big(9\,A-9\,B+6\,A\,e^{i\,(c+d\,x)}-4\,B\,e^{i\,(c+d\,x)}+12\,A\,e^{2\,i\,(c+d\,x)}-10\,B\,e^{2\,i\,(c+d\,x)}+6\,A\,e^{3\,i\,(c+d\,x)}-8\,B\,e^{3\,i\,(c+d\,x)}+3\,A\,e^{4\,i\,(c+d\,x)}-5\,B\,e^{4\,i\,(c+d\,x)}-9\,(A-B)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\left(1+e^{i\,(c+d\,x)}+e^{2\,i\,(c+d\,x)}+e^{3\,i\,(c+d\,x)}\right)\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\Big)\Bigg)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]\right)$$

Problem 203: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 153 leaves, 7 steps):

$$\frac{(A-3\,B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}}{a\,d}+\frac{(A-B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\sqrt{\text{Sec}[c+d\,x]}}{a\,d}-\frac{(A-3\,B)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{a\,d}+\frac{(A-B)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 5, 705 leaves):

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

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

$$\left(A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \sqrt{\mathrm{Cos}[c+d x]}\ \mathrm{Csc}\left[\frac{c}{2}\right] \mathrm{EllipticF}\left[\frac{1}{2}(c+d x),2\right] \mathrm{Sec}\left[\frac{c}{2}\right] \sqrt{\mathrm{Sec}[c+d x]}\left(A+B\,\mathrm{Sec}[c+d x]\right)\mathrm{Sin}[c]\right) \Big/ \left(d\left(B+A\,\mathrm{Cos}[c+d x]\right)\left(a+a\,\mathrm{Sec}[c+d x]\right)\right) -$$

$$\left(B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \sqrt{\mathrm{Cos}[c+d x]}\ \mathrm{Csc}\left[\frac{c}{2}\right] \mathrm{EllipticF}\left[\frac{1}{2}(c+d x),2\right] \mathrm{Sec}\left[\frac{c}{2}\right] \sqrt{\mathrm{Sec}[c+d x]}\left(A+B\,\mathrm{Sec}[c+d x]\right)\mathrm{Sin}[c]\right) \Big/ \left(d\left(B+A\,\mathrm{Cos}[c+d x]\right)\left(a+a\,\mathrm{Sec}[c+d x]\right)\right) +$$

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

Problem 204: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{\mathrm{Sec}[c+d x]}\ \left(A+B\,\mathrm{Sec}[c+d x]\right)}{a+a\,\mathrm{Sec}[c+d x]}\, dx$$

Optimal (type 4, 123 leaves, 6 steps):

$$-\frac{(A-B)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{a d}+\frac{(A+B)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{a d}+\frac{(A-B)\sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{d(a+a\,\text{Sec}[c+d x])}$$

Result (type 5, 207 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\left(\frac{4(A+B)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{d}+\frac{1}{d\left(1+e^{i(c+d x)}\right)}4 i(A-B)e^{-i(c+d x)}\left(1+e^{2 i(c+d x)}-\left(1+e^{i(c+d x)}\right)\sqrt{1+e^{2 i(c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i(c+d x)}\right]\right)\sqrt{\text{Sec}[c+d x]}\right)(A+B\,\text{Sec}[c+d x])\right)\Big/\left(2 a(B+A\,\text{Cos}[c+d x])(1+\text{Sec}[c+d x])\right)$$

Problem 205: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d x]}{\sqrt{\text{Sec}[c+d x]}\ (a+a\,\text{Sec}[c+d x])}\,dx$$

Optimal (type 4, 128 leaves, 6 steps):

$$\frac{(3A-B)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{a d}-\frac{(A-B)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{a d}-\frac{(A-B)\sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{d(a+a\,\text{Sec}[c+d x])}$$

Result (type 5, 425 leaves):

$$\frac{1}{2\,a\,d\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)}$$

$$\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\left(6\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Csc}[c]\right.$$

$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)-$$

$$2\,\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Csc}[c]$$

$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)-$$

$$\frac{1}{\sqrt{\mathrm{Sec}[c+d\,x]}}2\,\left(\left(2\,A-B\right)\,\mathrm{Cos}\left[\frac{1}{2}\,(c-d\,x)\right]+A\,\mathrm{Cos}\left[\frac{1}{2}\,(3\,c+d\,x)\right]\right)\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]-4\,A\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}+$$

$$\left.4\,B\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)$$

Problem 206: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 164 leaves, 7 steps):

$$-\frac{3\,(A-B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{a\,d}+$$

$$\frac{\left(5\,A-3\,B\right)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{3\,a\,d}+$$

$$\frac{\left(5\,A-3\,B\right)\,\mathrm{Sin}[c+d\,x]}{3\,a\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}-\frac{(A-B)\,\mathrm{Sin}[c+d\,x]}{d\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}$$

Result (type 5, 479 leaves):

$$\frac{1}{6\,a\,d\,(B+A\,\text{Cos}[c+d\,x])\,(1+\text{Sec}[c+d\,x])}$$
$$\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,(A+B\,\text{Sec}[c+d\,x])\,\left(-18\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)+$$
$$18\,\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Csc}[c]$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)+$$
$$20\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}-$$
$$12\,B\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}+$$
$$2\,\sqrt{\text{Sec}[c+d\,x]}\,\left(3\,(A-B)\,(2+\text{Cos}[2\,c])\,\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]+\right.$$
$$2\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]-6\,(A-B)\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sin}\left[\frac{d\,x}{2}\right]-$$
$$\left.\left.12\,(A-B)\,\text{Cos}[c]\,\text{Sin}[d\,x]+2\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]-6\,(A-B)\,\text{Tan}\left[\frac{c}{2}\right]\right)\right)$$

Problem 207: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d\,x]}{\text{Sec}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])}\,dx$$

Optimal (type 4, 197 leaves, 8 steps):

$$\frac{3\,(7\,A-5\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{5\,a\,d}-$$
$$\frac{5\,(A-B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{3\,a\,d}+$$
$$\frac{(7\,A-5\,B)\,\text{Sin}[c+d\,x]}{5\,a\,d\,\text{Sec}[c+d\,x]^{3/2}}-\frac{5\,(A-B)\,\text{Sin}[c+d\,x]}{3\,a\,d\,\sqrt{\text{Sec}[c+d\,x]}}-\frac{(A-B)\,\text{Sin}[c+d\,x]}{d\,\text{Sec}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])}$$

Result (type 5, 520 leaves):

$$\frac{1}{60\,a\,d\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)}$$
$$\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,\left(252\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Csc}[c]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)-$$
$$180\,\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Csc}[c]$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)-$$
$$200\,A\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}+$$
$$200\,B\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}+$$
$$\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(-3\,\left(51\,A-40\,B+\left(33\,A-20\,B\right)\,\mathrm{Cos}[2\,c]\right)\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]-\right.$$
$$40\,(A-B)\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]+12\,A\,\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]+$$
$$120\,(A-B)\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+12\,\left(33\,A-20\,B\right)\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]-$$
$$\left.\left.40\,(A-B)\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]+12\,A\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]+120\,(A-B)\,\mathrm{Tan}\left[\frac{c}{2}\right]\right)\right)$$

Problem 208: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]}{\mathrm{Sec}[c+d\,x]^{7/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}\,dx$$

Optimal (type 4, 230 leaves, 9 steps):

$$-\frac{21\,(A-B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{5\,a\,d}+$$
$$\frac{5\,\left(9\,A-7\,B\right)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{21\,a\,d}+\frac{\left(9\,A-7\,B\right)\,\mathrm{Sin}[c+d\,x]}{7\,a\,d\,\mathrm{Sec}[c+d\,x]^{5/2}}-$$
$$\frac{7\,(A-B)\,\mathrm{Sin}[c+d\,x]}{5\,a\,d\,\mathrm{Sec}[c+d\,x]^{3/2}}+\frac{5\,\left(9\,A-7\,B\right)\,\mathrm{Sin}[c+d\,x]}{21\,a\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}-\frac{(A-B)\,\mathrm{Sin}[c+d\,x]}{d\,\mathrm{Sec}[c+d\,x]^{5/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}$$

Result (type 5, 864 leaves):

$$-\left(\left(\left(21\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.\right.\right.$$

$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$

$$\left.\left.\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\right)\Big/\left(5\,\sqrt{2}\,d\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)\right)+$$

$$\left(21\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)$$

$$\left.\mathrm{Sec}\left[\frac{c}{2}\right]\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\right)\Big/\left(5\,\sqrt{2}\,d\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)+$$

$$\left(15\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$

$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Sin}[c]\right)\Big/\left(7\,d\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)-$$

$$\left(5\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right.$$

$$\left.\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,\mathrm{Sin}[c]\right)\Big/\left(3\,d\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)\right)+$$

$$\frac{1}{\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\sqrt{\mathrm{Sec}[c+d\,x]}$$

$$\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,\left(-\frac{3\,(-A+B)\,\left(17+11\,\mathrm{Cos}[2\,c]\right)\,\mathrm{Cos}[d\,x]\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]}{20\,d}-\right.$$

$$\frac{\left(-27\,A+14\,B\right)\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]}{21\,d}+\frac{(-A+B)\,\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]}{5\,d}+$$

$$\frac{A\,\mathrm{Cos}[4\,d\,x]\,\mathrm{Sin}[4\,c]}{14\,d}+\frac{2\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(-A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$

$$\frac{33\,(-A+B)\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{5\,d}-\frac{\left(-27\,A+14\,B\right)\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{21\,d}+$$

$$\left.\frac{(-A+B)\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{5\,d}+\frac{A\,\mathrm{Cos}[4\,c]\,\mathrm{Sin}[4\,d\,x]}{14\,d}+\frac{2\,(-A+B)\,\mathrm{Tan}\left[\frac{c}{2}\right]}{d}\right)$$

Problem 209: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^{7/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 237 leaves, 9 steps):

$$-\frac{(4\,A-7\,B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{a^2\,d}-\frac{5\,(A-2\,B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{3\,a^2\,d}+\frac{(4\,A-7\,B)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{a^2\,d}-\frac{5\,(A-2\,B)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,a^2\,d}+\frac{(4\,A-7\,B)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,(1+\text{Sec}[c+d\,x])}+\frac{(A-B)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{3\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}$$

Result (type 5, 841 leaves):

$$-\left(\left(\left(4\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\,(A+B\,\text{Sec}[c+dx])\right)\Big/\left(d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^2\right)\right)+$$

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

$$\left(d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^2\right)-$$

$$\left(10\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\,(A+B\,\text{Sec}[c+dx])\,\text{Sin}[c]\right)\Big/$$

$$\left(3\,d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^2\right)+$$

$$\left(20\,B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\,(A+B\,\text{Sec}[c+dx])\,\text{Sin}[c]\right)\Big/\left(3\,d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^2\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Sec}[c+dx]^{3/2}\,(A+B\,\text{Sec}[c+dx])\left(-\frac{2\,(-4A+7B)\,\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}+\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]+B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(-5\,A\,\text{Sin}\left[\frac{dx}{2}\right]+8\,B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+\frac{8\,B\,\text{Sec}[c]\,\text{Sec}[c+dx]\,\text{Sin}[dx]}{3d}+\frac{4\,(2B-5\,A\,\text{Cos}[c]+10\,B\,\text{Cos}[c])\,\text{Sec}[c]\,\text{Tan}\left[\frac{c}{2}\right]}{3d}+\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3d}\right)\right)\Big/$$

$$\left((B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^2\right)$$

Problem 210: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}[c+d x]^{5/2}\,(A+B\operatorname{Sec}[c+d x])}{(a+a\operatorname{Sec}[c+d x])^2}\,dx$$

Optimal (type 4, 204 leaves, 8 steps):

$$\frac{(A-4 B)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\operatorname{Sec}[c+d x]}}{a^2 d}+\frac{(2 A-5 B)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\operatorname{Sec}[c+d x]}}{3 a^2 d}-\frac{(A-4 B)\sqrt{\operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{a^2 d}+\frac{(2 A-5 B)\operatorname{Sec}[c+d x]^{3/2}\operatorname{Sin}[c+d x]}{3 a^2 d\,(1+\operatorname{Sec}[c+d x])}+\frac{(A-B)\operatorname{Sec}[c+d x]^{5/2}\operatorname{Sin}[c+d x]}{3 d\,(a+a\operatorname{Sec}[c+d x])^2}$$

Result (type 5, 811 leaves):

$$\left(\sqrt{2}\, A\, e^{-i (2c+dx)} \sqrt{\frac{e^{i (c+dx)}}{1+e^{2 i (c+dx)}}} \operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \operatorname{Csc}\left[\frac{c}{2}\right] \left(1+e^{2 i (c+dx)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+dx)}}\, \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+dx)}\right]\right) \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+dx] (A+B \operatorname{Sec}[c+dx])\right) \Big/ \left(d (B+A \operatorname{Cos}[c+dx]) (a+a \operatorname{Sec}[c+dx])^2\right) -$$

$$\left(4 \sqrt{2}\, B\, e^{-i (2c+dx)} \sqrt{\frac{e^{i (c+dx)}}{1+e^{2 i (c+dx)}}} \operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \operatorname{Csc}\left[\frac{c}{2}\right] \left(1+e^{2 i (c+dx)}+\left(-1+e^{2 i c}\right) \sqrt{1+e^{2 i (c+dx)}}\, \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (c+dx)}\right]\right) \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+dx] (A+B \operatorname{Sec}[c+dx])\right) \Big/ \left(d (B+A \operatorname{Cos}[c+dx]) (a+a \operatorname{Sec}[c+dx])^2\right) +$$

$$\left(4 A \operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \sqrt{\operatorname{Cos}[c+dx]} \operatorname{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+dx), 2\right] \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+dx]^{3/2} (A+B \operatorname{Sec}[c+dx]) \operatorname{Sin}[c]\right) \Big/ \left(3 d (B+A \operatorname{Cos}[c+dx]) (a+a \operatorname{Sec}[c+dx])^2\right) -$$

$$\left(10 B \operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \sqrt{\operatorname{Cos}[c+dx]} \operatorname{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+dx), 2\right] \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+dx]^{3/2} (A+B \operatorname{Sec}[c+dx]) \operatorname{Sin}[c]\right) \Big/ \left(3 d (B+A \operatorname{Cos}[c+dx]) (a+a \operatorname{Sec}[c+dx])^2\right) +$$

$$\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4 \operatorname{Sec}[c+dx]^{3/2} (A+B \operatorname{Sec}[c+dx]) \left(\frac{2 (-A+4 B) \operatorname{Cos}[dx] \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right]}{d} - \frac{2 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3 \left(-A \operatorname{Sin}\left[\frac{dx}{2}\right]+B \operatorname{Sin}\left[\frac{dx}{2}\right]\right)}{3 d} - \frac{4 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right] \left(-2 A \operatorname{Sin}\left[\frac{dx}{2}\right]+5 B \operatorname{Sin}\left[\frac{dx}{2}\right]\right)}{3 d} - \frac{4 (-2 A+5 B) \operatorname{Tan}\left[\frac{c}{2}\right]}{3 d} - \frac{2 (-A+B) \operatorname{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2 \operatorname{Tan}\left[\frac{c}{2}\right]}{3 d}\right)\right) \Big/ \left((B+A \operatorname{Cos}[c+dx]) (a+a \operatorname{Sec}[c+dx])^2\right)$$

Problem 211: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}[c+dx]^{3/2} (A+B \operatorname{Sec}[c+dx])}{(a+a \operatorname{Sec}[c+dx])^2} \, dx$$

Optimal (type 4, 161 leaves, 7 steps):

$$\frac{B\sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{a^2 d}+\frac{(A+2 B)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{3 a^2 d}-\frac{B\sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{a^2 d\,(1+\text{Sec}[c+d x])}+\frac{(A-B)\ \text{Sec}[c+d x]^{3/2}\ \text{Sin}[c+d x]}{3 d\,(a+a\,\text{Sec}[c+d x])^2}$$

Result (type 5, 617 leaves):

$$\left(\sqrt{2}\ B\ e^{-i(2c+d x)}\sqrt{\frac{e^{i(c+d x)}}{1+e^{2i(c+d x)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2i(c+d x)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+d x)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+d x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\ (A+B\,\text{Sec}[c+d x])\right)\Big/\left(d\,(B+A\,\text{Cos}[c+d x])\,(a+a\,\text{Sec}[c+d x])^2\right)+$$
$$\left(2 A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\sqrt{\text{Cos}[c+d x]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^{3/2}\,(A+B\,\text{Sec}[c+d x])\ \text{Sin}[c]\right)\Big/\left(3 d\,(B+A\,\text{Cos}[c+d x])\,(a+a\,\text{Sec}[c+d x])^2\right)+$$
$$\left(4 B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\sqrt{\text{Cos}[c+d x]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]^{3/2}\,(A+B\,\text{Sec}[c+d x])\ \text{Sin}[c]\right)\Big/\left(3 d\,(B+A\,\text{Cos}[c+d x])\,(a+a\,\text{Sec}[c+d x])^2\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Sec}[c+d x]^{3/2}\,(A+B\,\text{Sec}[c+d x])\left(-\frac{2 B\,\text{Cos}[d x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}+\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(-A\,\text{Sin}\left[\frac{d x}{2}\right]+B\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(A\,\text{Sin}\left[\frac{d x}{2}\right]+2 B\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}+\frac{4\,(A+2 B)\,\text{Tan}\left[\frac{c}{2}\right]}{3 d}+\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3 d}\right)\right)\Big/\left((B+A\,\text{Cos}[c+d x])\,(a+a\,\text{Sec}[c+d x])^2\right)$$

Problem 212: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d x]}\ (A+B\,\text{Sec}[c+d x])}{(a+a\,\text{Sec}[c+d x])^2}\,dx$$

Optimal (type 4, 168 leaves, 7 steps):

$$-\frac{A\sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{a^2 d}+\frac{(2 A+B)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}}{3 a^2 d}+\frac{(2 A+B)\sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{3 a^2 d\,(1+\text{Sec}[c+d x])}+\frac{(A-B)\sqrt{\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{3 d\,(a+a\,\text{Sec}[c+d x])^2}$$

Result (type 5, 618 leaves):

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

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

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

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Sec}[c+d x]^{3/2}(A+B\,\text{Sec}[c+d x])\left(\frac{2 A\,\text{Cos}[d x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(-4 A\,\text{Sin}\left[\frac{d x}{2}\right]+B\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}-\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(-A\,\text{Sin}\left[\frac{d x}{2}\right]+B\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}+\frac{4\,(-4 A+B)\,\text{Tan}\left[\frac{c}{2}\right]}{3 d}-\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3 d}\right)\right)\Big/\left((B+A\,\text{Cos}[c+d x])\,(a+a\,\text{Sec}[c+d x])^2\right)$$

Problem 213: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Sec}[c + d x]}{\sqrt{\operatorname{Sec}[c + d x]} \left(a + a \operatorname{Sec}[c + d x]\right)^2} \, dx$$

Optimal (type 4, 177 leaves, 7 steps):

$$\frac{(4 A - B) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]}}{a^2 d} - \frac{(5 A - 2 B) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]}}{3 a^2 d} - \frac{(5 A - 2 B) \sqrt{\operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{3 a^2 d (1 + \operatorname{Sec}[c + d x])} - \frac{(A - B) \sqrt{\operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{3 d (a + a \operatorname{Sec}[c + d x])^2}$$

Result (type 5, 830 leaves):

$$\left(4\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2\,i\,(c+dx)}}}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2\,i\,(c+dx)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+dx)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+dx)}\right]\right)$$

$$\left.\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+dx]\,\left(A+B\,\mathrm{Sec}[c+dx]\right)\right)\Big/\left(d\,\left(B+A\,\mathrm{Cos}[c+dx]\right)\,\left(a+a\,\mathrm{Sec}[c+dx]\right)^2\right)-$$

$$\left(\sqrt{2}\,B\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2\,i\,(c+dx)}}}\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2\,i\,(c+dx)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+dx)}}\;\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+dx)}\right]\right)$$

$$\left.\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+dx]\,\left(A+B\,\mathrm{Sec}[c+dx]\right)\right)\Big/\left(d\,\left(B+A\,\mathrm{Cos}[c+dx]\right)\,\left(a+a\,\mathrm{Sec}[c+dx]\right)^2\right)-$$

$$\left(10\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\mathrm{Cos}[c+dx]}\;\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}\,(c+dx),2\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+dx]^{3/2}\right.$$

$$\left.\left(A+B\,\mathrm{Sec}[c+dx]\right)\mathrm{Sin}[c]\right)\Big/\left(3\,d\,\left(B+A\,\mathrm{Cos}[c+dx]\right)\,\left(a+a\,\mathrm{Sec}[c+dx]\right)^2\right)+$$

$$\left(4\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\mathrm{Cos}[c+dx]}\;\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{EllipticF}\left[\frac{1}{2}\,(c+dx),2\right]\right.$$

$$\left.\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+dx]^{3/2}\,\left(A+B\,\mathrm{Sec}[c+dx]\right)\mathrm{Sin}[c]\right)\Big/$$

$$\left(3\,d\,\left(B+A\,\mathrm{Cos}[c+dx]\right)\,\left(a+a\,\mathrm{Sec}[c+dx]\right)^2\right)+\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\mathrm{Sec}[c+dx]^{3/2}\right.$$

$$\left(A+B\,\mathrm{Sec}[c+dx]\right)\left(-\frac{2\,\left(3A-B+A\,\mathrm{Cos}[2c]\right)\mathrm{Cos}[dx]\,\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]}{d}+\right.$$

$$\frac{2\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-A\,\mathrm{Sin}\left[\frac{dx}{2}\right]+B\,\mathrm{Sin}\left[\frac{dx}{2}\right]\right)}{3\,d}-$$

$$\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(-7\,A\,\mathrm{Sin}\left[\frac{dx}{2}\right]+4\,B\,\mathrm{Sin}\left[\frac{dx}{2}\right]\right)}{3\,d}+\frac{8\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[dx]}{d}-$$

$$\left.\left.\frac{4\,(-7A+4B)\,\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}+\frac{2\,(-A+B)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$

$$\left(\left(B+A\,\mathrm{Cos}[c+dx]\right)\,\left(a+a\,\mathrm{Sec}[c+dx]\right)^2\right)$$

Problem 214: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 211 leaves, 8 steps):

$$-\frac{(7\,A - 4\,B)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\,\mathrm{EllipticE}\left[\frac{1}{2}\,\left(c + d\,x\right),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}}{a^2\,d} + \frac{5\,\left(2\,A - B\right)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\,\mathrm{EllipticF}\left[\frac{1}{2}\,\left(c + d\,x\right),\,2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}}{3\,a^2\,d} + \frac{5\,\left(2\,A - B\right)\,\mathrm{Sin}[c + d\,x]}{3\,a^2\,d\,\sqrt{\mathrm{Sec}[c + d\,x]}} - \frac{(7\,A - 4\,B)\,\mathrm{Sin}[c + d\,x]}{3\,a^2\,d\,\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(1 + \mathrm{Sec}[c + d\,x]\right)} - \frac{(A - B)\,\mathrm{Sin}[c + d\,x]}{3\,d\,\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(a + a\,\mathrm{Sec}[c + d\,x]\right)^2}$$

Result (type 5, 875 leaves):

$$-\left(\left(\left(7\sqrt{2}\ A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\right.\right.\right.$$
$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\ (A+B\,\text{Sec}[c+dx])\right)\Big/\left(d\ (B+A\,\text{Cos}[c+dx])\ (a+a\,\text{Sec}[c+dx])^2\right)\Bigg)+$$
$$\left(4\sqrt{2}\ B\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\ \text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\ (A+B\,\text{Sec}[c+dx])\right)\Big/$$
$$\left(d\ (B+A\,\text{Cos}[c+dx])\ (a+a\,\text{Sec}[c+dx])^2\right)+$$
$$\left(20\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\,(c+dx),2\right]\right.$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\ (A+B\,\text{Sec}[c+dx])\ \text{Sin}[c]\right)\Big/$$
$$\left(3\,d\ (B+A\,\text{Cos}[c+dx])\ (a+a\,\text{Sec}[c+dx])^2\right)-$$
$$\left(10\,B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\ \text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\,(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\right.$$
$$\left.(A+B\,\text{Sec}[c+dx])\ \text{Sin}[c]\right)\Big/\left(3\,d\ (B+A\,\text{Cos}[c+dx])\ (a+a\,\text{Sec}[c+dx])^2\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Sec}[c+dx]^{3/2}\ (A+B\,\text{Sec}[c+dx])\right.$$
$$\left(-\frac{1}{d}2\ (-5\,A+3\,B-2\,A\,\text{Cos}[2c]+B\,\text{Cos}[2c])\ \text{Cos}[dx]\ \text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]+\right.$$
$$\frac{4\,A\,\text{Cos}[2dx]\ \text{Sin}[2c]}{3\,d}-\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]+B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3\,d}+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(-10\,A\,\text{Sin}\left[\frac{dx}{2}\right]+7\,B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3\,d}+\frac{8\ (-2\,A+B)\ \text{Cos}[c]\ \text{Sin}[dx]}{d}+$$
$$\left.\left.\frac{4\,A\,\text{Cos}[2c]\ \text{Sin}[2dx]}{3\,d}+\frac{4\ (-10\,A+7\,B)\ \text{Tan}\left[\frac{c}{2}\right]}{3\,d}-\frac{2\ (-A+B)\ \text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left((B+A\,\text{Cos}[c+dx])\ (a+a\,\text{Sec}[c+dx])^2\right)$$

Problem 215: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Sec}[c + d x]}{\operatorname{Sec}[c + d x]^{5/2} \left(a + a \operatorname{Sec}[c + d x]\right)^2} \, dx$$

Optimal (type 4, 244 leaves, 9 steps):

$$\frac{7 \left(8 A - 5 B\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticE}\left[\frac{1}{2} \left(c + d x\right), 2\right] \sqrt{\operatorname{Sec}[c + d x]}}{5 a^2 d} - \frac{5 \left(3 A - 2 B\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticF}\left[\frac{1}{2} \left(c + d x\right), 2\right] \sqrt{\operatorname{Sec}[c + d x]}}{3 a^2 d} + \frac{7 \left(8 A - 5 B\right) \operatorname{Sin}[c + d x]}{15 a^2 d \operatorname{Sec}[c + d x]^{3/2}} - \frac{5 \left(3 A - 2 B\right) \operatorname{Sin}[c + d x]}{3 a^2 d \sqrt{\operatorname{Sec}[c + d x]}} - \frac{\left(3 A - 2 B\right) \operatorname{Sin}[c + d x]}{a^2 d \operatorname{Sec}[c + d x]^{3/2} \left(1 + \operatorname{Sec}[c + d x]\right)} - \frac{(A - B) \operatorname{Sin}[c + d x]}{3 d \operatorname{Sec}[c + d x]^{3/2} \left(a + a \operatorname{Sec}[c + d x]\right)^2}$$

Result (type 5, 924 leaves):

$$\left(56\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\,(A+B\,\text{Sec}[c+dx])\right)\Big/\left(5\,d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^2\right)-$$
$$\left(7\sqrt{2}\,B\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]\,(A+B\,\text{Sec}[c+dx])\right)\Big/\left(d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^2\right)-$$
$$\left(10\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\right.$$
$$\left.(A+B\,\text{Sec}[c+dx])\,\text{Sin}[c]\right)\Big/\left(d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^2\right)+$$
$$\left(20\,B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{3/2}\right.$$
$$\left.(A+B\,\text{Sec}[c+dx])\,\text{Sin}[c]\right)\Big/\left(3\,d\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^2\right)+$$
$$\frac{1}{(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^2}\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Sec}[c+dx]^{3/2}\,(A+B\,\text{Sec}[c+dx])$$
$$\left(\frac{1}{10\,d}(-151\,A+100\,B-73\,A\,\text{Cos}[2c]+40\,B\,\text{Cos}[2c])\,\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]+\right.$$
$$\frac{4\,(-2A+B)\,\text{Cos}[2dx]\,\text{Sin}[2c]}{3\,d}+\frac{2\,A\,\text{Cos}[3dx]\,\text{Sin}[3c]}{5\,d}+$$
$$\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]+B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3\,d}-$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(-13\,A\,\text{Sin}\left[\frac{dx}{2}\right]+10\,B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3\,d}-$$
$$\frac{2\,(-73\,A+40\,B)\,\text{Cos}[c]\,\text{Sin}[dx]}{5\,d}+\frac{4\,(-2A+B)\,\text{Cos}[2c]\,\text{Sin}[2dx]}{3\,d}+$$
$$\left.\frac{2\,A\,\text{Cos}[3c]\,\text{Sin}[3dx]}{5\,d}-\frac{4\,(-13\,A+10\,B)\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}+\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)$$

Problem 216: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^{9/2}\,(A+B\,\text{Sec}[c+d\,x])}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 292 leaves, 10 steps):

$$-\frac{1}{10\,a^3\,d}7\,(7\,A-17\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}-\frac{(13\,A-33\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{6\,a^3\,d}+\frac{7\,(7\,A-17\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{10\,a^3\,d}-\frac{(13\,A-33\,B)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{6\,a^3\,d}+\frac{(A-B)\,\text{Sec}[c+d\,x]^{9/2}\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^3}+\frac{(A-2\,B)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{3\,a\,d\,(a+a\,\text{Sec}[c+d\,x])^2}+\frac{7\,(7\,A-17\,B)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{30\,d\,(a^3+a^3\,\text{Sec}[c+d\,x])}$$

Result (type 5, 933 leaves):

$$-\left(\left(\left(49\sqrt{2}\,A\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.\right.\right.$$
$$\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]\right)\right)\Big/\left(5d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$
$$\left(119\sqrt{2}\,B\,e^{-i(2c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2i(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(c+dx)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]\right)\right)\Big/$$
$$\left(5d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)-$$
$$\left(26\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{5/2}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+dx]\right)\text{Sin}[c]\right)\Big/\left(3d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$
$$\left(22\,B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{5/2}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+dx]\right)\text{Sin}[c]\right)\Big/\left(d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$
$$\frac{1}{\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3}\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Sec}[c+dx]^{5/2}\left(A+B\,\text{Sec}[c+dx]\right)$$
$$\left(-\frac{14\left(-7A+17B\right)\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5d}+\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]+B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5d}+\right.$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-8A\,\text{Sin}\left[\frac{dx}{2}\right]+13B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{15d}+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(-13A\,\text{Sin}\left[\frac{dx}{2}\right]+29B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+$$
$$\frac{16\,B\,\text{Sec}[c]\,\text{Sec}[c+dx]\,\text{Sin}[dx]}{3d}+\frac{4\left(4B-13A\,\text{Cos}[c]+33B\,\text{Cos}[c]\right)\text{Sec}[c]\,\text{Tan}\left[\frac{c}{2}\right]}{3d}+$$
$$\left.\frac{4\left(-8A+13B\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15d}+\frac{2\left(-A+B\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5d}\right)$$

Problem 217: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{7/2} (A+B \text{Sec}[c+d x])}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 4, 261 leaves, 9 steps):

$$\frac{(9 A-49 B) \sqrt{\text{Cos}[c+d x]} \text{ EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{10 a^3 d}+\frac{(3 A-13 B) \sqrt{\text{Cos}[c+d x]} \text{ EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{6 a^3 d}-\frac{(9 A-49 B) \sqrt{\text{Sec}[c+d x]} \text{ Sin}[c+d x]}{10 a^3 d}+\frac{(A-B) \text{ Sec}[c+d x]^{7/2} \text{Sin}[c+d x]}{5 d (a+a \text{Sec}[c+d x])^3}+\frac{(3 A-8 B) \text{ Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{15 a d (a+a \text{Sec}[c+d x])^2}+\frac{(3 A-13 B) \text{ Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{6 d \left(a^3+a^3 \text{Sec}[c+d x]\right)}$$

Result (type 5, 904 leaves):

$$\left(9\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]\right)\right)\Big/\left(5\,d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)-$$

$$\left(49\sqrt{2}\,B\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]\right)\right)\Big/\left(5\,d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\left(2\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{5/2}\right.$$

$$\left.\left(A+B\,\text{Sec}[c+dx]\right)\text{Sin}[c]\right)\Big/\left(d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)-$$

$$\left(26\,B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+dx\right),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{5/2}\right.$$

$$\left.\left(A+B\,\text{Sec}[c+dx]\right)\text{Sin}[c]\right)\Big/\left(3\,d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Sec}[c+dx]^{5/2}\left(A+B\,\text{Sec}[c+dx]\right)\right.$$

$$\left(\frac{2\left(-9A+49B\right)\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5d}-\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]+B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5d}-\right.$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-3\,A\,\text{Sin}\left[\frac{dx}{2}\right]+8\,B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{15d}-$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(-3\,A\,\text{Sin}\left[\frac{dx}{2}\right]+13\,B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}-\frac{4\left(-3A+13B\right)\text{Tan}\left[\frac{c}{2}\right]}{3d}-$$

$$\left.\left.\frac{4\left(-3A+8B\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15d}-\frac{2\left(-A+B\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5d}\right)\right)\Big/$$

$$\left(\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)$$

Problem 218: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{5/2} \left(A+B \text{Sec}[c+d x]\right)}{\left(a+a \text{Sec}[c+d x]\right)^3} \, dx$$

Optimal (type 4, 220 leaves, 8 steps):

$$\frac{(A+9 B) \sqrt{\text{Cos}[c+d x]} \; \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{10 a^3 d}+$$
$$\frac{(A+3 B) \sqrt{\text{Cos}[c+d x]} \; \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{6 a^3 d}+$$
$$\frac{(A-B) \text{Sec}[c+d x]^{5/2} \text{Sin}[c+d x]}{5 d \left(a+a \text{Sec}[c+d x]\right)^3}+$$
$$\frac{(A-6 B) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{15 a d \left(a+a \text{Sec}[c+d x]\right)^2}-\frac{(A+9 B) \sqrt{\text{Sec}[c+d x]} \; \text{Sin}[c+d x]}{10 d \left(a^3+a^3 \text{Sec}[c+d x]\right)}$$

Result (type 5, 899 leaves):

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

$$\left(9\sqrt{2}\, B\, e^{-i\,(2c+d x)} \sqrt{\frac{e^{i\,(c+d x)}}{1+e^{2 i\,(c+d x)}}}\, \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Csc}\left[\frac{c}{2}\right] \left(1+e^{2 i\,(c+d x)}+\left(-1+e^{2 i c}\right)\sqrt{1+e^{2 i\,(c+d x)}}\, \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i\,(c+d x)}\right]\right) \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^2 \left(A+B\,\text{Sec}[c+d x]\right)\right) \Big/ \left(5 d \left(B+A\,\text{Cos}[c+d x]\right) \left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$

$$\left(2 A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\text{Cos}[c+d x]}\, \text{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{5/2} \left(A+B\,\text{Sec}[c+d x]\right) \text{Sin}[c]\right) \Big/ \left(3 d \left(B+A\,\text{Cos}[c+d x]\right) \left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$

$$\left(2 B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\text{Cos}[c+d x]}\, \text{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right] \text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x]^{5/2} \left(A+B\,\text{Sec}[c+d x]\right) \text{Sin}[c]\right) \Big/ \left(d \left(B+A\,\text{Cos}[c+d x]\right) \left(a+a\,\text{Sec}[c+d x]\right)^3\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \text{Sec}[c+d x]^{5/2} \left(A+B\,\text{Sec}[c+d x]\right) \left(-\frac{2 (A+9 B)\,\text{Cos}[d x]\,\text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right]}{5 d}+\frac{2\,\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5 \left(-A\,\text{Sin}\left[\frac{d x}{2}\right]+B\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(A\,\text{Sin}\left[\frac{d x}{2}\right]+3 B\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3 \left(2 A\,\text{Sin}\left[\frac{d x}{2}\right]+3 B\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{15 d}+\frac{4 (A+3 B)\,\text{Tan}\left[\frac{c}{2}\right]}{3 d}+\frac{4 (2 A+3 B)\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Tan}\left[\frac{c}{2}\right]}{15 d}+\frac{2 (-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Tan}\left[\frac{c}{2}\right]}{5 d}\right)\right) \Big/ \left(\left(B+A\,\text{Cos}[c+d x]\right) \left(a+a\,\text{Sec}[c+d x]\right)^3\right)$$

Problem 219: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

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

$$-\frac{(A-B) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{10 a^3 d}+\frac{(A+B) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}}{6 a^3 d}+\frac{(A-B) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{5 d (a+a \text{Sec}[c+d x])^3}-\frac{(A+4 B) \sqrt{\text{Sec}[c+d x]} \, \text{Sin}[c+d x]}{15 a d (a+a \text{Sec}[c+d x])^2}+\frac{(A+B) \sqrt{\text{Sec}[c+d x]} \, \text{Sin}[c+d x]}{6 d \left(a^3+a^3 \text{Sec}[c+d x]\right)}$$

Result (type 5, 898 leaves):

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

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

$$\left(2 A \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]^{5/2} (A+B \operatorname{Sec}[c+d x]) \operatorname{Sin}[c]\right) \Big/ \left(3 d\, (B+A \operatorname{Cos}[c+d x])\, (a+a \operatorname{Sec}[c+d x])^3\right)+$$

$$\left(2 B \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{Csc}\left[\frac{c}{2}\right] \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right] \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]^{5/2} (A+B \operatorname{Sec}[c+d x]) \operatorname{Sin}[c]\right) \Big/ \left(3 d\, (B+A \operatorname{Cos}[c+d x])\, (a+a \operatorname{Sec}[c+d x])^3\right)+$$

$$\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \operatorname{Sec}[c+d x]^{5/2} (A+B \operatorname{Sec}[c+d x]) \left(-\frac{2 (-A+B) \operatorname{Cos}[d x] \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right]}{5 d}-\frac{2 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5 \left(-A \operatorname{Sin}\left[\frac{d x}{2}\right]+B \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+\frac{4 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(A \operatorname{Sin}\left[\frac{d x}{2}\right]+B \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}+\frac{4 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3 \left(-7 A \operatorname{Sin}\left[\frac{d x}{2}\right]+2 B \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{15 d}+\frac{4 (A+B) \operatorname{Tan}\left[\frac{c}{2}\right]}{3 d}+\frac{4 (-7 A+2 B) \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \operatorname{Tan}\left[\frac{c}{2}\right]}{15 d}-\frac{2 (-A+B) \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \operatorname{Tan}\left[\frac{c}{2}\right]}{5 d}\right)\right) \Big/ \left((B+A \operatorname{Cos}[c+d x])\, (a+a \operatorname{Sec}[c+d x])^3\right)$$

Problem 220: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

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

Optimal (type 4, 222 leaves, 8 steps):

$$-\frac{(9\,A+B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{10\,a^3\,d}+\frac{(3\,A+B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{6\,a^3\,d}+\frac{(A-B)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}+\frac{(3\,A+2\,B)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{15\,a\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+\frac{(3\,A+B)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{6\,d\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}$$

Result (type 5, 899 leaves):

$$-\left(\left(\left(9\sqrt{2}\,A\,e^{-i\,(2c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.\right.\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]\right)\right)\Big/\left(5\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)\right)-$$
$$\left(\sqrt{2}\,B\,e^{-i\,(2c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.$$
$$\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)$$
$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]\right)\right)\Big/$$
$$\left(5\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(2\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^{5/2}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]\right)\text{Sin}[c]\right)\Big/\left(d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(2\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^{5/2}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]\right)\text{Sin}[c]\right)\Big/\left(3\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Sec}[c+d\,x]^{5/2}\left(A+B\,\text{Sec}[c+d\,x]\right)\right.$$
$$\left(\frac{2\,(9\,A+B)\,\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5\,d}+\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(-9\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+\right.$$
$$\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}-$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(-12\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+7\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+\frac{4\,(-9\,A+B)\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}-$$
$$\left.\left.\frac{4\,(-12\,A+7\,B)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$
$$\left(\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 221: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Sec}[c + d x]}{\sqrt{\operatorname{Sec}[c + d x]}\ (a + a \operatorname{Sec}[c + d x])^3} \, dx$$

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

$$\frac{(49 A - 9 B) \sqrt{\operatorname{Cos}[c + d x]}\ \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]}}{10 a^3 d} - \frac{(13 A - 3 B) \sqrt{\operatorname{Cos}[c + d x]}\ \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), 2\right] \sqrt{\operatorname{Sec}[c + d x]}}{6 a^3 d} - \frac{(A - B) \sqrt{\operatorname{Sec}[c + d x]}\ \operatorname{Sin}[c + d x]}{5 d (a + a \operatorname{Sec}[c + d x])^3} - \frac{(8 A - 3 B) \sqrt{\operatorname{Sec}[c + d x]}\ \operatorname{Sin}[c + d x]}{15 a d (a + a \operatorname{Sec}[c + d x])^2} - \frac{(13 A - 3 B) \sqrt{\operatorname{Sec}[c + d x]}\ \operatorname{Sin}[c + d x]}{6 d (a^3 + a^3 \operatorname{Sec}[c + d x])}$$

Result (type 5, 923 leaves):

$$\left(49\sqrt{2}\,A\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]\right)\right)\Big/\left(5d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)-$$

$$\left(9\sqrt{2}\,B\,e^{-i\,(2c+dx)}\sqrt{\frac{e^{i\,(c+dx)}}{1+e^{2i\,(c+dx)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\right.$$

$$\left(1+e^{2i\,(c+dx)}+\left(-1+e^{2ic}\right)\sqrt{1+e^{2i\,(c+dx)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i\,(c+dx)}\right]\right)$$

$$\left.\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^2\left(A+B\,\text{Sec}[c+dx]\right)\right)\Big/\left(5d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)-$$

$$\left(26A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{5/2}\right.$$

$$\left.\left(A+B\,\text{Sec}[c+dx]\right)\text{Sin}[c]\right)\Big/\left(3d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\left(2B\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\sqrt{\text{Cos}[c+dx]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^{5/2}\right.$$

$$\left.\left(A+B\,\text{Sec}[c+dx]\right)\text{Sin}[c]\right)\Big/\left(d\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3\right)+$$

$$\frac{1}{\left(B+A\,\text{Cos}[c+dx]\right)\left(a+a\,\text{Sec}[c+dx]\right)^3}\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Sec}[c+dx]^{5/2}$$

$$\left(A+B\,\text{Sec}[c+dx]\right)\left(-\frac{2\left(39A-9B+10A\,\text{Cos}[2c]\right)\text{Cos}[dx]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]}{5d}-\right.$$

$$\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^5\left(-A\,\text{Sin}\left[\frac{dx}{2}\right]+B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{5d}-$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]\left(-23A\,\text{Sin}\left[\frac{dx}{2}\right]+9B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{3d}+$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^3\left(-17A\,\text{Sin}\left[\frac{dx}{2}\right]+12B\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{15d}+$$

$$\frac{16A\,\text{Cos}[c]\,\text{Sin}[dx]}{d}-\frac{4\left(-23A+9B\right)\text{Tan}\left[\frac{c}{2}\right]}{3d}+$$

$$\left.\frac{4\left(-17A+12B\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15d}-\frac{2\left(-A+B\right)\text{Sec}\left[\frac{c}{2}+\frac{dx}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5d}\right)$$

Problem 222: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 261 leaves, 9 steps):

$$-\frac{1}{10\,a^3\,d}7\,\left(17\,A - 7\,B\right)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,\left(c + d\,x\right), 2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]} + \frac{\left(33\,A - 13\,B\right)\,\sqrt{\mathrm{Cos}[c + d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,\left(c + d\,x\right), 2\right]\,\sqrt{\mathrm{Sec}[c + d\,x]}}{6\,a^3\,d} + \frac{\left(33\,A - 13\,B\right)\,\mathrm{Sin}[c + d\,x]}{6\,a^3\,d\,\sqrt{\mathrm{Sec}[c + d\,x]}} - \frac{(A - B)\,\mathrm{Sin}[c + d\,x]}{5\,d\,\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(a + a\,\mathrm{Sec}[c + d\,x]\right)^3} - \frac{\left(2\,A - B\right)\,\mathrm{Sin}[c + d\,x]}{3\,a\,d\,\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(a + a\,\mathrm{Sec}[c + d\,x]\right)^2} - \frac{7\,\left(17\,A - 7\,B\right)\,\mathrm{Sin}[c + d\,x]}{30\,d\,\sqrt{\mathrm{Sec}[c + d\,x]}\,\left(a^3 + a^3\,\mathrm{Sec}[c + d\,x]\right)}$$

Result (type 5, 968 leaves):

$$-\left(\left(\left(119\sqrt{2}\,A\,e^{-i\,(2c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]\right)\right)\Big/\left(5\,d\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)\right)+$$

$$\left(49\sqrt{2}\,B\,e^{-i\,(2c+d\,x)}\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]\right)\right)\Big/$$

$$\left(5\,d\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\left(22\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^{5/2}\left(A+B\,\text{Sec}[c+d\,x]\right)\text{Sin}[c]\right)\Big/\left(d\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-$$

$$\left(26\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\text{Cos}[c+d\,x]}\,\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^{5/2}\left(A+B\,\text{Sec}[c+d\,x]\right)\text{Sin}[c]\right)\Big/\left(3\,d\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\frac{1}{\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Sec}[c+d\,x]^{5/2}\left(A+B\,\text{Sec}[c+d\,x]\right)$$

$$\left(-\frac{1}{5\,d}2\left(-89\,A+39\,B-30\,A\,\text{Cos}[2\,c]+10\,B\,\text{Cos}[2\,c]\right)\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]+\frac{8\,A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{3\,d}+\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}-\right.$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(-22\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+17\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(-43\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+23\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+$$

$$\frac{16\left(-3\,A+B\right)\text{Cos}[c]\,\text{Sin}[d\,x]}{d}+\frac{8\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{3\,d}+\frac{4\left(-43\,A+23\,B\right)\text{Tan}\left[\frac{c}{2}\right]}{3\,d}-$$

$$\left.\frac{4\left(-22\,A+17\,B\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)$$

Problem 223: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d\,x]}{\text{Sec}[c+d\,x]^{5/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 294 leaves, 10 steps):

$$\frac{7\,(33\,A-17\,B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\sqrt{\text{Sec}[c+d\,x]}}{10\,a^3\,d}-\frac{(21\,A-11\,B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\sqrt{\text{Sec}[c+d\,x]}}{2\,a^3\,d}+\frac{7\,(33\,A-17\,B)\,\text{Sin}[c+d\,x]}{30\,a^3\,d\,\text{Sec}[c+d\,x]^{3/2}}-\frac{(21\,A-11\,B)\,\text{Sin}[c+d\,x]}{2\,a^3\,d\,\sqrt{\text{Sec}[c+d\,x]}}-\frac{(A-B)\,\text{Sin}[c+d\,x]}{5\,d\,\text{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}-\frac{(12\,A-7\,B)\,\text{Sin}[c+d\,x]}{15\,a\,d\,\text{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-\frac{3\,(21\,A-11\,B)\,\text{Sin}[c+d\,x]}{10\,d\,\text{Sec}[c+d\,x]^{3/2}\,\left(a^3+a^3\,\text{Sec}[c+d\,x]\right)}$$

Result (type 5, 1012 leaves):

$$\Bigg(231\,\sqrt{2}\,A\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]\right)\Bigg)\Big/\left(5\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-$$

$$\Bigg(119\,\sqrt{2}\,B\,e^{-i\,(2\,c+d\,x)}\,\sqrt{\frac{e^{i\,(c+d\,x)}}{1+e^{2\,i\,(c+d\,x)}}}\;\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\left(1+e^{2\,i\,(c+d\,x)}+\left(-1+e^{2\,i\,c}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\right)\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]\right)\Bigg)\Big/\left(5\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)-$$

$$\left(42\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\text{Cos}[c+d\,x]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^{5/2}\left(A+B\,\text{Sec}[c+d\,x]\right)\text{Sin}[c]\right)\Big/\left(d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\left(22\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\sqrt{\text{Cos}[c+d\,x]}\;\text{Csc}\left[\frac{c}{2}\right]\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^{5/2}\left(A+B\,\text{Sec}[c+d\,x]\right)\text{Sin}[c]\right)\Big/\left(d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\frac{1}{(B + A\,\text{Cos}[c + d\,x])\,(a + a\,\text{Sec}[c + d\,x])^3}\,\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^6\,\text{Sec}[c + d\,x]^{5/2}\,(A + B\,\text{Sec}[c + d\,x])$$
$$\left(\frac{1}{5\,d}\,(-329\,A + 178\,B - 133\,A\,\text{Cos}[2\,c] + 60\,B\,\text{Cos}[2\,c])\,\text{Cos}[d\,x]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right] + \right.$$
$$\frac{8\,(-3\,A + B)\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{3\,d} + \frac{4\,A\,\text{Cos}[3\,d\,x]\,\text{Sin}[3\,c]}{5\,d} -$$
$$\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^5\,\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right] + B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d} +$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^3\,\left(-27\,A\,\text{Sin}\left[\frac{d\,x}{2}\right] + 22\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d} -$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]\,\left(-69\,A\,\text{Sin}\left[\frac{d\,x}{2}\right] + 43\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d} - \frac{4\,(-133\,A + 60\,B)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{5\,d} +$$
$$\frac{8\,(-3\,A + B)\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{3\,d} + \frac{4\,A\,\text{Cos}[3\,c]\,\text{Sin}[3\,d\,x]}{5\,d} - \frac{4\,(-69\,A + 43\,B)\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d} +$$
$$\left.\frac{4\,(-27\,A + 22\,B)\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d} - \frac{2\,(-A + B)\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)$$

Problem 224: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c + d\,x]^{5/2}\,\sqrt{a + a\,\text{Sec}[c + d\,x]}\,(A + B\,\text{Sec}[c + d\,x])\,dx$$

Optimal (type 3, 176 leaves, 5 steps):

$$\frac{\sqrt{a}\,(6\,A + 5\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{8\,d} + \frac{a\,(6\,A + 5\,B)\,\text{Sec}[c + d\,x]^{3/2}\,\text{Sin}[c + d\,x]}{8\,d\,\sqrt{a + a\,\text{Sec}[c + d\,x]}} +$$
$$\frac{a\,(6\,A + 5\,B)\,\text{Sec}[c + d\,x]^{5/2}\,\text{Sin}[c + d\,x]}{12\,d\,\sqrt{a + a\,\text{Sec}[c + d\,x]}} + \frac{a\,B\,\text{Sec}[c + d\,x]^{7/2}\,\text{Sin}[c + d\,x]}{3\,d\,\sqrt{a + a\,\text{Sec}[c + d\,x]}}$$

Result (type 3, 1184 leaves):

$$-\left(\left(\left(\left(\frac{1}{64} + \frac{i}{64}\right)\left((-1 + i) + \sqrt{2}\right)\left((18 + 6\,i)\,A + 6\,\sqrt{2}\,A + (15 + 5\,i)\,B + 5\,\sqrt{2}\,B\right)\right.\right.\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c + d\,x)\right] - \text{Sin}\left[\frac{1}{4}\,(c + d\,x)\right] - \sqrt{2}\,\text{Sin}\left[\frac{1}{4}\,(c + d\,x)\right]}{-\text{Cos}\left[\frac{1}{4}\,(c + d\,x)\right] + \sqrt{2}\,\text{Cos}\left[\frac{1}{4}\,(c + d\,x)\right] - \text{Sin}\left[\frac{1}{4}\,(c + d\,x)\right]}\right]$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]\,\sqrt{a\,(1 + \text{Sec}[c + d\,x])}\right) \Big/ \left(\sqrt{2}\,\left(i + \sqrt{2}\right)\,d\,\sqrt{\text{Sec}[c + d\,x]}\right)\right) -$$

$$\left(\left(\frac{1}{64}-\frac{i}{64}\right)\left((1+i)+\sqrt{2}\right)\left((-18+6i)A+6\sqrt{2}A-(15-5i)B+5\sqrt{2}B\right)\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a(1+\text{Sec}[c+dx])}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\sqrt{\text{Sec}[c+dx]}\right)+$$
$$\left(\left(12A+6i\sqrt{2}A+10B+5i\sqrt{2}B\right)\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]\right.$$
$$\left.\sqrt{a(1+\text{Sec}[c+dx])}\right)\Big/\left(32\left(i+\sqrt{2}\right)d\sqrt{\text{Sec}[c+dx]}\right)-$$
$$\left(\left(\frac{1}{128}-\frac{i}{128}\right)\left((-1+i)+\sqrt{2}\right)\left((18+6i)A+6\sqrt{2}A+(15+5i)B+5\sqrt{2}B\right)\right.$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]$$
$$\left.\sqrt{a(1+\text{Sec}[c+dx])}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\sqrt{\text{Sec}[c+dx]}\right)+$$
$$\left(\left(\frac{1}{128}+\frac{i}{128}\right)\left((1+i)+\sqrt{2}\right)\left((-18+6i)A+6\sqrt{2}A-(15-5i)B+5\sqrt{2}B\right)\right.$$
$$\left.\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a(1+\text{Sec}[c+dx])}\right)\Big/$$
$$\left(\sqrt{2}\left(i+\sqrt{2}\right)d\sqrt{\text{Sec}[c+dx]}\right)+\frac{B\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a(1+\text{Sec}[c+dx])}}{12d\sqrt{\text{Sec}[c+dx]}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^3}+$$
$$\frac{(6A+5B)\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a(1+\text{Sec}[c+dx])}}{16d\sqrt{\text{Sec}[c+dx]}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}-$$
$$\frac{B\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a(1+\text{Sec}[c+dx])}}{12d\sqrt{\text{Sec}[c+dx]}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^3}+$$
$$\frac{(-6A-5B)\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a(1+\text{Sec}[c+dx])}}{16d\sqrt{\text{Sec}[c+dx]}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}+$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a(1+\text{Sec}[c+dx])}\left(2A\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+B\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\Big/$$
$$\left(8d\sqrt{\text{Sec}[c+dx]}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2\right)+$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a(1+\text{Sec}[c+dx])}\left(2A\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+B\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\Big/$$
$$\left(8d\sqrt{\text{Sec}[c+dx]}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2\right)$$

Problem 225: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^{3/2} \sqrt{a+a \text{Sec}[c+d x]} \, (A+B \text{Sec}[c+d x]) \, dx$$

Optimal (type 3, 131 leaves, 4 steps):

$$\frac{\sqrt{a} \, (4 A+3 B) \, \text{ArcSinh}\left[\frac{\sqrt{a} \, \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{4 d}+\frac{a \, (4 A+3 B) \, \text{Sec}[c+d x]^{3/2} \, \text{Sin}[c+d x]}{4 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{a B \, \text{Sec}[c+d x]^{5/2} \, \text{Sin}[c+d x]}{2 d \sqrt{a+a \text{Sec}[c+d x]}}$$

Result (type 3, 1002 leaves):

$$-\left(\left(\left(\left(\frac{1}{32}+\frac{i}{32}\right)\left((-1+i)+\sqrt{2}\right)\left((12+4i)A+4\sqrt{2}A+(9+3i)B+3\sqrt{2}B\right)\right.\right.\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{-\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\sqrt{\text{Sec}[c+dx]}\right)\Bigg)-$$

$$\left(\left(\frac{1}{32}-\frac{i}{32}\right)\left((1+i)+\sqrt{2}\right)\left((-12+4i)A+4\sqrt{2}A-(9-3i)B+3\sqrt{2}B\right)\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\sqrt{\text{Sec}[c+dx]}\right)+$$

$$\left(\left(8A+4i\sqrt{2}A+6B+3i\sqrt{2}B\right)\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]\right.$$

$$\left.\sqrt{a\,(1+\text{Sec}[c+dx])}\right)\Big/\left(16\left(i+\sqrt{2}\right)d\sqrt{\text{Sec}[c+dx]}\right)-$$

$$\left(\left(\frac{1}{64}-\frac{i}{64}\right)\left((-1+i)+\sqrt{2}\right)\left((12+4i)A+4\sqrt{2}A+(9+3i)B+3\sqrt{2}B\right)\right.$$

$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]$$

$$\left.\sqrt{a\,(1+\text{Sec}[c+dx])}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\sqrt{\text{Sec}[c+dx]}\right)+$$

$$\left(\left(\frac{1}{64}+\frac{i}{64}\right)\left((1+i)+\sqrt{2}\right)\left((-12+4i)A+4\sqrt{2}A-(9-3i)B+3\sqrt{2}B\right)\right.$$

$$\left.\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}\right)\Big/$$

$$\left(\sqrt{2}\left(i+\sqrt{2}\right)d\sqrt{\text{Sec}[c+dx]}\right)+\frac{(4A+3B)\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}}{8d\sqrt{\text{Sec}[c+dx]}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}+$$

$$\frac{(-4A-3B)\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}}{8d\sqrt{\text{Sec}[c+dx]}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}+$$

$$\frac{B\sqrt{a\,(1+\text{Sec}[c+dx])}\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{4d\sqrt{\text{Sec}[c+dx]}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+$$

$$\frac{B\sqrt{a\,(1+\text{Sec}[c+dx])}\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{4d\sqrt{\text{Sec}[c+dx]}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}$$

Problem 226: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \sqrt{\text{Sec}[c+d x]}\ \sqrt{a+a\,\text{Sec}[c+d x]}\ (A+B\,\text{Sec}[c+d x])\,dx$$

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

$$\frac{\sqrt{a}\ (2 A+B)\ \text{ArcSinh}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{d}+\frac{a\,B\,\text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{d\,\sqrt{a+a\,\text{Sec}[c+d x]}}$$

Result (type 3, 522 leaves):

$$\frac{1}{d\,\sqrt{\text{Sec}[c+d x]}}\left(\frac{1}{32}+\frac{i}{32}\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$
$$\sqrt{a\,(1+\text{Sec}[c+d x])}\ \left(\frac{1}{i+\sqrt{2}}2\,i\,\sqrt{2}\ \left((-3+i)+\sqrt{2}\right)\left((1+i)+\sqrt{2}\right)(2 A+B)\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\left(-1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\left(1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]-\frac{1}{i+\sqrt{2}}2\sqrt{2}\ \left((-1+i)+\sqrt{2}\right)$$
$$\left((3+i)+\sqrt{2}\right)(2 A+B)\ \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\left(1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\left(-1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]+$$
$$\frac{(4+4 i)\left(-2 i+\sqrt{2}\right)(2 A+B)\ \text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{i+\sqrt{2}}+$$
$$\frac{1}{i+\sqrt{2}}i\,\sqrt{2}\ \left((-1+i)+\sqrt{2}\right)\left((3+i)+\sqrt{2}\right)(2 A+B)$$
$$\text{Log}\left[2-\sqrt{2}\ \text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\ \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\frac{1}{i+\sqrt{2}}\sqrt{2}\ \left((-3+i)+\sqrt{2}\right)$$
$$\left((1+i)+\sqrt{2}\right)(2 A+B)\ \text{Log}\left[2+\sqrt{2}\ \text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\ \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+$$
$$\left.\frac{(8-8 i)\,B}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]}-\frac{(8-8 i)\,B}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]}\right)$$

Problem 227: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{a+a\,\text{Sec}[c+d x]}\ (A+B\,\text{Sec}[c+d x])}{\sqrt{\text{Sec}[c+d x]}}\,dx$$

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

$$\frac{2\sqrt{a}\ B\,\text{ArcSinh}\left[\frac{\sqrt{a}\ \text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a\,A\sqrt{\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{d\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 321 leaves):

$$\frac{1}{4\,d\sqrt{\text{Sec}[c+d\,x]}}\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{a\,(1+\text{Sec}[c+d\,x])}\left(-2\,i\sqrt{2}\ B\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]-2\,i\sqrt{2}\ B\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\left(1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]+2\sqrt{2}\ B\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\sqrt{2}\ B\,\text{Log}\left[2-\sqrt{2}\ \text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\ \text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\sqrt{2}\ B\,\text{Log}\left[2+\sqrt{2}\ \text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\ \text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+8\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

Problem 231: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 227 leaves, 6 steps):

$$\frac{a^{3/2}\,(88\,A+75\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\ \text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{64\,d}+\frac{a^2\,(88\,A+75\,B)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{64\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,(88\,A+75\,B)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{96\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,(8\,A+9\,B)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{24\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,B\,\text{Sec}[c+d\,x]^{7/2}\sqrt{a+a\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{4\,d}$$

Result (type 3, 1376 leaves):

$$-\left(\left(\left(\left(\frac{1}{1024}+\frac{i}{1024}\right)\left((-1+i)+\sqrt{2}\right)\left((264+88\,i)\,A+88\sqrt{2}\ A+(225+75\,i)\,B+75\sqrt{2}\ B\right)\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\ \text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\ \text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\,(a\,(1+\text{Sec}[c+d\,x]))^{3/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{3/2}\right)\right)-$$

$$\left(\left(\frac{1}{1024}-\frac{i}{1024}\right)\left((1+i)+\sqrt{2}\right)\left((-264+88 i) A+88 \sqrt{2} A-(225-75 i) B+75 \sqrt{2} B\right)\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right) \Big/ \left(\sqrt{2}\left(i+\sqrt{2}\right) d\,\text{Sec}[c+d x]^{3/2}\right)+$$
$$\left(\left(176 A+88 i \sqrt{2} A+150 B+75 i \sqrt{2} B\right) \text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right) \Big/ \left(512\left(i+\sqrt{2}\right) d\,\text{Sec}[c+d x]^{3/2}\right)-$$
$$\left(\left(\frac{1}{2048}-\frac{i}{2048}\right)\left((-1+i)+\sqrt{2}\right)\left((264+88 i) A+88 \sqrt{2} A+(225+75 i) B+75 \sqrt{2} B\right)\right.$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3$$
$$\left.\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right) \Big/ \left(\sqrt{2}\left(i+\sqrt{2}\right) d\,\text{Sec}[c+d x]^{3/2}\right)+$$
$$\left(\left(\frac{1}{2048}+\frac{i}{2048}\right)\left((1+i)+\sqrt{2}\right)\left((-264+88 i) A+88 \sqrt{2} A-(225-75 i) B+75 \sqrt{2} B\right)\right.$$
$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3$$
$$\left.\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right) \Big/ \left(\sqrt{2}\left(i+\sqrt{2}\right) d\,\text{Sec}[c+d x]^{3/2}\right)+$$
$$\frac{(8 A+15 B)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}}{192\, d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{(88 A+75 B)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}}{256\, d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+$$
$$\frac{(-8 A-15 B)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}}{192\, d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{(-88 A-75 B)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}}{256\, d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(24 A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+19 B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/$$
$$\left(128\, d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(24 A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+19 B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/$$
$$\left(128\, d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$

$$\frac{B\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{32\,d\,\text{Sec}[c+d\,x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+$$
$$\frac{B\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{32\,d\,\text{Sec}[c+d\,x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}$$

Problem 232: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 180 leaves, 5 steps):

$$\frac{a^{3/2}(14A+11B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{8\,d}+\frac{a^2(14A+11B)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{8\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a^2(6A+7B)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{12\,d\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,B\,\text{Sec}[c+d\,x]^{5/2}\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 3, 1208 leaves):

$$-\left(\left(\left(\left(\frac{1}{128}+\frac{i}{128}\right)\left((-1+i)+\sqrt{2}\right)\left((42+14i)A+14\sqrt{2}A+(33+11i)B+11\sqrt{2}B\right)\right.\right.\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$
$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{3/2}\right)\right)-$$
$$\left(\left(\frac{1}{128}-\frac{i}{128}\right)\left((1+i)+\sqrt{2}\right)\left((-42+14i)A+14\sqrt{2}A-(33-11i)B+11\sqrt{2}B\right)\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{3/2}\right)+$$
$$\left(\left(28A+14i\sqrt{2}A+22B+11i\sqrt{2}B\right)\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\right.$$
$$\left.\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)\Big/\left(64\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{3/2}\right)-$$
$$\left(\left(\frac{1}{256}-\frac{i}{256}\right)\left((-1+i)+\sqrt{2}\right)\left((42+14i)A+14\sqrt{2}A+(33+11i)B+11\sqrt{2}B\right)\right.$$

$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3$$
$$(a(1+\text{Sec}[c+d x]))^{3/2}\Big)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d x]^{3/2}\right)+$$
$$\left(\left(\frac{1}{256}+\frac{i}{256}\right)\left((1+i)+\sqrt{2}\right)\left((-42+14 i)A+14\sqrt{2}A-(33-11 i)B+11\sqrt{2}B\right)\right.$$
$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3$$
$$(a(1+\text{Sec}[c+d x]))^{3/2}\Big)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d x]^{3/2}\right)+$$
$$\frac{B\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3(a(1+\text{Sec}[c+d x]))^{3/2}}{24 d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{(14 A+11 B)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3(a(1+\text{Sec}[c+d x]))^{3/2}}{32 d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-$$
$$\frac{B\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3(a(1+\text{Sec}[c+d x]))^{3/2}}{24 d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{(-14 A-11 B)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3(a(1+\text{Sec}[c+d x]))^{3/2}}{32 d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3(a(1+\text{Sec}[c+d x]))^{3/2}\left(2 A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+3 B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(16 d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^3(a(1+\text{Sec}[c+d x]))^{3/2}\left(2 A\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+3 B\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(16 d\,\text{Sec}[c+d x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)$$

Problem 233: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Sec}[c+d x]}\,(a+a\,\text{Sec}[c+d x])^{3/2}(A+B\,\text{Sec}[c+d x])\,dx$$

Optimal (type 3, 133 leaves, 4 steps):

$$\frac{a^{3/2}(12 A+7 B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{4 d}+$$
$$\frac{a^2(4 A+5 B)\,\text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]}{4 d\sqrt{a+a\,\text{Sec}[c+d x]}}+\frac{a B\,\text{Sec}[c+d x]^{3/2}\sqrt{a+a\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{2 d}$$

Result (type 3, 1040 leaves):

$$-\left(\left(\left(\left(\frac{1}{64}+\frac{i}{64}\right)\left((-1+i)+\sqrt{2}\right)\left((36+12\,i)\,A+12\sqrt{2}\,A+(21+7\,i)\,B+7\sqrt{2}\,B\right)\right.\right.\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$

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

$$\left(\left(\frac{1}{64}-\frac{i}{64}\right)\left((1+i)+\sqrt{2}\right)\left((-36+12\,i)\,A+12\sqrt{2}\,A-(21-7\,i)\,B+7\sqrt{2}\,B\right)\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$

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

$$\left(\left(24\,A+12\,i\sqrt{2}\,A+14\,B+7\,i\sqrt{2}\,B\right)\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\right.$$

$$\left.\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)\Big/\left(32\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{3/2}\right)-$$

$$\left(\left(\frac{1}{128}-\frac{i}{128}\right)\left((-1+i)+\sqrt{2}\right)\left((36+12\,i)\,A+12\sqrt{2}\,A+(21+7\,i)\,B+7\sqrt{2}\,B\right)\right.$$

$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3$$

$$\left.\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{3/2}\right)+$$

$$\left(\left(\frac{1}{128}+\frac{i}{128}\right)\left((1+i)+\sqrt{2}\right)\left((-36+12\,i)\,A+12\sqrt{2}\,A-(21-7\,i)\,B+7\sqrt{2}\,B\right)\right.$$

$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3$$

$$\left.\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{3/2}\right)+$$

$$\frac{(4\,A+7\,B)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}}{16\,d\,\text{Sec}[c+d\,x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+$$

$$\frac{(-4\,A-7\,B)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}}{16\,d\,\text{Sec}[c+d\,x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+$$

$$\frac{B\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{8\,d\,\text{Sec}[c+d\,x]^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+$$

$$\frac{B\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{3/2}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{8\,d\,\text{Sec}[c+d\,x]^{3/2}\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}$$

Problem 234: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 124 leaves, 4 steps):

$$\frac{a^{3/2}\,(2\,A+3\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{a^2\,(2\,A-B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,B\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d}$$

Result (type 3, 603 leaves):

$$\frac{1}{d\,\mathrm{Sec}[c+d\,x]^{3/2}}\left(\frac{1}{64}+\frac{\mathrm{i}}{64}\right)\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$(a\,(1+\mathrm{Sec}[c+d\,x]))^{3/2}\left(\frac{1}{\mathrm{i}+\sqrt{2}}2\,\mathrm{i}\,\sqrt{2}\,\left((-3+\mathrm{i})+\sqrt{2}\right)\left((1+\mathrm{i})+\sqrt{2}\right)(2\,A+3\,B)\right.$$
$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$\frac{1}{\mathrm{i}+\sqrt{2}}2\,\sqrt{2}\,\left((-1+\mathrm{i})+\sqrt{2}\right)\left((3+\mathrm{i})+\sqrt{2}\right)(2\,A+3\,B)$$
$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(1+\sqrt{2}\right)\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{\mathrm{i}+\sqrt{2}}$$
$$(4+4\,\mathrm{i})\left(-2\,\mathrm{i}+\sqrt{2}\right)(2\,A+3\,B)\,\mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\frac{1}{\mathrm{i}+\sqrt{2}}\mathrm{i}\,\sqrt{2}\,\left((-1+\mathrm{i})+\sqrt{2}\right)\left((3+\mathrm{i})+\sqrt{2}\right)(2\,A+3\,B)$$
$$\mathrm{Log}\left[2-\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\frac{1}{\mathrm{i}+\sqrt{2}}\sqrt{2}\,\left((-3+\mathrm{i})+\sqrt{2}\right)\left((1+\mathrm{i})+\sqrt{2}\right)(2\,A+3\,B)$$
$$\mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$\left.\frac{(8-8\,\mathrm{i})\,B\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}+(32-32\,\mathrm{i})\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-\frac{(8-8\,\mathrm{i})\,B\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}\right)$$

Problem 235: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

$$\frac{2\,a^{3/2}\,B\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{d}+$$
$$\frac{2\,a^2\,(4\,A+3\,B)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+\frac{2\,a\,A\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}$$

Result (type 3, 348 leaves):

$$\frac{1}{12\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}\,a\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}$$
$$\left(-6\,i\,\sqrt{2}\,B\,\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]-\right.$$
$$6\,i\,\sqrt{2}\,B\,\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(1+\sqrt{2}\right)\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]+6\,\sqrt{2}\,B$$
$$\mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-3\,\sqrt{2}\,B\,\mathrm{Log}\left[2-\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$
$$3\,\sqrt{2}\,B\,\mathrm{Log}\left[2+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$\left.36\,A\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+24\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+4\,A\,\mathrm{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]\right)$$

Problem 239: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^{5/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}\,(A+B\,\mathrm{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 274 leaves, 7 steps):

$$\frac{a^{5/2}\,(326\,A+283\,B)\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{128\,d}+\frac{a^3\,(326\,A+283\,B)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{128\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+$$
$$\frac{a^3\,(326\,A+283\,B)\,\mathrm{Sec}[c+d\,x]^{5/2}\,\mathrm{Sin}[c+d\,x]}{192\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+\frac{a^3\,(170\,A+157\,B)\,\mathrm{Sec}[c+d\,x]^{7/2}\,\mathrm{Sin}[c+d\,x]}{240\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(10\,A+13\,B)\,\mathrm{Sec}[c+d\,x]^{7/2}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{40\,d}+$$
$$\frac{a\,B\,\mathrm{Sec}[c+d\,x]^{7/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{5\,d}$$

Result (type 3, 1544 leaves):

$$-\left(\left(\left(\left(\frac{1}{4096}+\frac{i}{4096}\right)\left((-1+i)+\sqrt{2}\right)\left((978+326\,i)\,A+326\,\sqrt{2}\,A+(849+283\,i)\,B+283\,\sqrt{2}\,B\right)\right.\right.\right.$$
$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{-\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]$$
$$\left.\left.\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}\right)\Big/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)d\,\mathrm{Sec}[c+d\,x]^{5/2}\right)\right)-$$

$$\left(\left(\frac{1}{4096}-\frac{i}{4096}\right)\left((1+i)+\sqrt{2}\right)\left((-978+326 i) A+326\sqrt{2} A-(849-283 i) B+283\sqrt{2} B\right)\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right) d\,\text{Sec}[c+d x]^{5/2}\right)+$$
$$\left(\left(652 A+326 i\sqrt{2} A+566 B+283 i\sqrt{2} B\right)\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\right)\Big/\left(2048\left(i+\sqrt{2}\right) d\,\text{Sec}[c+d x]^{5/2}\right)-$$
$$\left(\left(\frac{1}{8192}-\frac{i}{8192}\right)\left((-1+i)+\sqrt{2}\right)\left((978+326 i) A+326\sqrt{2} A+(849+283 i) B+283\sqrt{2} B\right)\right.$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5$$
$$\left.\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right) d\,\text{Sec}[c+d x]^{5/2}\right)+$$
$$\left(\left(\frac{1}{8192}+\frac{i}{8192}\right)\left((1+i)+\sqrt{2}\right)\left((-978+326 i) A+326\sqrt{2} A-(849-283 i) B+283\sqrt{2} B\right)\right.$$
$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5$$
$$\left.\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right) d\,\text{Sec}[c+d x]^{5/2}\right)+$$
$$\frac{B\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}}{160\, d\,\text{Sec}[c+d x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}+$$
$$\frac{(46 A+59 B)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}}{768\, d\,\text{Sec}[c+d x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{(326 A+283 B)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}}{1024\, d\,\text{Sec}[c+d x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-$$
$$\frac{B\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}}{160\, d\,\text{Sec}[c+d x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}+$$
$$\frac{(-46 A-59 B)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}}{768\, d\,\text{Sec}[c+d x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{(-326 A-283 B)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}}{1024\, d\,\text{Sec}[c+d x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+$$

$$\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\operatorname{Sec}[c+d x]))^{5/2}\left(2 A \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+5 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/ \left(128 d \operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)+$$
$$\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\operatorname{Sec}[c+d x]))^{5/2}\left(2 A \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+5 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/ \left(128 d \operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)+$$
$$\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\operatorname{Sec}[c+d x]))^{5/2}\left(86 A \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+75 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/ \left(512 d \operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$
$$\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\operatorname{Sec}[c+d x]))^{5/2}\left(86 A \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+75 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/ \left(512 d \operatorname{Sec}[c+d x]^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)$$

Problem 240: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x]^{3/2}(a+a \operatorname{Sec}[c+d x])^{5/2}(A+B \operatorname{Sec}[c+d x])\, dx$$

Optimal (type 3, 227 leaves, 6 steps):

$$\frac{a^{5/2}(200 A+163 B) \operatorname{ArcSinh}\left[\frac{\sqrt{a} \operatorname{Tan}[c+d x]}{\sqrt{a+a \operatorname{Sec}[c+d x]}}\right]}{64 d}+\frac{a^3(200 A+163 B) \operatorname{Sec}[c+d x]^{3/2} \operatorname{Sin}[c+d x]}{64 d \sqrt{a+a \operatorname{Sec}[c+d x]}}+\frac{a^3(104 A+95 B) \operatorname{Sec}[c+d x]^{5/2} \operatorname{Sin}[c+d x]}{96 d \sqrt{a+a \operatorname{Sec}[c+d x]}}+\frac{a^2(8 A+11 B) \operatorname{Sec}[c+d x]^{5/2} \sqrt{a+a \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{24 d}+\frac{a B \operatorname{Sec}[c+d x]^{5/2}(a+a \operatorname{Sec}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{4 d}$$

Result (type 3, 1376 leaves):

$$-\left(\left(\left(\left(\frac{1}{2048}+\frac{i}{2048}\right)\left((-1+i)+\sqrt{2}\right)\left((600+200 i) A+200 \sqrt{2} A+(489+163 i) B+163 \sqrt{2} B\right) \operatorname{ArcTan}\left[\frac{\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]-\sqrt{2} \operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]}{-\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]+\sqrt{2} \operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]}\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\operatorname{Sec}[c+d x]))^{5/2}\right) \Big/ \left(\sqrt{2}\left(i+\sqrt{2}\right) d \operatorname{Sec}[c+d x]^{5/2}\right)\right)-$$

$$\left(\left(\frac{1}{2048}-\frac{i}{2048}\right)\left((1+i)+\sqrt{2}\right)\left((-600+200\,i)\,A+200\sqrt{2}\,A-(489-163\,i)\,B+163\sqrt{2}\,B\right)\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{5/2}\right)+$$
$$\left(\left(400\,A+200\,i\sqrt{2}\,A+326\,B+163\,i\sqrt{2}\,B\right)\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\right)\Big/\left(1024\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{5/2}\right)-$$
$$\left(\left(\frac{1}{4096}-\frac{i}{4096}\right)\left((-1+i)+\sqrt{2}\right)\left((600+200\,i)\,A+200\sqrt{2}\,A+(489+163\,i)\,B+163\sqrt{2}\,B\right)\right.$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5$$
$$\left.\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{5/2}\right)+$$
$$\left(\left(\frac{1}{4096}+\frac{i}{4096}\right)\left((1+i)+\sqrt{2}\right)\left((-600+200\,i)\,A+200\sqrt{2}\,A-(489-163\,i)\,B+163\sqrt{2}\,B\right)\right.$$
$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5$$
$$\left.\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{5/2}\right)+$$
$$\frac{(8\,A+23\,B)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}}{384\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+$$
$$\frac{(200\,A+163\,B)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}}{512\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+$$
$$\frac{(-8\,A-23\,B)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}}{384\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+$$
$$\frac{(-200\,A-163\,B)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}}{512\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\left(40\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+43\,B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Big/$$
$$\left(256\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\right)+$$
$$\left(\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\left(40\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+43\,B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Big/$$
$$\left(256\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\right)+$$

$$\frac{B\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{5/2}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{64\,d\,\mathrm{Sec}[c+d\,x]^{5/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+$$
$$\frac{B\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{5/2}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{64\,d\,\mathrm{Sec}[c+d\,x]^{5/2}\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}$$

Problem 241: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\sqrt{\mathrm{Sec}[c+d\,x]}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 3, 180 leaves, 5 steps):

$$\frac{a^{5/2}\,(38\,A+25\,B)\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{8\,d}+\frac{a^3\,(54\,A+49\,B)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{24\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(2\,A+3\,B)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{4\,d}+$$
$$\frac{a\,B\,\mathrm{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\mathrm{Sin}[c+d\,x]}{3\,d}$$

Result (type 3, 1208 leaves):

$$-\left(\left(\left(\left(\frac{1}{256}+\frac{i}{256}\right)\,\left((-1+i)+\sqrt{2}\right)\,\left((114+38\,i)\,A+38\,\sqrt{2}\,A+(75+25\,i)\,B+25\,\sqrt{2}\,B\right)\right.\right.\right.$$
$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{-\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]$$
$$\left.\left.\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{5/2}\right)\Big/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\mathrm{Sec}[c+d\,x]^{5/2}\right)\right)-$$
$$\left(\left(\frac{1}{256}-\frac{i}{256}\right)\,\left((1+i)+\sqrt{2}\right)\,\left((-114+38\,i)\,A+38\,\sqrt{2}\,A-(75-25\,i)\,B+25\,\sqrt{2}\,B\right)\right.$$
$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]$$
$$\left.\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,(1+\mathrm{Sec}[c+d\,x])\right)^{5/2}\right)\Big/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\mathrm{Sec}[c+d\,x]^{5/2}\right)+$$
$$\left(\left(76\,A+38\,i\,\sqrt{2}\,A+50\,B+25\,i\,\sqrt{2}\,B\right)\,\mathrm{Log}\left[\sqrt{2}+2\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\right.$$

$$\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\Big/\left(128\left(\text{i}+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(\left(\frac{1}{512}-\frac{\text{i}}{512}\right)\left(\left(-1+\text{i}\right)+\sqrt{2}\right)\left(\left(114+38\,\text{i}\right)A+38\sqrt{2}\,A+\left(75+25\,\text{i}\right)B+25\sqrt{2}\,B\right)\right.$$

$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5$$

$$\left.\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)\Big/\left(\sqrt{2}\left(\text{i}+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{5/2}\right)+$$

$$\left(\left(\frac{1}{512}+\frac{\text{i}}{512}\right)\left(\left(1+\text{i}\right)+\sqrt{2}\right)\left(\left(-114+38\,\text{i}\right)A+38\sqrt{2}\,A-\left(75-25\,\text{i}\right)B+25\sqrt{2}\,B\right)\right.$$

$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5$$

$$\left.\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)\Big/\left(\sqrt{2}\left(\text{i}+\sqrt{2}\right)d\,\text{Sec}[c+d\,x]^{5/2}\right)+$$

$$\frac{B\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}}{48\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)^3}+$$

$$\frac{\left(22\,A+25\,B\right)\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}}{64\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)}-$$

$$\frac{B\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}}{48\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)^3}+$$

$$\frac{\left(-22\,A-25\,B\right)\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}}{64\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)}+$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(2\,A\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+5\,B\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\right)\Big/$$

$$\left(32\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)^2\right)+$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(2\,A\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+5\,B\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\right)\Big/$$

$$\left(32\,d\,\text{Sec}[c+d\,x]^{5/2}\left(\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)^2\right)$$

Problem 242: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 180 leaves, 5 steps):

$$\frac{a^{5/2}\,(20\,A+19\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{4\,d}+\frac{a^3\,(4\,A-9\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$

$$\frac{a^2\,(4\,A+7\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d}+$$

$$\frac{a\,B\,\sqrt{\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 3, 1094 leaves) :

$$-\left(\left(\left(\left(\frac{1}{128}+\frac{i}{128}\right)\left((-1+i)+\sqrt{2}\right)\left((60+20\,i)\,A+20\,\sqrt{2}\,A+(57+19\,i)\,B+19\,\sqrt{2}\,B\right)\right.\right.\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)\Big/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\text{Sec}[c+d\,x]^{5/2}\right)\Big)-$$

$$\left(\left(\frac{1}{128}-\frac{i}{128}\right)\left((1+i)+\sqrt{2}\right)\left((-60+20\,i)\,A+20\,\sqrt{2}\,A-(57-19\,i)\,B+19\,\sqrt{2}\,B\right)\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)\Big/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\text{Sec}[c+d\,x]^{5/2}\right)+$$

$$\left(\left(40\,A+20\,i\,\sqrt{2}\,A+38\,B+19\,i\,\sqrt{2}\,B\right)\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5\right.$$

$$\left.(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)\Big/\left(64\,\left(i+\sqrt{2}\right)\,d\,\text{Sec}[c+d\,x]^{5/2}\right)-$$

$$\left(\left(\frac{1}{256}-\frac{i}{256}\right)\left((-1+i)+\sqrt{2}\right)\left((60+20\,i)\,A+20\,\sqrt{2}\,A+(57+19\,i)\,B+19\,\sqrt{2}\,B\right)\right.$$

$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5$$

$$\left.(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)\Big/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\text{Sec}[c+d\,x]^{5/2}\right)+$$

$$\left(\left(\frac{1}{256}+\frac{i}{256}\right)\left((1+i)+\sqrt{2}\right)\left((-60+20\,i)\,A+20\,\sqrt{2}\,A-(57-19\,i)\,B+19\,\sqrt{2}\,B\right)\right.$$

$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^5$$

$$\left.(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)\Big/\left(\sqrt{2}\,\left(i+\sqrt{2}\right)\,d\,\text{Sec}[c+d\,x]^{5/2}\right)+$$

$$\frac{(4\,A+11\,B)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}}{32\,d\,\text{Sec}[c+d\,x]^{5/2}\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}+$$

$$\frac{(-4\,A-11\,B)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}}{32\,d\,\text{Sec}[c+d\,x]^{5/2}\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}+$$

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

$$\frac{B\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{16\,d\,\text{Sec}[c+d\,x]^{5/2}\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+$$

$$\frac{B\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{16\,d\,\text{Sec}[c+d\,x]^{5/2}\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}$$

Problem 243: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])}{\text{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 3, 177 leaves, 5 steps):

$$\frac{a^{5/2}\,(2\,A+5\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{a^3\,(14\,A+3\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-$$

$$\frac{a^2\,(2\,A-3\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}+$$

$$\frac{2\,a\,A\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

Result (type 3, 635 leaves):

$$\frac{1}{d\,\text{Sec}[c+d\,x]^{5/2}}\left(\frac{1}{384}+\frac{i}{384}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4$$

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

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]-$$

$$\frac{1}{i+\sqrt{2}}6\,\sqrt{2}\,\left((-1+i)+\sqrt{2}\right)\left((3+i)+\sqrt{2}\right)(2\,A+5\,B)$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\left(1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{i+\sqrt{2}}$$

$$(12+12\,i)\left(-2\,i+\sqrt{2}\right)(2\,A+5\,B)\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{1}{i+\sqrt{2}}3\,i\,\sqrt{2}\,\left((-1+i)+\sqrt{2}\right)\left((3+i)+\sqrt{2}\right)(2\,A+5\,B)$$

$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{1}{i+\sqrt{2}}3\,\sqrt{2}\,\left((-3+i)+\sqrt{2}\right)\left((1+i)+\sqrt{2}\right)(2\,A+5\,B)$$

$$\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$(16-16\,i)\,A\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]-\frac{(24-24\,i)\,B\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}+$$

$$\left.(48-48\,i)\,(5\,A+2\,B)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\frac{(24-24\,i)\,B\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)$$

Problem 244: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])}{\text{Sec}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 3, 172 leaves, 5 steps):

$$\frac{2\,a^{5/2}\,B\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a^3\,(32\,A+35\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$

$$\frac{2\,a^2\,(8\,A+5\,B)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d\,\sqrt{\text{Sec}[c+d\,x]}}+\frac{2\,a\,A\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{5\,d\,\text{Sec}[c+d\,x]^{3/2}}$$

Result (type 3, 376 leaves):

$$\frac{1}{60\, d \sqrt{\text{Sec}[c+d x]}} a^2 \text{Sec}\left[\frac{1}{2}(c+d x)\right] \sqrt{a (1+\text{Sec}[c+d x])} \left(-30\, i \sqrt{2}\, B\, \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\left(-1+\sqrt{2}\right) \text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\left(1+\sqrt{2}\right) \text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right] - 30\, i \sqrt{2}\, B\, \text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\left(1+\sqrt{2}\right) \text{Sin}\left[\frac{1}{4}(c+d x)\right]}{\left(-1+\sqrt{2}\right) \text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]}\right] + 30 \sqrt{2}\, B\, \text{Log}\left[\sqrt{2}+2 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] - 15 \sqrt{2}\, B\, \text{Log}\left[2-\sqrt{2} \text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2} \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] - 15 \sqrt{2}\, B\, \text{Log}\left[2+\sqrt{2} \text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2} \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] + 300\, A\, \text{Sin}\left[\frac{1}{2}(c+d x)\right] + 300\, B\, \text{Sin}\left[\frac{1}{2}(c+d x)\right] + 50\, A\, \text{Sin}\left[\frac{3}{2}(c+d x)\right] + 20\, B\, \text{Sin}\left[\frac{3}{2}(c+d x)\right] + 6\, A\, \text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)$$

Problem 248: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{5/2} (A+B\, \text{Sec}[c+d x])}{\sqrt{a+a\, \text{Sec}[c+d x]}}\, dx$$

Optimal (type 3, 190 leaves, 7 steps):

$$-\frac{(4 A-7 B)\, \text{ArcSinh}\left[\frac{\sqrt{a}\, \text{Tan}[c+d x]}{\sqrt{a+a\, \text{Sec}[c+d x]}}\right]}{4 \sqrt{a}\, d} + \frac{\sqrt{2}\, (A-B)\, \text{ArcTanh}\left[\frac{\sqrt{a} \sqrt{\text{Sec}[c+d x]}\, \text{Sin}[c+d x]}{\sqrt{2} \sqrt{a+a\, \text{Sec}[c+d x]}}\right]}{\sqrt{a}\, d} + \frac{(4 A-B)\, \text{Sec}[c+d x]^{3/2}\, \text{Sin}[c+d x]}{4 d \sqrt{a+a\, \text{Sec}[c+d x]}} + \frac{B\, \text{Sec}[c+d x]^{5/2}\, \text{Sin}[c+d x]}{2 d \sqrt{a+a\, \text{Sec}[c+d x]}}$$

Result (type 3, 684 leaves):

$$\frac{1}{d\sqrt{a\,(1+\text{Sec}[c+d\,x])}}\left(\frac{1}{64}+\frac{\mathrm{i}}{64}\right)\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]$$

$$\sqrt{\text{Sec}[c+d\,x]}\,\left(\frac{1}{-1+\mathrm{i}\,\sqrt{2}}2\,\sqrt{2}\,\left((-3+\mathrm{i})+\sqrt{2}\right)\,\left((1+\mathrm{i})+\sqrt{2}\right)\,(4\,A-7\,B)\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]+\frac{1}{\mathrm{i}+\sqrt{2}}2\,\sqrt{2}\,\left((-1+\mathrm{i})+\sqrt{2}\right)$$

$$\left((3+\mathrm{i})+\sqrt{2}\right)\,(4\,A-7\,B)\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(1+\sqrt{2}\right)\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]-$$

$$(64-64\,\mathrm{i})\,(A-B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]+$$

$$(64-64\,\mathrm{i})\,(A-B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]-$$

$$\frac{(4+4\,\mathrm{i})\,\left(-2\,\mathrm{i}+\sqrt{2}\right)\,(4\,A-7\,B)\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{\mathrm{i}+\sqrt{2}}+$$

$$\frac{1}{-1+\mathrm{i}\,\sqrt{2}}\sqrt{2}\,\left((-1+\mathrm{i})+\sqrt{2}\right)\,\left((3+\mathrm{i})+\sqrt{2}\right)\,(4\,A-7\,B)$$

$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\frac{1}{\mathrm{i}+\sqrt{2}}\sqrt{2}\,\left((-3+\mathrm{i})+\sqrt{2}\right)$$

$$\left((1+\mathrm{i})+\sqrt{2}\right)\,(4\,A-7\,B)\,\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$

$$\frac{(8-8\,\mathrm{i})\,(4\,A-B)}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}+\frac{(16-16\,\mathrm{i})\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+$$

$$\left.\frac{(16-16\,\mathrm{i})\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{(8-8\,\mathrm{i})\,(-4\,A+B)}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}\right)$$

Problem 249: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 141 leaves, 6 steps):

$$\frac{(2A-B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}-\frac{\sqrt{2}\,(A-B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{B\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 596 leaves):

$$\frac{1}{d\sqrt{a\,(1+\text{Sec}[c+d\,x])}}\left(\frac{1}{16}+\frac{i}{16}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\text{Sec}[c+d\,x]}\left(\frac{1}{i+\sqrt{2}}2\,i\,\sqrt{2}\left((-3+i)+\sqrt{2}\right)\left((1+i)+\sqrt{2}\right)(2A-B)\right.$$
$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]-\frac{1}{i+\sqrt{2}}2\sqrt{2}\left((-1+i)+\sqrt{2}\right)$$
$$\left((3+i)+\sqrt{2}\right)(2A-B)\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\left(1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]+$$
$$(16-16\,i)\,(A-B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right]-$$
$$(16-16\,i)\,(A-B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right]+$$
$$\frac{(4+4\,i)\left(-2\,i+\sqrt{2}\right)(2A-B)\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{i+\sqrt{2}}+$$
$$\frac{1}{i+\sqrt{2}}i\,\sqrt{2}\left((-1+i)+\sqrt{2}\right)\left((3+i)+\sqrt{2}\right)(2A-B)$$
$$\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\frac{1}{i+\sqrt{2}}\sqrt{2}\left((-3+i)+\sqrt{2}\right)$$
$$\left((1+i)+\sqrt{2}\right)(2A-B)\,\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+$$
$$\left.\frac{(8-8\,i)\,B}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}-\frac{(8-8\,i)\,B}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}\right)$$

Problem 250: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d\,x]}\,(A+B\,\text{Sec}[c+d\,x])}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 100 leaves, 5 steps):

$$\frac{2\,B\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{\sqrt{2}\,(A-B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{\sqrt{a}\,d}$$

Result (type 3, 412 leaves):

$$\frac{1}{2\,d\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}}\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\left(-2\,\mathbb{i}\,\sqrt{2}\,B\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]-\right.$$
$$2\,\mathbb{i}\,\sqrt{2}\,B\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(1+\sqrt{2}\right)\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]-$$
$$4\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]+$$
$$4\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]+4\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]-$$
$$4\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]+2\,\sqrt{2}\,B\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$
$$\sqrt{2}\,B\,\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$
$$\left.\sqrt{2}\,B\,\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\sqrt{\text{Sec}[c+d\,x]}$$

Problem 255: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^{7/2}\,(A+B\,\text{Sec}[c+d\,x])}{(a+a\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 247 leaves, 8 steps):

$$-\frac{(12\,A-19\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{4\,a^{3/2}\,d}+$$
$$\frac{(9\,A-13\,B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}+\frac{(A-B)\,\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{2\,d\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}+$$
$$\frac{(6\,A-7\,B)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{4\,a\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{(A-2\,B)\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{2\,a\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 1318 leaves):

$$-\left(\left(\left(\left(\frac{1}{8}+\frac{\mathrm{i}}{8}\right)\left((-1+\mathrm{i})+\sqrt{2}\right)\left((-36-12\,\mathrm{i})\,A-12\sqrt{2}\,A+(57+19\,\mathrm{i})\,B+19\sqrt{2}\,B\right)\right.\right.\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{-\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$

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

$$\left(\left(\frac{1}{8}-\frac{\mathrm{i}}{8}\right)\left((1+\mathrm{i})+\sqrt{2}\right)\left((36-12\,\mathrm{i})\,A-12\sqrt{2}\,A-(57-19\,\mathrm{i})\,B+19\sqrt{2}\,B\right)\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}\right]$$

$$\left.\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3\text{Sec}[c+d\,x]^{3/2}\right)\Big/\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right)d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)+$$

$$\left((-9\,A+13\,B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right]\text{Sec}[c+d\,x]^{3/2}\right)\Big/$$

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

$$\left((9\,A-13\,B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right]\text{Sec}[c+d\,x]^{3/2}\right)\Big/$$

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

$$\left(\left(-24\,A-12\,\mathrm{i}\sqrt{2}\,A+38\,B+19\,\mathrm{i}\sqrt{2}\,B\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right.$$

$$\left.\text{Sec}[c+d\,x]^{3/2}\right)\Big/\left(4\left(\mathrm{i}+\sqrt{2}\right)d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)-$$

$$\left(\left(\frac{1}{16}-\frac{\mathrm{i}}{16}\right)\left((-1+\mathrm{i})+\sqrt{2}\right)\left((-36-12\,\mathrm{i})\,A-12\sqrt{2}\,A+(57+19\,\mathrm{i})\,B+19\sqrt{2}\,B\right)\right.$$

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

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right)d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)+$$

$$\left(\left(\frac{1}{16}+\frac{\mathrm{i}}{16}\right)\left((1+\mathrm{i})+\sqrt{2}\right)\left((36-12\,\mathrm{i})\,A-12\sqrt{2}\,A-(57-19\,\mathrm{i})\,B+19\sqrt{2}\,B\right)\right.$$

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

$$\left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right)d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)+$$

$$\frac{(A-B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3\text{Sec}[c+d\,x]^{3/2}}{2\,d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^2}+$$

$$\frac{(-A+B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3\text{Sec}[c+d\,x]^{3/2}}{2\,d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^2}+$$

$$\frac{(4A-5B)\,\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]^3\,\mathrm{Sec}[c+dx]^{3/2}}{2d\left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{3/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}+$$
$$\frac{B\,\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]^3\,\mathrm{Sec}[c+dx]^{3/2}\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]}{d\left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{3/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+$$
$$\frac{B\,\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]^3\,\mathrm{Sec}[c+dx]^{3/2}\,\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]}{d\left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{3/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+$$
$$\frac{(-4A+5B)\,\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]^3\,\mathrm{Sec}[c+dx]^{3/2}}{2d\left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{3/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}$$

Problem 256: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[c+dx]^{5/2}\left(A+B\,\mathrm{Sec}[c+dx]\right)}{\left(a+a\,\mathrm{Sec}[c+dx]\right)^{3/2}}\,dx$$

Optimal (type 3, 197 leaves, 7 steps):

$$\frac{(2A-3B)\,\mathrm{ArcSinh}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+dx]}{\sqrt{a+a\,\mathrm{Sec}[c+dx]}}\right]}{a^{3/2}\,d}-\frac{(5A-9B)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\mathrm{Sec}[c+dx]}\,\mathrm{Sin}[c+dx]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sec}[c+dx]}}\right]}{2\sqrt{2}\,a^{3/2}\,d}+$$
$$\frac{(A-B)\,\mathrm{Sec}[c+dx]^{5/2}\,\mathrm{Sin}[c+dx]}{2d\left(a+a\,\mathrm{Sec}[c+dx]\right)^{3/2}}-\frac{(A-3B)\,\mathrm{Sec}[c+dx]^{3/2}\,\mathrm{Sin}[c+dx]}{2ad\sqrt{a+a\,\mathrm{Sec}[c+dx]}}$$

Result (type 3, 1157 leaves):

$$-\left(\left(\left(\frac{1}{2}-\frac{i}{2}\right)\left((1+i)-i\sqrt{2}\right)\left((-6-2i)A-2\sqrt{2}A+(9+3i)B+3\sqrt{2}B\right)\right.\right.$$
$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]}{-\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]$$
$$\left.\left.\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]^3\,\mathrm{Sec}[c+dx]^{3/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\left(a\left(1+\mathrm{Sec}[c+dx]\right)\right)^{3/2}\right)\right)+$$
$$\left(\left(\frac{1}{2}-\frac{i}{2}\right)\left((1+i)+\sqrt{2}\right)\left((6-2i)A-2\sqrt{2}A-(9-3i)B+3\sqrt{2}B\right)\right.$$
$$\mathrm{ArcTan}\left[\frac{\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]}{\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]$$

$$\left.\text{Cos}\left[\frac{1}{2}(c+d x)\right]^3 \text{Sec}[c+d x]^{3/2}\right) \Big/ \left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)+$$

$$\left((5 A-9 B) \text{Cos}\left[\frac{1}{2}(c+d x)\right]^3 \text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right] \text{Sec}[c+d x]^{3/2}\right) \Big/ \left(d\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)+$$

$$\left((-5 A+9 B) \text{Cos}\left[\frac{1}{2}(c+d x)\right]^3 \text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right] \text{Sec}[c+d x]^{3/2}\right) \Big/ \left(d\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)+$$

$$\left(\left(4 A+2 \mathrm{i} \sqrt{2} A-6 B-3 \mathrm{i} \sqrt{2} B\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]^3 \text{Log}\left[\sqrt{2}+2 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sec}[c+d x]^{3/2}\right) \Big/ \left(\left(\mathrm{i}+\sqrt{2}\right) d\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)+$$

$$\left(\left(\frac{1}{4}+\frac{\mathrm{i}}{4}\right)\left((1+\mathrm{i})-\mathrm{i} \sqrt{2}\right)\left((-6-2 \mathrm{i}) A-2 \sqrt{2} A+(9+3 \mathrm{i}) B+3 \sqrt{2} B\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]^3 \text{Log}\left[2-\sqrt{2} \text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2} \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sec}[c+d x]^{3/2}\right) \Big/ \left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)-$$

$$\left(\left(\frac{1}{4}+\frac{\mathrm{i}}{4}\right)\left((1+\mathrm{i})+\sqrt{2}\right)\left((6-2 \mathrm{i}) A-2 \sqrt{2} A-(9-3 \mathrm{i}) B+3 \sqrt{2} B\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]^3 \text{Log}\left[2+\sqrt{2} \text{Cos}\left[\frac{1}{2}(c+d x)\right]-\sqrt{2} \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sec}[c+d x]^{3/2}\right) \Big/ \left(\sqrt{2}\left(\mathrm{i}+\sqrt{2}\right) d\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\right)+$$

$$\frac{(-A+B) \text{Cos}\left[\frac{1}{2}(c+d x)\right]^3 \text{Sec}[c+d x]^{3/2}}{2 d\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2}+\frac{(A-B) \text{Cos}\left[\frac{1}{2}(c+d x)\right]^3 \text{Sec}[c+d x]^{3/2}}{2 d\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2}+$$

$$\frac{2 B \text{Cos}\left[\frac{1}{2}(c+d x)\right]^3 \text{Sec}[c+d x]^{3/2}}{d\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{2 B \text{Cos}\left[\frac{1}{2}(c+d x)\right]^3 \text{Sec}[c+d x]^{3/2}}{d\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}$$

Problem 257: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 145 leaves, 6 steps):

$$\frac{2\,B\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{a^{3/2}\,d}+$$

$$\frac{(A-5\,B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}+\frac{(A-B)\,\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{2\,d\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}$$

Result (type 3, 430 leaves):

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

$$\left(-4\,i\,\sqrt{2}\,B\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(-1+\sqrt{2}\right)\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(1+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]-\right.$$

$$4\,i\,\sqrt{2}\,B\,\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\left(1+\sqrt{2}\right)\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\left(-1+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}\right]-$$

$$2\,(A-5\,B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]+$$

$$2\,(A-5\,B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]+4\,\sqrt{2}\,B\,\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$

$$2\,\sqrt{2}\,B\,\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$

$$2\,\sqrt{2}\,B\,\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$

$$\left.\frac{A-B}{\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^2}+\frac{-A+B}{\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^2}\right)$$

Problem 262: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^{7/2}\,(A+B\,\text{Sec}[c+d\,x])}{(a+a\,\text{Sec}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 246 leaves, 8 steps):

$$\frac{(2A-5B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{a^{5/2}\,d}-\frac{(43A-115B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{16\sqrt{2}\,a^{5/2}\,d}+\frac{(A-B)\,\text{Sec}[c+dx]^{7/2}\,\text{Sin}[c+dx]}{4d\,(a+a\,\text{Sec}[c+dx])^{5/2}}+\frac{(7A-15B)\,\text{Sec}[c+dx]^{5/2}\,\text{Sin}[c+dx]}{16\,a\,d\,(a+a\,\text{Sec}[c+dx])^{3/2}}-\frac{(11A-35B)\,\text{Sec}[c+dx]^{3/2}\,\text{Sin}[c+dx]}{16\,a^2\,d\,\sqrt{a+a\,\text{Sec}[c+dx]}}$$

Result (type 3, 1304 leaves):

$$-\left(\left((1-i)\left((1+i)-i\sqrt{2}\right)\left((-6-2i)A-2\sqrt{2}A+(15+5i)B+5\sqrt{2}B\right)\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{-\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\text{Sec}[c+dx]^{5/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)\right)+$$

$$\left((1-i)\left((1+i)+\sqrt{2}\right)\left((6-2i)A-2\sqrt{2}A-(15-5i)B+5\sqrt{2}B\right)\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}(c+dx)\right]}{\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]}\right]\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\text{Sec}[c+dx]^{5/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)+$$

$$\left((43A-115B)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+dx)\right]-\text{Sin}\left[\frac{1}{4}(c+dx)\right]\right]\text{Sec}[c+dx]^{5/2}\right)\Big/\left(4d\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)+$$

$$\left((-43A+115B)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+dx)\right]+\text{Sin}\left[\frac{1}{4}(c+dx)\right]\right]\text{Sec}[c+dx]^{5/2}\right)\Big/\left(4d\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)+$$

$$\left(2\left(4A+2i\sqrt{2}A-10B-5i\sqrt{2}B\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}[c+dx]^{5/2}\right)\Big/\left(\left(i+\sqrt{2}\right)d\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)+$$

$$\left(\left(\frac{1}{2}+\frac{i}{2}\right)\left((1+i)-i\sqrt{2}\right)\left((-6-2i)A-2\sqrt{2}A+(15+5i)B+5\sqrt{2}B\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}[c+dx]^{5/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right)d\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right)-$$

$$\left(\left(\frac{1}{2}+\frac{i}{2}\right)\left((1+i)+\sqrt{2}\right)\left((6-2 i) A-2\sqrt{2} A-(15-5 i) B+5\sqrt{2} B\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^5 \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}[c+d x]^{5/2}\right)\Big/\left(\sqrt{2}\left(i+\sqrt{2}\right) d\left(a(1+\operatorname{Sec}[c+d x])\right)^{5/2}\right)+\frac{(-A+B)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^5\operatorname{Sec}[c+d x]^{5/2}}{8 d\left(a(1+\operatorname{Sec}[c+d x])\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)^4}+\frac{(-11 A+19 B)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^5\operatorname{Sec}[c+d x]^{5/2}}{8 d\left(a(1+\operatorname{Sec}[c+d x])\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}+\frac{(A-B)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^5\operatorname{Sec}[c+d x]^{5/2}}{8 d\left(a(1+\operatorname{Sec}[c+d x])\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)^4}+\frac{(11 A-19 B)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^5\operatorname{Sec}[c+d x]^{5/2}}{8 d\left(a(1+\operatorname{Sec}[c+d x])\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}+\frac{4 B\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^5\operatorname{Sec}[c+d x]^{5/2}}{d\left(a(1+\operatorname{Sec}[c+d x])\right)^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{4 B\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^5\operatorname{Sec}[c+d x]^{5/2}}{d\left(a(1+\operatorname{Sec}[c+d x])\right)^{5/2}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}$$

Problem 263: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{Sec}[c+d x]^{5/2}\left(A+B\operatorname{Sec}[c+d x]\right)}{\left(a+a\operatorname{Sec}[c+d x]\right)^{5/2}}\,dx$$

Optimal (type 3, 194 leaves, 7 steps):

$$\frac{2 B\operatorname{ArcSinh}\left[\frac{\sqrt{a}\operatorname{Tan}[c+d x]}{\sqrt{a+a\operatorname{Sec}[c+d x]}}\right]}{a^{5/2} d}+\frac{(3 A-43 B)\operatorname{ArcTanh}\left[\frac{\sqrt{a}\sqrt{\operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{\sqrt{2}\sqrt{a+a\operatorname{Sec}[c+d x]}}\right]}{16\sqrt{2} a^{5/2} d}+\frac{(A-B)\operatorname{Sec}[c+d x]^{5/2}\operatorname{Sin}[c+d x]}{4 d\left(a+a\operatorname{Sec}[c+d x]\right)^{5/2}}+\frac{(3 A-11 B)\operatorname{Sec}[c+d x]^{3/2}\operatorname{Sin}[c+d x]}{16 a d\left(a+a\operatorname{Sec}[c+d x]\right)^{3/2}}$$

Result (type 3, 988 leaves):

$$-\left(\left(\left(2\left((-1+i)+\sqrt{2}\right)\left((1+i)+\sqrt{2}\right) B\right.\right.\right.$$

$$\text{ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{-\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]}\right]\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5$$

$$\left.\text{Sec}[c+d\,x]^{5/2}\right)\Big/\left(d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)-\left(2\left(\left(-1+i\right)+\sqrt{2}\right)\right.$$

$$\left(\left(1+i\right)+\sqrt{2}\right)\text{B ArcTan}\left[\frac{\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]+\sqrt{2}\,\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]}\right]$$

$$\left.\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\text{Sec}[c+d\,x]^{5/2}\right)\Big/\left(d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$

$$\left(\left(-3\,A+43\,B\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\text{Log}\left[\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]\right]\text{Sec}[c+d\,x]^{5/2}\right)\Big/$$

$$\left(4\,d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$

$$\left(\left(3\,A-43\,B\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\text{Log}\left[\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]\right]\text{Sec}[c+d\,x]^{5/2}\right)\Big/$$

$$\left(4\,d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$

$$\left(4\sqrt{2}\,\text{B Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\text{Log}\left[\sqrt{2}+2\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]\text{Sec}[c+d\,x]^{5/2}\right)\Big/$$

$$\left(d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+$$

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

$$\left.\text{Log}\left[2-\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]\text{Sec}[c+d\,x]^{5/2}\right)\Big/$$

$$\left(d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+\left(i\left(\left(-1+i\right)+\sqrt{2}\right)\left(\left(1+i\right)+\sqrt{2}\right)\text{B Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\right.$$

$$\left.\text{Log}\left[2+\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\sqrt{2}\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]\text{Sec}[c+d\,x]^{5/2}\right)\Big/$$

$$\left(d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+\frac{\left(A-B\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\text{Sec}[c+d\,x]^{5/2}}{8\,d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]\right)^4}+$$

$$\frac{\left(3\,A-11\,B\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\text{Sec}[c+d\,x]^{5/2}}{8\,d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]-\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]\right)^2}+$$

$$\frac{\left(-A+B\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\text{Sec}[c+d\,x]^{5/2}}{8\,d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]\right)^4}+$$

$$\frac{\left(-3\,A+11\,B\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5\text{Sec}[c+d\,x]^{5/2}}{8\,d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]+\text{Sin}\left[\frac{1}{4}\left(c+d\,x\right)\right]\right)^2}$$

Problem 266: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d\,x]}{\sqrt{\text{Sec}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

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

$$-\frac{(75\,A-19\,B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}-\frac{(A-B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}-\frac{(13\,A-5\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{16\,a\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}+\frac{(49\,A-9\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{16\,a^2\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 491 leaves):

$$\left((75\,A-19\,B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]\,\text{Sec}[c+d\,x]^{5/2}\right)\Big/\left(4\,d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+\left((-75\,A+19\,B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right]\,\text{Sec}[c+d\,x]^{5/2}\right)\Big/\left(4\,d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+\frac{(-A+B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^4}+\frac{(21\,A-13\,B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^2}+\frac{(A-B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^4}+\frac{(-21\,A+13\,B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^2}+\frac{16\,A\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}}$$

Problem 267: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sec}[c+d\,x]}{\text{Sec}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 250 leaves, 6 steps):

$$\frac{(163\,A-75\,B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}-\frac{(A-B)\,\text{Sin}[c+d\,x]}{4\,d\,\sqrt{\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^{5/2}}-\frac{(17\,A-9\,B)\,\text{Sin}[c+d\,x]}{16\,a\,d\,\sqrt{\text{Sec}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}+\frac{(95\,A-39\,B)\,\text{Sin}[c+d\,x]}{48\,a^2\,d\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{(299\,A-147\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{48\,a^2\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 551 leaves):

$$\left((-163\,A+75\,B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right]\,\text{Sec}[c+d\,x]^{5/2}\right)\Big/\left(4\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)+\left((163\,A-75\,B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right]\,\text{Sec}[c+d\,x]^{5/2}\right)\Big/\left(4\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)+\frac{(A-B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^4}+\frac{(-29\,A+21\,B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^2}+\frac{(-A+B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^4}+\frac{(29\,A-21\,B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^2}+\frac{8\,(-5\,A+2\,B)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}}+\frac{8\,A\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]}{3\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}}$$

Problem 268: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Sec}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 297 leaves, 7 steps):

$$-\frac{(283\,A-163\,B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}-\frac{(A-B)\,\text{Sin}[c+d\,x]}{4\,d\,\text{Sec}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^{5/2}}-\frac{(21\,A-13\,B)\,\text{Sin}[c+d\,x]}{16\,a\,d\,\text{Sec}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}+\frac{(157\,A-85\,B)\,\text{Sin}[c+d\,x]}{80\,a^2\,d\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{(787\,A-475\,B)\,\text{Sin}[c+d\,x]}{240\,a^2\,d\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{(2671\,A-1495\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{240\,a^2\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 609 leaves):

$$\left((283\,A-163\,B)\,\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]\,\text{Sec}[c+d\,x]^{5/2}\right)\Big/\left(4\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)+\left((-283\,A+163\,B)\,\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]\,\text{Sec}[c+d\,x]^{5/2}\right)\Big/\left(4\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\right)+\frac{(-A+B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{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}+\frac{(37\,A-29\,B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{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}+\frac{(A-B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{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}+\frac{(-37\,A+29\,B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}}{8\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{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}-\frac{40\,(-2\,A+B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}}+\frac{4\,(-5\,A+2\,B)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]}{3\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}}+\frac{4\,A\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]}{5\,d\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}}$$

Problem 269: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 406 leaves, 9 steps):

$$\left(3\sqrt{2}\ \text{A AppellF1}\left[\frac{7}{6},\frac{1}{2},1,\frac{13}{6},\frac{1}{2}\left(1+\text{Sec}[c+d x]\right),1+\text{Sec}[c+d x]\right]\left(a+a\,\text{Sec}[c+d x]\right)^{2/3}\text{Tan}[c+d x]\right)\Big/\left(7 d\sqrt{1-\text{Sec}[c+d x]}\right)+\frac{3 B\left(a+a\,\text{Sec}[c+d x]\right)^{2/3}\text{Tan}[c+d x]}{2 d\left(1+\text{Sec}[c+d x]\right)}-$$

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

Result (type 6, 7123 leaves):

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

$$\Bigg(\text{Cos}[c+d x]\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{2/3}\left(A+B\,\text{Sec}[c+d x]\right)$$

$$\left(\frac{1}{2}\text{A Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(1+\text{Sec}[c+d x]\right)^{2/3}+\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\frac{1}{2}A\left(1+\text{Sec}[c+d x]\right)^{2/3}+\frac{1}{4}B\left(1+\text{Sec}[c+d x]\right)^{2/3}\right)\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{2/3}\Bigg(10\,\text{B AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

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

$$\left(12\,A+B\left(3+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(2^{1/3}\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\Bigg(-9\,\mathrm{AppellF1}\left[\frac{1}{2},\,\frac{2}{3},\,1,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

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

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

$$\Bigg(-15\,\mathrm{AppellF1}\left[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

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

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

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

$$\Bigg(10\,B\,\mathrm{AppellF1}\left[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$

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

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

$$9\,\mathrm{AppellF1}\left[\frac{1}{2},\,\frac{2}{3},\,1,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\Bigg(-2\,(4\,A+B)$$

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

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

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

$$\left(12\,A+B\left(3+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\Bigg)\Bigg)\Bigg)\Bigg/\left(2^{1/3}\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2$$

$$\Bigg(-9\,\mathrm{AppellF1}\left[\frac{1}{2},\,\frac{2}{3},\,1,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

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

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

$$\Bigg(-15\,\mathrm{AppellF1}\left[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

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

$$\Bigg(\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{2/3}\Bigg(10\,B\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$\left(12\,A+B\left(3+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Bigg)\Bigg)\Bigg)\Bigg/\left(2\times 2^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$

$$\Bigg(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)$$

$$\Bigg(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)+$$

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

$$\Bigg(10\,B\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\left(-2\,(4\,A+B)\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+\right.$$
$$\left.d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left.\left.\left(12\,A+B\left(3+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\right)\Big/\left(3\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$

$$\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$

$$\left(\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{2/3}\left(2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\right.\right.\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$
$$9\left(-\frac{1}{3}\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{9}\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$
$$\left(3\left(-\frac{6}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)-$$
$$2\left(-\frac{3}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\left[\right.\right.$$

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

$$\Big(10\,B\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^{2}\right]$$

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

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^{2}\right]$$

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

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

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

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

$$\Big(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^{2}\right]+$$

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

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

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

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

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

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

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

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

$$15\,\Big(-\frac{3}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^{2}\right]$$

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

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

$$\Big(3\,\Big(-\frac{10}{7}\,\text{AppellF1}\left[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^{2},-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^{2}\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{10}{21}\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\right.$$

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

$$2\Big(-\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{25}{21}\text{AppellF1}\Big[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\text{Tan}\Big[$$

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

$$\Big(10\,B\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

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

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

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

$$\Big(2^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big(-9\,\text{AppellF1}\Big[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

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

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

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

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

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

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

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

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

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

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

$$10\,B\ \Big(-3\,\text{AppellF1}[\tfrac{3}{2},\ \tfrac{2}{3},\ 2,\ \tfrac{5}{2},\ \text{Tan}[\tfrac{1}{2}(c+d\,x)]^2,\ -\text{Tan}[\tfrac{1}{2}(c+d\,x)]^2] +$$

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

$$\text{Tan}[\tfrac{1}{2}(c+d\,x)]^4\ \Big(-\tfrac{3}{5}\,\text{AppellF1}[\tfrac{5}{2},\ \tfrac{2}{3},\ 2,\ \tfrac{7}{2},\ \text{Tan}[\tfrac{1}{2}(c+d\,x)]^2,$$

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

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

$$10\,B\,\text{AppellF1}[\tfrac{3}{2},\ \tfrac{2}{3},\ 1,\ \tfrac{5}{2},\ \text{Tan}[\tfrac{1}{2}(c+d\,x)]^2,\ -\text{Tan}[\tfrac{1}{2}(c+d\,x)]^2]\ \text{Tan}[\tfrac{1}{2}(c+d\,x)]^4$$

$$\Big(-3\ \Big(-\tfrac{6}{5}\,\text{AppellF1}[\tfrac{5}{2},\ \tfrac{2}{3},\ 3,\ \tfrac{7}{2},\ \text{Tan}[\tfrac{1}{2}(c+d\,x)]^2,\ -\text{Tan}[\tfrac{1}{2}(c+d\,x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(c+d\,x)]^2\ \text{Tan}[\tfrac{1}{2}(c+d\,x)] + \tfrac{2}{5}\,\text{AppellF1}[\tfrac{5}{2},\ \tfrac{5}{3},\ 2,\ \tfrac{7}{2},$$

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

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

$$\text{Sec}[\tfrac{1}{2}(c+d\,x)]^2\ \text{Tan}[\tfrac{1}{2}(c+d\,x)] + \text{AppellF1}[\tfrac{5}{2},\ \tfrac{8}{3},\ 1,\ \tfrac{7}{2},\ \text{Tan}[$$

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

$$9\ \Big(-\tfrac{1}{3}\,\text{AppellF1}[\tfrac{3}{2},\ \tfrac{2}{3},\ 2,\ \tfrac{5}{2},\ \text{Tan}[\tfrac{1}{2}(c+d\,x)]^2,\ -\text{Tan}[\tfrac{1}{2}(c+d\,x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(c+d\,x)]^2\ \text{Tan}[\tfrac{1}{2}(c+d\,x)] + \tfrac{2}{9}\,\text{AppellF1}[\tfrac{3}{2},\ \tfrac{5}{3},\ 1,\ \tfrac{5}{2},$$

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

$$\Big(-2\ (4\,A+B)\ \Big(3\,\text{AppellF1}[\tfrac{5}{2},\ \tfrac{2}{3},\ 2,\ \tfrac{7}{2},\ \text{Tan}[\tfrac{1}{2}(c+d\,x)]^2,\ -\text{Tan}[\tfrac{1}{2}(c+d\,x)]^2] -$$

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

$$\text{Tan}[\tfrac{1}{2}(c+d\,x)]^2 + 5\,\text{AppellF1}[\tfrac{3}{2},\ \tfrac{2}{3},\ 1,\ \tfrac{5}{2},\ \text{Tan}[\tfrac{1}{2}(c+d\,x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(c+d\,x)]^2]\ \Big(12\,A + B\ \Big(3 + \text{Tan}[\tfrac{1}{2}(c+d\,x)]^2\Big)\Big)\Big) +$$

$$9\,\text{AppellF1}[\tfrac{1}{2},\ \tfrac{2}{3},\ 1,\ \tfrac{3}{2},\ \text{Tan}[\tfrac{1}{2}(c+d\,x)]^2,\ -\text{Tan}[\tfrac{1}{2}(c+d\,x)]^2]$$

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

$$\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]-2\,(4 A+B)\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},$$
$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]-2\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},$$
$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]-$$
$$2\,(4 A+B)\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\,\Big(3\,\Big(-\frac{10}{7}\,\text{AppellF1}\Big[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,$$
$$-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+\frac{10}{21}\,\text{AppellF1}\Big[$$
$$\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2$$
$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big)-2\,\Big(-\frac{5}{7}\,\text{AppellF1}\Big[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,$$
$$-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+$$
$$\frac{25}{21}\,\text{AppellF1}\Big[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]$$
$$\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big)\Big)+5\,\Big(-\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},$$
$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+$$
$$\frac{2}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]$$
$$\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big)\,\Big(12 A+B\,\Big(3+\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big)\Big)\Big)\Big)\Big)\Big)\Big/$$
$$\Big(2^{1/3}\,\Big(1+\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big)\,\Big(-9\,\text{AppellF1}\Big[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,$$
$$-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]+$$
$$2\,\Big(3\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]-2\,\text{AppellF1}\Big[$$
$$\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big)$$
$$\Big(-15\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]+$$
$$2\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]-2\,\text{AppellF1}\Big[\frac{5}{2},$$
$$\frac{5}{3},1,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big)\Big)\Big)$$

Problem 270: Result more than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Sec}[c + d x]}{(a + a \operatorname{Sec}[c + d x])^{1/3}} \, dx$$

Optimal (type 6, 354 leaves, 8 steps):

$$\left(3 \sqrt{2} \text{ A AppellF1}\left[\frac{1}{6}, \frac{1}{2}, 1, \frac{7}{6}, \frac{1}{2} (1 + \operatorname{Sec}[c + d x]), 1 + \operatorname{Sec}[c + d x]\right] \operatorname{Tan}[c + d x]\right) \Big/ \left(d \sqrt{1 - \operatorname{Sec}[c + d x]} \, (a + a \operatorname{Sec}[c + d x])^{1/3}\right) - \left(3^{3/4} \text{ B EllipticF}\left[\operatorname{ArcCos}\left[\frac{2^{1/3} - \left(1 - \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}}{2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}}\right], \frac{1}{4} \left(2 + \sqrt{3}\right)\right] \left(2^{1/3} - (1 + \operatorname{Sec}[c + d x])^{1/3}\right) \sqrt{\frac{2^{2/3} + 2^{1/3} (1 + \operatorname{Sec}[c + d x])^{1/3} + (1 + \operatorname{Sec}[c + d x])^{2/3}}{\left(2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}\right)^2}} \operatorname{Tan}[c + d x]\right) \Big/ \left(2^{1/3} d \, (1 - \operatorname{Sec}[c + d x]) \, (a + a \operatorname{Sec}[c + d x])^{1/3} \sqrt{-\frac{(1 + \operatorname{Sec}[c + d x])^{1/3} \left(2^{1/3} - (1 + \operatorname{Sec}[c + d x])^{1/3}\right)}{\left(2^{1/3} - \left(1 + \sqrt{3}\right) (1 + \operatorname{Sec}[c + d x])^{1/3}\right)^2}}\right)$$

Result (type 6, 7136 leaves):

$$\left(2^{2/3} \operatorname{Cos}[c + d x]^2 \left(\operatorname{Cos}\left[\frac{1}{2} (c + d x)\right]^2 \operatorname{Sec}[c + d x]\right)^{5/3} (1 + \operatorname{Sec}[c + d x])^{1/3} (A + B \operatorname{Sec}[c + d x]) \left(\frac{1}{2} B \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^2 (1 + \operatorname{Sec}[c + d x])^{2/3} + \frac{1}{2} 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}\right) \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right] \left(10 (A - B) \text{ 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 \text{ 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 \text{ 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}, \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2, -\operatorname{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}, \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2\right] (A + 2 B + (2 A + B) \operatorname{Cos}[c + d x]) \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^2 + 2 (A + B) \left(3 \text{ AppellF1}\left[\frac{5}{2}, \frac{2}{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] - 2 \text{ AppellF1}\left[\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\right]\right) \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]^2\right)\right)\right) \Big/$$

$$\left(d\,(B+A\,\text{Cos}[c+d\,x])\,(a\,(1+\text{Sec}[c+d\,x]))^{1/3}\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\right.\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$
$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$
$$\left.\left.2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\left(\left(\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{5/3}\right.\right.$$
$$\left(10\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\left(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$(A+2\,B+(2\,A+B)\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(A+B)$$
$$\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\right)\Big/$$
$$\left(2^{1/3}\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$
$$\left(2^{2/3}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{5/3}\text{Sin}[c+d\,x]\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right.$$

$$\Big(10\,(A-B)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

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

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

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^4-9\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{2}{3},\,1,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

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

$$\big(A+2\,B+(2\,A+B)\,\text{Cos}[c+d\,x]\big)\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2+2\,(A+B)$$

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

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

$$\Big(\Big(-9\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{2}{3},\,1,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+$$

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

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

$$\Big(-15\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+$$

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

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

$$\Big(2^{2/3}\,\text{Cos}[c+d\,x]\,\Big(\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Sec}[c+d\,x]\Big)^{5/3}\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]$$

$$\Big(10\,(A-B)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2}{3},\,1,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

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

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

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^4-9\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{2}{3},\,1,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

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

$$\big(A+2\,B+(2\,A+B)\,\text{Cos}[c+d\,x]\big)\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2+2\,(A+B)$$

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

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

$$\left(2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-9\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{9}\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\right.$$
$$\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+$$
$$2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(3\left(-\frac{6}{5}\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+\right.\right.\right.\right.$$
$$\left.\left.d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-$$
$$2\left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\Big/$$
$$\left(\left(\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.\right.\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2$$
$$\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$
$$\left(2^{2/3}\,\text{Cos}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{5/3}\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right.$$
$$\left(10\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\left(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left(A+2B+(2A+B)\,\mathrm{Cos}[c+dx]\right)\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2+2\,(A+B)$$
$$\left(3\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\,\mathrm{AppellF1}\left[\right.\right.$$
$$\left.\left.\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)\Big)$$
$$\left(2\left(3\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-\right.\right.$$
$$\left.2\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)$$
$$\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]-$$
$$15\left(-\frac{3}{5}\mathrm{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{2}{5}\mathrm{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$
$$\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\right)+2\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2$$
$$\left(3\left(-\frac{10}{7}\mathrm{AppellF1}\left[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.\right.$$
$$\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{10}{21}\mathrm{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\right.$$
$$\left.\left.\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\right)-$$
$$2\left(-\frac{5}{7}\mathrm{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{25}{21}\mathrm{AppellF1}\left[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}(c+\right.\right.$$
$$\left.\left.\left.\left.\left.dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\right)\right)\right)\Big/$$
$$\left(\left(\left(-9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.\right.\right.$$
$$2\left(3\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\,\mathrm{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)$$
$$\left(-15\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$
$$2\left(3\,\mathrm{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\,\mathrm{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\Big)+$$
$$\left(2^{2/3}\,\mathrm{Cos}[c+dx]\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Sec}[c+dx]\right)^{5/3}\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\right.$$
$$\left(20\,(A-B)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+10\,(A-B)$$
$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4$$
$$\left(-\frac{3}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)-$$
$$9\left(-\frac{1}{3}\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{9}\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$
$$\left(-5\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$(A+2\,B+(2\,A+B)\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(A+B)$$
$$\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)+$$
$$10\,(A-B)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4$$
$$\left(3\left(-\frac{6}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)-$$
$$2\left(-\frac{3}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\text{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)-$$

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

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

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

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

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

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

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

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

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

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

$$2\,(A+B)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg(3\,\Bigg(-\frac{10}{7}\,\text{AppellF1}\left[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\frac{10}{21}\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$\left.\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{25}{21}\,\text{AppellF1}\left[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\Bigg(\Bigg(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

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

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

$$\Bigg(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

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

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

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

$$\Big(10 (A-B) \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

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

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4 - 9 \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

$$\big(A+2 B+(2 A+B) \text{Cos}[c+d x]\big) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 + 2 (A+B)$$

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

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

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

$$\text{Sec}[c+d x] \text{Tan}[c+d x]\Big)\Big) \Big/$$

$$\Big(3 \Big(-9 \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] +$$

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

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

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

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

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

Problem 271: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 415 leaves, 9 steps):

$$\frac{3\,B\,\mathrm{Tan}[c+d\,x]}{5\,a\,d\,(1+\mathrm{Sec}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}}-$$

$$\left(3\sqrt{2}\,A\,\mathrm{AppellF1}\left[-\frac{5}{6},\frac{1}{2},1,\frac{1}{6},\frac{1}{2}\,(1+\mathrm{Sec}[c+d\,x]),1+\mathrm{Sec}[c+d\,x]\right]\mathrm{Tan}[c+d\,x]\right)\Big/$$

$$\left(5\,a\,d\,\sqrt{1-\mathrm{Sec}[c+d\,x]}\,(1+\mathrm{Sec}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\right)-$$

$$\left(3^{3/4}\,B\,\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)(1+\mathrm{Sec}[c+d\,x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$

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

$$\left.\mathrm{Tan}[c+d\,x]\right)\Big/\left(5\times 2^{1/3}\,a\,d\,(1-\mathrm{Sec}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^{1/3}\right.$$

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

Result (type 6, 7385 leaves):

$$\left(\mathrm{Cos}[c+d\,x]\,((1+\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x])^{2/3}\,(1+\mathrm{Sec}[c+d\,x])^{4/3}\right.$$

$$(A+B\,\mathrm{Sec}[c+d\,x])\left(\frac{3}{5}\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]\left(-A\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]+B\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-\right.$$

$$\left.\left.\frac{3}{10}\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\left(-A\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]+B\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\Big/$$

$$\left(d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a\,(1+\mathrm{Sec}[c+d\,x]))^{4/3}\right)+$$

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

$$(A+B\,\mathrm{Sec}[c+d\,x])\left(\frac{1}{2}A\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2(1+\mathrm{Sec}[c+d\,x])^{2/3}+\right.$$

$$\left.\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(-\frac{1}{10}A\,(1+\mathrm{Sec}[c+d\,x])^{2/3}+\frac{1}{10}B\,(1+\mathrm{Sec}[c+d\,x])^{2/3}\right)\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\left(10\,(6\,A-B)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

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

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

$$9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$\left(3 A+2 B+(9 A+B) \operatorname{Cos}[c+d x]\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2+2 (4 A+B)$$
$$\left(3 \text{AppellF1}\left[\frac{5}{2}, \frac{2}{3}, 2, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2 \text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\left.\frac{5}{3}, 1, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right) \Big/$$
$$\left(5 d\left(B+A \operatorname{Cos}[c+d x]\right)\left(a\left(1+\operatorname{Sec}[c+d x]\right)\right)^{4/3}\left(-9 \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, 1, \frac{3}{2},\right.\right.\right.$$
$$\left.\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$
$$2\left(3 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 2, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$\left.\left.2 \text{AppellF1}\left[\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)$$
$$\left(-15 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(3 \text{AppellF1}\left[\frac{5}{2}, \frac{2}{3}, 2, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$\left.\left.2 \text{AppellF1}\left[\frac{5}{2}, \frac{5}{3}, 1, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)$$
$$\left(\left(\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]\right)^{5/3}\right.\right.$$
$$\left(10 (6 A-B) \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\left(3 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 2, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2 \text{AppellF1}\left[\right.\right.$$
$$\left.\left.\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^4-$$
$$9 \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, 1, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\left(-5 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\left(3 A+2 B+(9 A+B) \operatorname{Cos}[c+d x]\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2+2 (4 A+B)\left(3 \text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\frac{2}{3}, 2, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2 \text{AppellF1}\left[\frac{5}{2}, \frac{5}{3},\right.$$
$$\left.\left.\left.\left.1, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right) \Big/$$
$$\left(5 \times 2^{1/3}\left(-9 \text{AppellF1}\left[\frac{1}{2}, \frac{2}{3}, 1, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.\right.$$
$$2\left(3 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 2, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2 \text{AppellF1}\left[\right.\right.$$
$$\left.\left.\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$
$$\left(-15 \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

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

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

$$\Bigg(10\,(6\,A-B)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$(3\,A+2\,B+(9\,A+B)\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+2\,(4\,A+B)\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(5\,\Bigg(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

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

$$\Bigg(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$

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

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

$$\Bigg(10\,(6\,A-B)\,\text{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$9\,\text{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

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

$$\left(3 A+2 B+\left(9 A+B\right) \operatorname{Cos}[c+d x]\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2+2 (4 A+B)$$
$$\left(3 \operatorname{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2 \operatorname{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{5}{2},\frac{5}{3},1,\frac{7}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)$$
$$\left(2 \left(3 \operatorname{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2 \operatorname{AppellF1}\left[\right.\right.\right.$$
$$\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\right.$$
$$\left.\frac{1}{2}(c+d x)\right]-9 \left(-\frac{1}{3} \operatorname{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{9} \operatorname{AppellF1}\left[\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\left(3 \left(-\frac{6}{5} \operatorname{AppellF1}\left[\frac{5}{2},\frac{2}{3},3,\frac{7}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.\right.$$
$$\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{2}{5} \operatorname{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\right.$$
$$\left.\left.\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-$$
$$2 \left(-\frac{3}{5} \operatorname{AppellF1}\left[\frac{5}{2},\frac{5}{3},2,\frac{7}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Sec}\left[\right.\right.$$
$$\left.\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+\operatorname{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\Big/$$
$$\left(5 \left(-9 \operatorname{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.\right.$$
$$2 \left(3 \operatorname{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2 \operatorname{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{5}{3},1,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2$$
$$\left(-15 \operatorname{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2 \left(3 \operatorname{AppellF1}\left[\frac{5}{2},\frac{2}{3},2,\frac{7}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2 \operatorname{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\frac{5}{3},1,\frac{7}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$
$$\left(2^{2/3} \operatorname{Cos}[c+d x] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]\right)^{5/3} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right.$$
$$\left(10 (6 A-B) \operatorname{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\left(3 \operatorname{AppellF1}\left[\frac{3}{2},\frac{2}{3},2,\frac{5}{2},\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2 \operatorname{AppellF1}\left[\right.\right.$$

$$\frac{3}{2},\ \frac{5}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4-$$
$$9\,\text{AppellF1}\left[\frac{1}{2},\ \frac{2}{3},\ 1,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$
$$\Big(-5\,\text{AppellF1}\left[\frac{3}{2},\ \frac{2}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$
$$\left(3\,A+2\,B+\left(9\,A+B\right)\,\text{Cos}\left[c+d\,x\right]\right)\,\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+2\,\left(4\,A+B\right)$$
$$\Big(3\,\text{AppellF1}\left[\frac{5}{2},\ \frac{2}{3},\ 2,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]-2\,\text{AppellF1}\Big[$$
$$\frac{5}{2},\ \frac{5}{3},\ 1,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)\Big)$$
$$\Big(2\,\Big(3\,\text{AppellF1}\left[\frac{5}{2},\ \frac{2}{3},\ 2,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]-$$
$$2\,\text{AppellF1}\left[\frac{5}{2},\ \frac{5}{3},\ 1,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\Big)$$
$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-15\,\Big(-\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\ \frac{2}{3},\ 2,\ \frac{7}{2},$$
$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$
$$\frac{2}{5}\,\text{AppellF1}\left[\frac{5}{2},\ \frac{5}{3},\ 1,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)+2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$
$$\Big(3\,\Big(-\frac{10}{7}\,\text{AppellF1}\left[\frac{7}{2},\ \frac{2}{3},\ 3,\ \frac{9}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{10}{21}\,\text{AppellF1}\Big[\frac{7}{2},\ \frac{5}{3},\ 2,\ \frac{9}{2},$$
$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)-$$
$$2\,\Big(-\frac{5}{7}\,\text{AppellF1}\left[\frac{7}{2},\ \frac{5}{3},\ 2,\ \frac{9}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{25}{21}\,\text{AppellF1}\Big[\frac{7}{2},\ \frac{8}{3},\ 1,\ \frac{9}{2},\ \text{Tan}\Big[\frac{1}{2}\,\big(c+$$
$$d\,x\big)\Big]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big)\Big)\Big)\Big/$$
$$\Big(5\,\Big(-9\,\text{AppellF1}\left[\frac{1}{2},\ \frac{2}{3},\ 1,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+$$
$$2\,\Big(3\,\text{AppellF1}\left[\frac{3}{2},\ \frac{2}{3},\ 2,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]-2\,\text{AppellF1}\Big[$$
$$\frac{3}{2},\ \frac{5}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)$$
$$\Big(-15\,\text{AppellF1}\left[\frac{3}{2},\ \frac{2}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+$$
$$2\,\Big(3\,\text{AppellF1}\left[\frac{5}{2},\ \frac{2}{3},\ 2,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]-2\,\text{AppellF1}\Big[\frac{5}{2},$$

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

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

$$\Big(20 (6 A-B) \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^3 + 10 (6 A-B)$$

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

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

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

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

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

$$9 \Big(-\frac{1}{3} \text{AppellF1}\left[\frac{3}{2}, \frac{2}{3}, 2, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{2}{9} \text{AppellF1}\left[\frac{3}{2}, \frac{5}{3}, 1, \frac{5}{2},\right.$$

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

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

$$\big(3 A+2 B+(9 A+B) \text{Cos}[c+d x]\big) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 + 2 (4 A+B) \Big(3 \text{AppellF1}\left[\frac{5}{2},\right.$$

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

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big) + 10 (6 A-B)$$

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

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

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

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

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

$$\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{AppellF1}\left[\frac{5}{2},\frac{8}{3},1,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big)\Big)-$$

$$9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$

$$\Big(5\,(9\,A+B)\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Sin}[c+d\,x]+$$

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

$$\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-5\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,(3\,A+2\,B+(9\,A+B)\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-5\,(3\,A+2\,B+(9\,A+B)\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$2\,(4\,A+B)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\Big(3\,\Big(-\frac{10}{7}\,\mathrm{AppellF1}\left[\frac{7}{2},\frac{2}{3},3,\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$

$$\frac{10}{21}\,\mathrm{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big)-2\,\Big(-\frac{5}{7}\,\mathrm{AppellF1}\left[\frac{7}{2},\frac{5}{3},2,\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{25}{21}\,\mathrm{AppellF1}\left[\frac{7}{2},\frac{8}{3},1,\frac{9}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(5\,\Big(-9\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

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

$$\Big(-15\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]+$$

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

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

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

$$\Big(10\,(6 A-B)\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]$$

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

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

$$9\,\text{AppellF1}\Big[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]$$

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

$$\Big(3 A+2 B+(9 A+B)\,\text{Cos}[c+d x]\Big)\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2+2\,(4 A+B)$$

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

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

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

$$\text{Sec}[c+d x]\,\text{Tan}[c+d x]\Big)\Big)\Big/$$

$$\Big(3\,\Big(-9\,\text{AppellF1}\Big[\frac{1}{2},\frac{2}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]+$$

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

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

$$\Big(-15\,\text{AppellF1}\Big[\frac{3}{2},\frac{2}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]+$$

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

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

Problem 272: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 787 leaves, 11 steps):

$$\frac{3\,a\,B\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\,\text{Tan}[c+d\,x]}{4\,d}+$$

$$\left(3\sqrt{2}\;a\,A\,\text{AppellF1}\left[\frac{11}{6},\frac{1}{2},1,\frac{17}{6},\frac{1}{2}\left(1+\text{Sec}[c+d\,x]\right),1+\text{Sec}[c+d\,x]\right]\right.$$
$$\left.\left(1+\text{Sec}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\text{Tan}[c+d\,x]\right)\Big/\left(11\,d\sqrt{1-\text{Sec}[c+d\,x]}\right)-$$

$$\frac{15\left(1+\sqrt{3}\right)a\,B\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\text{Tan}[c+d\,x]}{4\,d\left(1+\text{Sec}[c+d\,x]\right)^{2/3}\left(2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\right)}+$$

$$\left(15\times 3^{1/4}\,a\,B\,\text{EllipticE}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\left(1+\text{Sec}[c+d\,x]\right)^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d\,x]\right)^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\left(2^{1/3}-\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\left(1+\text{Sec}[c+d\,x]\right)^{1/3}+\left(1+\text{Sec}[c+d\,x]\right)^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\right)^2}}\;\text{Tan}[c+d\,x]\right)\Bigg/\left(2\times 2^{2/3}\,d\right.$$
$$\left.\left(1-\text{Sec}[c+d\,x]\right)\left(1+\text{Sec}[c+d\,x]\right)^{2/3}\sqrt{-\frac{\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\left(2^{1/3}-\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\right)^2}}\right)+$$

$$\left(5\times 3^{3/4}\left(1-\sqrt{3}\right)a\,B\,\text{EllipticF}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\left(1+\text{Sec}[c+d\,x]\right)^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d\,x]\right)^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$\left(a+a\,\text{Sec}[c+d\,x]\right)^{1/3}\left(2^{1/3}-\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\left(1+\text{Sec}[c+d\,x]\right)^{1/3}+\left(1+\text{Sec}[c+d\,x]\right)^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\right)^2}}\;\text{Tan}[c+d\,x]\right)\Bigg/\left(4\times 2^{2/3}\,d\right.$$
$$\left.\left(1-\text{Sec}[c+d\,x]\right)\left(1+\text{Sec}[c+d\,x]\right)^{2/3}\sqrt{-\frac{\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\left(2^{1/3}-\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\right)^2}}\right)$$

Result (type 6, 5276 leaves):

$$\left(\text{Cos}[c+d\,x]\left(\left(1+\text{Cos}[c+d\,x]\right)\text{Sec}[c+d\,x]\right)^{1/3}\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{4/3}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d\,x]\right)\left(\frac{3}{4}\left(4\,A+5\,B\right)\text{Sin}[c+d\,x]+\frac{3}{4}\,B\,\text{Tan}[c+d\,x]\right)\right)\Big/$$
$$\left(d\left(B+A\,\text{Cos}[c+d\,x]\right)\left(1+\text{Sec}[c+d\,x]\right)^{4/3}\right)-\left(\text{Cos}[c+d\,x]\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{4/3}\right.$$
$$\left(A+B\,\text{Sec}[c+d\,x]\right)\left(2\,A\left(1+\text{Sec}[c+d\,x]\right)^{1/3}+\frac{5}{4}\,B\left(1+\text{Sec}[c+d\,x]\right)^{1/3}+\right.$$
$$\left.\text{Cos}[c+d\,x]\left(-3\,A\left(1+\text{Sec}[c+d\,x]\right)^{1/3}-\frac{15}{4}\,B\left(1+\text{Sec}[c+d\,x]\right)^{1/3}\right)\right)\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]$$

$$\left(\left(9\ (4 A-5 B)\ \text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\right.$$
$$\left(9\ \text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(-3\ \text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$
$$\left((4 A+5 B)\left(6\left(3\ \text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.\right.$$
$$\left.\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$
$$\text{Cos}[c+d x]\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\ \text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\right.$$
$$\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)\Big/$$
$$\left(15\ \text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(-3\ \text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\left.\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)\Big/$$
$$\left(2\times 2^{2/3}\ d\ (B+A\ \text{Cos}[c+d x])\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{2/3}\right.$$
$$(1+\text{Sec}[c+d x])^{4/3}$$
$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4\right)$$
$$\left(\left(1\Big/\left(2^{2/3}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{2/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4\right)^2\right)\right)\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4$$
$$\left(\left(9\ (4 A-5 B)\ \text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\right.$$
$$\left(9\ \text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(-3\ \text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$
$$\left((4 A+5 B)\left(6\left(3\ \text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.\right.$$
$$\left.\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$
$$\text{Cos}[c+d x]\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\ \text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\right.$$
$$\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)\Big/$$

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$

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

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

$$\left(\left(9\,(4\,A-5\,B)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\right.$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+$$

$$\left((4\,A+5\,B)\left(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\right.\right.$$

$$\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left.\left.\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Big/$$

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$

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

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

$$\left(\left(9\,(4\,A-5\,B)\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{9}\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Big/\right.$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\right.\right.\right.$$

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

$$\Big(9\ (4\,A-5\,B)\ \mathrm{AppellF1}\Big[\frac{1}{2},\ \frac{1}{3},\ 1,\ \frac{3}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]$$

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

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

$$\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+9\ \Big(-\frac{1}{3}\ \mathrm{AppellF1}\Big[\frac{3}{2},\ \frac{1}{3},\ 2,\ \frac{5}{2},$$

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

$$\frac{1}{9}\ \mathrm{AppellF1}\Big[\frac{3}{2},\ \frac{4}{3},\ 1,\ \frac{5}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]$$

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

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

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

$$-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-3\ \Big(-\frac{6}{5}\ \mathrm{AppellF1}\Big[$$

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

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

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

$$\Big(9\ \mathrm{AppellF1}\Big[\frac{1}{2},\ \frac{1}{3},\ 1,\ \frac{3}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]+2$$

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

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

$$\Big((4\,A+5\,B)\ \Big(6\ \Big(3\ \mathrm{AppellF1}\Big[\frac{5}{2},\ \frac{1}{3},\ 2,\ \frac{7}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]-$$

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

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

$$1,\ \frac{5}{2},\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \Big(-9+8\ \mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)\Big)$$

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

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+15\left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{1}{5}\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(-\frac{5}{7}\text{AppellF1}\left[\right.\right.$$
$$\left.\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-3\left(-\frac{10}{7}\text{AppellF1}\left[\right.\right.$$
$$\left.\frac{7}{2},\frac{1}{3},3,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{21}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\Big/$$
$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\right.$$
$$\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2+$$
$$\left((4 A+5 B)\left(40\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Sin}[c+d x]\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+6$$
$$\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$
$$\left.\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Cos}[c+d x]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+5\left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{1}{5}\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+6$$
$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg(\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$
$$\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+3\Bigg(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2},\frac{1}{3},3,\right.$$
$$\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{21}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$
$$2\Bigg(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\Big[$$
$$\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Bigg)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)+$$
$$\left(1\Bigg/\left(3\times 2^{2/3}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{5/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4\right)\right)\right)$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$
$$\Bigg(\Bigg(9\,(4A-5B)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\Bigg/$$
$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$
$$2\Bigg(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\text{AppellF1}\Big[$$
$$\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Bigg)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)+$$
$$\Bigg((4A+5B)\Bigg(6\Bigg(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$
$$\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)$$
$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\right.$$
$$\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg)\Bigg/$$

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\left(-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\right.$$
$$\left.\left.\left.\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\right)\right)\right)$$

Problem 273: Result more than twice size of optimal antiderivative.

$$\int(a+a\,\text{Sec}[c+d\,x])^{1/3}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 6, 739 leaves, 10 steps):

$$\left(3\sqrt{2}\, A\, \text{AppellF1}\left[\frac{5}{6},\frac{1}{2},1,\frac{11}{6},\frac{1}{2}\left(1+\text{Sec}[c+d x]\right),1+\text{Sec}[c+d x]\right]\right.$$
$$\left.\left(a+a\,\text{Sec}[c+d x]\right)^{1/3}\text{Tan}[c+d x]\right)\Big/\left(5 d\sqrt{1-\text{Sec}[c+d x]}\right)-$$
$$\frac{3\left(1+\sqrt{3}\right) B\left(a+a\,\text{Sec}[c+d x]\right)^{1/3}\text{Tan}[c+d x]}{d\left(1+\text{Sec}[c+d x]\right)^{2/3}\left(2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)}+$$
$$\left(3\times 2^{1/3}\times 3^{1/4} B\,\text{EllipticE}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\left(1+\text{Sec}[c+d x]\right)^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d x]\right)^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$\left(a+a\,\text{Sec}[c+d x]\right)^{1/3}\left(2^{1/3}-\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\left(1+\text{Sec}[c+d x]\right)^{1/3}+\left(1+\text{Sec}[c+d x]\right)^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)^2}}\,\text{Tan}[c+d x]\right)\Big/$$
$$\left(d\left(1-\text{Sec}[c+d x]\right)\left(1+\text{Sec}[c+d x]\right)^{2/3}\sqrt{-\frac{\left(1+\text{Sec}[c+d x]\right)^{1/3}\left(2^{1/3}-\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)^2}}\right)+$$
$$\left(3^{3/4}\left(1-\sqrt{3}\right) B\,\text{EllipticF}\left[\text{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\left(1+\text{Sec}[c+d x]\right)^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d x]\right)^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right.$$
$$\left(a+a\,\text{Sec}[c+d x]\right)^{1/3}\left(2^{1/3}-\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)$$
$$\left.\sqrt{\frac{2^{2/3}+2^{1/3}\left(1+\text{Sec}[c+d x]\right)^{1/3}+\left(1+\text{Sec}[c+d x]\right)^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)^2}}\,\text{Tan}[c+d x]\right)\Big/\left(2^{2/3} d\right.$$
$$\left.\left(1-\text{Sec}[c+d x]\right)\left(1+\text{Sec}[c+d x]\right)^{2/3}\sqrt{-\frac{\left(1+\text{Sec}[c+d x]\right)^{1/3}\left(2^{1/3}-\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)^2}}\right)$$

Result (type 6, 4726 leaves):

$$\left(3 B\,\text{Cos}[c+d x]\left(\left(1+\text{Cos}[c+d x]\right)\text{Sec}[c+d x]\right)^{1/3}\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{1/3}\right.$$
$$\left.\left(A+B\,\text{Sec}[c+d x]\right)\text{Sin}[c+d x]\right)\Big/\left(d\left(B+A\,\text{Cos}[c+d x]\right)\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)+$$
$$\left(2^{1/3}\,\text{Cos}[c+d x]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{1/3}\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{1/3}\left(A+B\,\text{Sec}[c+d x]\right)\right.$$
$$\left(A\left(1+\text{Sec}[c+d x]\right)^{1/3}+B\left(1+\text{Sec}[c+d x]\right)^{1/3}-3 B\,\text{Cos}[c+d x]\left(1+\text{Sec}[c+d x]\right)^{1/3}\right)\text{Tan}\Big[$$
$$\frac{1}{2}(c+d x)\Big]\left(\left(9\left(2 A-B\right)\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\right.$$
$$\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right.$$
$$\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

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

$$B\left(-3-\left(5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big/\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Bigg)\Bigg)\Bigg/$$

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

$$\Bigg(\left(9\,(2\,A-B)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\Bigg(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)+$$

$$B\left(-3-\left(5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big/\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Bigg)-$$

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

$$\Bigg(\left(9\,(2\,A-B)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/$$

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

$$\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.\left.\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$
$$B\left(-3-\left(5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big/\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\right.\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\right.$$
$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\right)+$$
$$2^{1/3}\,\text{Cos}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{1/3}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$
$$\left(-\left(\left(9\,(2A-B)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.\right.\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big/\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\left(-9\right.\right.$$
$$\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\right.\right.$$
$$\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\right.$$
$$\left.\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)+$$
$$\left(9\,(2A-B)\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{9}\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Big/$$
$$\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+$$
$$2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$
$$\left(9\,(2A-B)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\left(2\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.\right.$$

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-9\Big(-\frac{1}{3}\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},$$

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

$$\frac{1}{9}\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

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

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

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

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

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

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

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

$$\Big(\Big(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big(-9\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

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

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

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

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3\Big)\Big/\Big(\Big(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)^2\Big(-15\,\text{AppellF1}\Big[$$

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

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

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

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big/\Big(\Big(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big(-15\,\text{AppellF1}\Big[$$

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

$$\frac{1}{3}, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] - \text{AppellF1}\left[\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\bigg)\bigg) -$$

$$\left(5\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2 \left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right] + \frac{1}{5}\text{AppellF1}\left[\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\right) \Big/ \left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right) \left(-15\,\text{AppellF1}\left[\frac{3}{2}, \frac{1}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] + 2\left(3\,\text{AppellF1}\left[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] - \text{AppellF1}\left[\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right) +$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2}, \frac{1}{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] \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2 \left(2\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] - \text{AppellF1}\left[\frac{5}{2}, \frac{4}{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}(c+dx)\right] - 15\left(-\frac{3}{5}\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] \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}, 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] \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{5}{7}\text{AppellF1}\left[\frac{7}{2}, \frac{4}{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] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right] - \frac{20}{21}\text{AppellF1}\left[\frac{7}{2}, \frac{7}{3}, 1, \frac{9}{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] + 3\left(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2}, \frac{1}{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] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right] + \frac{5}{21}\text{AppellF1}\left[\frac{7}{2}, \frac{4}{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] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\right)\right)\right) \Big/$$

$$\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\right.$$
$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\right)\right)+$$
$$\frac{1}{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{2/3}}2^{1/3}\,\text{Cos}[c+d x]\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$
$$\left(\left(9(2A-B)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\right/$$
$$\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right.$$
$$\left(-9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.\left.\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$
$$B\left(-3-\left(5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big/\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\right.\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\right.$$
$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)\right)$$
$$\left(-\text{Cos}\left[\frac{1}{2}(c+d x)\right]\text{Sec}[c+d x]\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\right.$$
$$\left.\left.\left.\text{Sec}[c+d x]\,\text{Tan}[c+d x]\right)\right)\right)$$

Problem 274: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 764 leaves, 11 steps):

$$\frac{3\,B\,\mathrm{Tan}[c+d\,x]}{d\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{2/3}}-\left(3\,\sqrt{2}\;A\,\mathrm{AppellF1}\left[-\frac{1}{6},\frac{1}{2},1,\frac{5}{6},\frac{1}{2}\,\left(1+\mathrm{Sec}[c+d\,x]\right),1+\mathrm{Sec}[c+d\,x]\right]\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(d\,\sqrt{1-\mathrm{Sec}[c+d\,x]}\;\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{2/3}\right)+\frac{3\,\left(1+\sqrt{3}\right)\,B\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\,\mathrm{Tan}[c+d\,x]}{d\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{2/3}\,\left(2^{1/3}-\left(1+\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)}-$$

$$\left(3\times 2^{1/3}\times 3^{1/4}\,B\,\mathrm{EllipticE}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}}\right],\frac{1}{4}\,\left(2+\sqrt{3}\right)\right]\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\,\left(2^{1/3}-\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)\sqrt{\frac{2^{2/3}+2^{1/3}\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}+\left(1+\mathrm{Sec}[c+d\,x]\right)^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)^{2}}}\;\mathrm{Tan}[c+d\,x]\right)\Big/\left(d\,\left(1-\mathrm{Sec}[c+d\,x]\right)\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{2/3}\sqrt{-\frac{\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\,\left(2^{1/3}-\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)^{2}}}\right)-$$

$$\left(3^{3/4}\,\left(1-\sqrt{3}\right)\,B\,\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{2^{1/3}-\left(1-\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}}{2^{1/3}-\left(1+\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}}\right],\frac{1}{4}\,\left(2+\sqrt{3}\right)\right]\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\,\left(2^{1/3}-\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)\sqrt{\frac{2^{2/3}+2^{1/3}\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}+\left(1+\mathrm{Sec}[c+d\,x]\right)^{2/3}}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)^{2}}}\;\mathrm{Tan}[c+d\,x]\right)\Big/\left(2^{2/3}\,d\,\left(1-\mathrm{Sec}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{2/3}\sqrt{-\frac{\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\,\left(2^{1/3}-\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)}{\left(2^{1/3}-\left(1+\sqrt{3}\right)\,\left(1+\mathrm{Sec}[c+d\,x]\right)^{1/3}\right)^{2}}}\right)$$

Result (type 6, 5254 leaves):

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

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

$$\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\,\left(\left(9\,\left(A+B\right)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^{2},-\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^{2}\right]\right)\Big/\right.$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+$$
$$\left((A-B)\left(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.\right.\right.$$
$$\left.\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\right.$$
$$\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Big/$$
$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\left.\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Big/$$
$$\left(d\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{2/3}(a\,(1+\text{Sec}[c+d\,x]))^{2/3}\right.$$
$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4\right)$$
$$\left(\frac{1}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^{2/3}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4\right)^2}\right.$$
$$2\times 2^{1/3}\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4$$
$$\left(\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\right.$$
$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+$$
$$\left((A-B)\left(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.\right.\right.$$
$$\left.\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$
$$\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\right.$$
$$\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Big/$$

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$

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

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

$$\left(\left(9\,(A+B)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\right.$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+$$

$$\left((A-B)\left(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Big/$$

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\frac{4}{3},1,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$

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

$$\left(\left(9\,(A+B)\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{9}\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Big/\right.$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-$$

$$\Big(9\,(A+B)\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]$$

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

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

$$\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+9\,\Big(-\frac{1}{3}\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{3},2,\frac{5}{2},$$

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

$$\frac{1}{9}\,\text{AppellF1}\Big[\frac{3}{2},\frac{4}{3},1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]$$

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

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

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

$$-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-3\,\Big(-\frac{6}{5}\,\text{AppellF1}\Big[$$

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

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

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

$$\Big(9\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]+2$$

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

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

$$\Big((A-B)\,\Big(6\,\Big(3\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]-$$

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

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

$$1,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\,\Big(-9+8\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)\Big)$$

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

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

$$\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+15\,\Big(-\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right] +$$
$$\frac{1}{5}\text{AppellF1}\left[\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]\Bigg) + 2\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2 \Bigg(-\frac{5}{7}\text{AppellF1}\Big[$$
$$\frac{7}{2}, \frac{4}{3}, 2, \frac{9}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right] + \frac{20}{21}\text{AppellF1}\Big[\frac{7}{2}, \frac{7}{3}, 1, \frac{9}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right] - 3\Bigg(-\frac{10}{7}\text{AppellF1}\Big[$$
$$\frac{7}{2}, \frac{1}{3}, 3, \frac{9}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right] + \frac{5}{21}\text{AppellF1}\Big[\frac{7}{2}, \frac{4}{3}, 2, \frac{9}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(15\,\text{AppellF1}\Big[\frac{3}{2}, \frac{1}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big] + 2$$
$$\Bigg(-3\,\text{AppellF1}\Big[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big] + \text{AppellF1}\Big[$$
$$\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\Bigg) \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)^2 +$$
$$\Bigg((A-B)\Bigg(40\,\text{AppellF1}\Big[\frac{3}{2}, \frac{1}{3}, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right] + 6$$
$$\Bigg(3\,\text{AppellF1}\Big[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big] -$$
$$\text{AppellF1}\Big[\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\Bigg)$$
$$\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^4 \text{Tan}\left[\frac{1}{2}(c+dx)\right] - 6$$
$$\Bigg(3\,\text{AppellF1}\Big[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big] -$$
$$\text{AppellF1}\Big[\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\Bigg)$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Sin}[c+dx]\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2 + 6$$
$$\Bigg(3\,\text{AppellF1}\Big[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big] -$$
$$\text{AppellF1}\Big[\frac{5}{2}, \frac{4}{3}, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\Bigg) \text{Cos}[c+dx]$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]^3 + 5\Bigg(-\frac{3}{5}\text{AppellF1}\Big[\frac{5}{2}, \frac{1}{3}, 2, \frac{7}{2},$$

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

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\left(-9+8\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+6$$

$$\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\right.\right.$$

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

$$\frac{20}{21}\text{AppellF1}\left[\frac{7}{2},\frac{7}{3},1,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+3\left(-\frac{10}{7}\text{AppellF1}\left[\frac{7}{2},\frac{1}{3},3,\right.\right.$$

$$\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{21}\text{AppellF1}\left[\frac{7}{2},\frac{4}{3},2,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{3},1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

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

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

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

$$2\times$$

$$2^{1/3}$$

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

$$\left(\left(9(A+B)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\right.$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{3},1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

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

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

$$\left((A-B)\left(6\left(3\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{3},2,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.\right.$$

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

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

$$\left.\left.\frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right]\ \left(-9+8\,\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right)\right)\right) \Big/$$
$$\left(15\,\text{AppellF1}\left[\frac{3}{2},\ \frac{1}{3},\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right]+\right.$$
$$2\left(-3\,\text{AppellF1}\left[\frac{5}{2},\ \frac{1}{3},\ 2,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{5}{2},\ \frac{4}{3},\ 1,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right]\right)\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right)\right)$$
$$\left(-\text{Cos}\left[\frac{1}{2}\ (c+d\,x)\right]\ \text{Sec}[c+d\,x]\ \text{Sin}\left[\frac{1}{2}\ (c+d\,x)\right]+\text{Cos}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right.$$
$$\left.\left.\left.\text{Sec}[c+d\,x]\ \text{Tan}[c+d\,x]\right)\right)\right)$$

Problem 275: Result more than twice size of optimal antiderivative.

$$\int (c\,\text{Sec}[e+f\,x])^n\ (a+a\,\text{Sec}[e+f\,x])^m\ (A+B\,\text{Sec}[e+f\,x])\ dx$$

Optimal (type 6, 197 leaves, 7 steps):

$$-\left(\left(B\,\text{AppellF1}\left[n,\ \frac{1}{2},\ -\frac{1}{2}-m,\ 1+n,\ \text{Sec}[e+f\,x],\ -\text{Sec}[e+f\,x]\right]\ (c\,\text{Sec}[e+f\,x])^n\right.\right.$$
$$\left.\left.(1+\text{Sec}[e+f\,x])^{-\frac{1}{2}-m}\ (a+a\,\text{Sec}[e+f\,x])^m\ \text{Tan}[e+f\,x]\right)\Big/\left(f\,n\,\sqrt{1-\text{Sec}[e+f\,x]}\right)\right)-$$
$$\left((A-B)\ \text{AppellF1}\left[n,\ \frac{1}{2},\ \frac{1}{2}-m,\ 1+n,\ \text{Sec}[e+f\,x],\ -\text{Sec}[e+f\,x]\right]\ (c\,\text{Sec}[e+f\,x])^n\right.$$
$$\left.(1+\text{Sec}[e+f\,x])^{-\frac{1}{2}-m}\ (a+a\,\text{Sec}[e+f\,x])^m\ \text{Tan}[e+f\,x]\right)\Big/\left(f\,n\,\sqrt{1-\text{Sec}[e+f\,x]}\right)$$

Result (type 6, 4897 leaves):

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

$$\left(\text{AppellF1}\left[\frac{1}{2},1+m+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\frac{2}{3}\left(n\,\text{AppellF1}\left[\frac{3}{2},1+m+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},2+m+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\Bigg)\Bigg)\Bigg/\left(f\,(B+A\,\text{Cos}[e+fx])\left(-1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right.$$

$$\left(-\frac{1}{\left(-1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^2}2^{1+m}\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{1+n}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^{m+n}\right.$$
$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg(-\Bigg(\Bigg(3\,A\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Cos}[e+fx]\Bigg)\Bigg/\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},m+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+(m+n)\,\text{AppellF1}\left[\frac{3}{2},1+m+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)-$$
$$\left(B\,\text{AppellF1}\left[\frac{1}{2},1+m+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\Bigg/\left(\text{AppellF1}\left[\frac{1}{2},1+m+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\frac{2}{3}\left(n\,\text{AppellF1}\left[\frac{3}{2},1+m+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},2+m+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\Bigg)+$$
$$\frac{1}{-1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}2^{m}\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{1+n}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^{m+n}$$
$$\Bigg(-\Bigg(\Bigg(3\,A\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Cos}[e+fx]\Bigg)\Bigg/\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},m+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+(m+n)\,\text{AppellF1}\left[\frac{3}{2},1+m+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)-$$

$$\left(B\,\text{AppellF1}\left[\frac{1}{2},1+m+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\Big/$$
$$\left(\text{AppellF1}\left[\frac{1}{2},1+m+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$
$$\frac{2}{3}\left(n\,\text{AppellF1}\left[\frac{3}{2},1+m+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$
$$(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},2+m+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)+$$
$$\frac{1}{-1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}\,2^{1+m}\,n\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^n\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^{m+n}$$
$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2$$
$$\left(-\left(\left(3\,A\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Cos}[e+\right.\right.\right.$$
$$\left.fx]\right)\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$
$$2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},m+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$
$$(m+n)\,\text{AppellF1}\left[\frac{3}{2},1+m+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)-$$
$$\left(B\,\text{AppellF1}\left[\frac{1}{2},1+m+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\Big/$$
$$\left(\text{AppellF1}\left[\frac{1}{2},1+m+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$
$$\frac{2}{3}\left(n\,\text{AppellF1}\left[\frac{3}{2},1+m+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$
$$(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},2+m+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)+$$
$$\frac{1}{-1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}\,2^{1+m}\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^n\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^{m+n}$$
$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]$$
$$\left(\left(3\,A\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sin}[e+fx]\right)\Big/\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$
$$2\left((-1+n)\,\text{AppellF1}\left[\frac{3}{2},m+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$

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

$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)-\Big(3\,A\,\text{Cos}[e+fx]\,\Big(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2},m+n,2-n,\right.$$

$$\left.\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$

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

$$\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

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

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

$$\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)-$$

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

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

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

$$\Big(\text{AppellF1}\left[\frac{1}{2},1+m+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

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

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

$$\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)+$$

$$\Big(3\,A\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Cos}[e+fx]$$

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

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

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

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

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

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

$$2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\left(\left(-1+n\right)\,\left(-\frac{3}{5}\,(2-n)\,\mathrm{AppellF1}\left[\frac{5}{2},\,m+n,\,3-n,\,\frac{7}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{3}{5}\,(m+n)\,\mathrm{AppellF1}\left[\frac{5}{2},\,1+m+n,\,2-n,\,\frac{7}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+(m+n)\,\left(-\frac{3}{5}\,(1-n)\,\mathrm{AppellF1}\left[\frac{5}{2},\,1+m+n,\,2-n,\,\frac{7}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{3}{5}\,(1+m+n)\,\mathrm{AppellF1}\left[\frac{5}{2},\,2+m+n,\,1-n,\,\frac{7}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)\right)\Bigg)\Bigg/$$

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

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

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

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

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

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

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

$$\frac{1}{-1+\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2}\,2^{1+m}\left(m+n\right)\left(\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^n\left(\text{Cos}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Sec}\left[e+f\,x\right]\right)^{-1+m+n}\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]$$

$$\Bigg(-\Bigg(\Bigg(3\,A\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Cos}\left[e+f\,x\right]\Bigg)\Bigg/\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},m+n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+2\left(\left(-1+n\right)\text{AppellF1}\left[\frac{3}{2},m+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+\left(m+n\right)\text{AppellF1}\left[\frac{3}{2},1+m+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\Bigg)\Bigg)-$$

$$\left(B\,\text{AppellF1}\left[\frac{1}{2},1+m+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\right)\Bigg/\left(\text{AppellF1}\left[\frac{1}{2},1+m+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+\frac{2}{3}\left(n\,\text{AppellF1}\left[\frac{3}{2},1+m+n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+\left(1+m+n\right)\text{AppellF1}\left[\frac{3}{2},2+m+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)\Bigg)$$

$$\Bigg(-\text{Cos}\left[\frac{1}{2}\left(e+f\,x\right)\right]\text{Sec}\left[e+f\,x\right]\text{Sin}\left[\frac{1}{2}\left(e+f\,x\right)\right]+\text{Cos}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2$$

$$\left.\left.\left.\mathrm{Sec}[e+f x]\,\mathrm{Tan}[e+f x]\right)\right)\right)$$

Problem 277: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d x]^3\,(a+b\,\mathrm{Sec}[c+d x])\,(A+B\,\mathrm{Sec}[c+d x])\,dx$$

Optimal (type 3, 114 leaves, 6 steps):

$$\frac{(4 a A+3 b B)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d x]]}{8 d}+\frac{(A b+a B)\,\mathrm{Tan}[c+d x]}{d}+\frac{(4 a A+3 b B)\,\mathrm{Sec}[c+d x]\,\mathrm{Tan}[c+d x]}{8 d}+\frac{b B\,\mathrm{Sec}[c+d x]^3\,\mathrm{Tan}[c+d x]}{4 d}+\frac{(A b+a B)\,\mathrm{Tan}[c+d x]^3}{3 d}$$

Result (type 3, 403 leaves):

$$-\frac{a A\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}-\frac{3 b B\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{a A\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}+\frac{3 b B\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{b B}{16 d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{a A}{4 d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{3 b B}{16 d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{b B}{16 d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{a A}{4 d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{3 b B}{16 d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{2 A b\,\mathrm{Tan}[c+d x]}{3 d}+\frac{2 a B\,\mathrm{Tan}[c+d x]}{3 d}+\frac{A b\,\mathrm{Sec}[c+d x]^2\,\mathrm{Tan}[c+d x]}{3 d}+\frac{a B\,\mathrm{Sec}[c+d x]^2\,\mathrm{Tan}[c+d x]}{3 d}$$

Problem 279: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d x]\,(a+b\,\mathrm{Sec}[c+d x])\,(A+B\,\mathrm{Sec}[c+d x])\,dx$$

Optimal (type 3, 61 leaves, 5 steps):

$$\frac{(2 a A+b B)\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d x]]}{2 d}+\frac{(A b+a B)\,\mathrm{Tan}[c+d x]}{d}+\frac{b B\,\mathrm{Sec}[c+d x]\,\mathrm{Tan}[c+d x]}{2 d}$$

Result (type 3, 164 leaves):

$$\frac{1}{4\,d}\left(-2\,(2\,a\,A+b\,B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$4\,a\,A\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$2\,b\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{b\,B}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-$$
$$\left.\frac{b\,B}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+4\,(A\,b+a\,B)\,\text{Tan}[c+d\,x]\right)$$

Problem 280: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[c+d\,x])\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 35 leaves, 4 steps):

$$a\,A\,x+\frac{(A\,b+a\,B)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{d}+\frac{b\,B\,\text{Tan}[c+d\,x]}{d}$$

Result (type 3, 159 leaves):

$$a\,A\,x-\frac{A\,b\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}-\frac{a\,B\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+$$
$$\frac{A\,b\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{a\,B\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{b\,B\,\text{Tan}[c+d\,x]}{d}$$

Problem 281: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 35 leaves, 3 steps):

$$(A\,b+a\,B)\,x+\frac{b\,B\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{d}+\frac{a\,A\,\text{Sin}[c+d\,x]}{d}$$

Result (type 3, 104 leaves):

$$A\,b\,x+a\,B\,x-\frac{b\,B\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+$$
$$\frac{b\,B\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{a\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{d}+\frac{a\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{d}$$

Problem 286: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 179 leaves, 7 steps):

$$\frac{\left(8\,a\,A\,b+4\,a^2\,B+3\,b^2\,B\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{\left(4\,a^2\,A\,b+4\,A\,b^3-a^3\,B+8\,a\,b^2\,B\right)\,\text{Tan}[c+d\,x]}{6\,b\,d}+\frac{\left(8\,a\,A\,b-2\,a^2\,B+9\,b^2\,B\right)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{24\,d}+\frac{\left(4\,A\,b-a\,B\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\text{Tan}[c+d\,x]}{12\,b\,d}+\frac{B\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\text{Tan}[c+d\,x]}{4\,b\,d}$$

Result (type 3, 457 leaves):

$$\frac{1}{48\,d}\left(-6\,\left(8\,a\,A\,b+4\,a^2\,B+3\,b^2\,B\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$6\,\left(8\,a\,A\,b+4\,a^2\,B+3\,b^2\,B\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$\frac{3\,b^2\,B}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{12\,a^2\,B+8\,a\,b\,\left(3\,A+B\right)+b^2\,\left(4\,A+9\,B\right)}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+$$
$$\frac{8\,b\,\left(A\,b+2\,a\,B\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+\frac{16\,\left(3\,a^2\,A+2\,A\,b^2+4\,a\,b\,B\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}-$$
$$\frac{3\,b^2\,B}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{8\,b\,\left(A\,b+2\,a\,B\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$
$$\left.\frac{12\,a^2\,B+8\,a\,b\,\left(3\,A+B\right)+b^2\,\left(4\,A+9\,B\right)}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{16\,\left(3\,a^2\,A+2\,A\,b^2+4\,a\,b\,B\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}\right)$$

Problem 287: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 116 leaves, 6 steps):

$$\frac{\left(2\,a^2\,A+A\,b^2+2\,a\,b\,B\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+\frac{2\,\left(3\,a\,A\,b+a^2\,B+b^2\,B\right)\,\text{Tan}[c+d\,x]}{3\,d}+\frac{b\,\left(3\,A\,b+2\,a\,B\right)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{6\,d}+\frac{B\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\text{Tan}[c+d\,x]}{3\,d}$$

Result (type 3, 239 leaves):

$$\frac{1}{6\,d}\,\text{Sec}[c+d\,x]^3\,\Bigg(-\frac{9}{4}\,\left(2\,a^2\,A+A\,b^2+2\,a\,b\,B\right)\,\text{Cos}[c+d\,x]\,\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)-\frac{3}{4}\,\left(2\,a^2\,A+A\,b^2+2\,a\,b\,B\right)\,\text{Cos}[3\,(c+d\,x)]\,\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)+\left(6\,a\,A\,b+3\,a^2\,B+4\,b^2\,B+3\,b\,(A\,b+2\,a\,B)\,\text{Cos}[c+d\,x]+\left(6\,a\,A\,b+3\,a^2\,B+2\,b^2\,B\right)\,\text{Cos}[2\,(c+d\,x)]\right)\,\text{Sin}[c+d\,x]\Bigg)$$

Problem 288: Result more than twice size of optimal antiderivative.

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

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

$$a^2\,A\,x+\frac{\left(4\,a\,A\,b+2\,a^2\,B+b^2\,B\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+\frac{b\,(2\,A\,b+3\,a\,B)\,\text{Tan}[c+d\,x]}{2\,d}+\frac{b\,B\,(a+b\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]}{2\,d}$$

Result (type 3, 345 leaves):

$$\frac{1}{4\,d}\,\text{Sec}[c+d\,x]^2\,\Bigg(2\,a^2\,A\,c+2\,a^2\,A\,d\,x-4\,a\,A\,b\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-2\,a^2\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-b^2\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+4\,a\,A\,b\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+2\,a^2\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+b^2\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\text{Cos}[2\,(c+d\,x)]\,\left(2\,a^2\,A\,(c+d\,x)-\left(4\,a\,A\,b+2\,a^2\,B+b^2\,B\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\left(4\,a\,A\,b+2\,a^2\,B+b^2\,B\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)+2\,b^2\,B\,\text{Sin}[c+d\,x]+2\,A\,b^2\,\text{Sin}[2\,(c+d\,x)]+4\,a\,b\,B\,\text{Sin}[2\,(c+d\,x)]\Bigg)$$

Problem 295: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^3\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 180 leaves, 7 steps):

$$\frac{\left(8 a^3 A+12 a A b^2+12 a^2 b B+3 b^3 B\right) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}+\frac{\left(16 a^2 A b+4 A b^3+3 a^3 B+12 a b^2 B\right) \operatorname{Tan}[c+d x]}{6 d}+\frac{b\left(20 a A b+6 a^2 B+9 b^2 B\right) \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{24 d}+\frac{(4 A b+3 a B)(a+b \operatorname{Sec}[c+d x])^2 \operatorname{Tan}[c+d x]}{12 d}+\frac{B(a+b \operatorname{Sec}[c+d x])^3 \operatorname{Tan}[c+d x]}{4 d}$$

Result (type 3, 1179 leaves):

$$\left(\left(-8 a^3 A-12 a A b^2-12 a^2 b B-3 b^3 B\right) \operatorname{Cos}[c+d x]^4 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+b \operatorname{Sec}[c+d x])^3(A+B \operatorname{Sec}[c+d x])\right) \Big/ \left(8 d(b+a \operatorname{Cos}[c+d x])^3(B+A \operatorname{Cos}[c+d x])\right)+$$
$$\left(\left(8 a^3 A+12 a A b^2+12 a^2 b B+3 b^3 B\right) \operatorname{Cos}[c+d x]^4 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+b \operatorname{Sec}[c+d x])^3(A+B \operatorname{Sec}[c+d x])\right) \Big/ \left(8 d(b+a \operatorname{Cos}[c+d x])^3(B+A \operatorname{Cos}[c+d x])\right)+$$
$$\left(b^3 B \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^3(A+B \operatorname{Sec}[c+d x])\right) \Big/ \left(16 d(b+a \operatorname{Cos}[c+d x])^3(B+A \operatorname{Cos}[c+d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)+$$
$$\left(\left(36 a A b^2+4 A b^3+36 a^2 b B+12 a b^2 B+9 b^3 B\right) \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^3(A+B \operatorname{Sec}[c+d x])\right) \Big/ \left(48 d(b+a \operatorname{Cos}[c+d x])^3(B+A \operatorname{Cos}[c+d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)-$$
$$\left(b^3 B \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^3(A+B \operatorname{Sec}[c+d x])\right) \Big/ \left(16 d(b+a \operatorname{Cos}[c+d x])^3(B+A \operatorname{Cos}[c+d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)+$$
$$\left(\left(-36 a A b^2-4 A b^3-36 a^2 b B-12 a b^2 B-9 b^3 B\right) \operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^3(A+B \operatorname{Sec}[c+d x])\right) \Big/ \left(48 d(b+a \operatorname{Cos}[c+d x])^3(B+A \operatorname{Cos}[c+d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)+$$
$$\left(\operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^3(A+B \operatorname{Sec}[c+d x])\left(A b^3 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+3 a b^2 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/ \left(6 d(b+a \operatorname{Cos}[c+d x])^3(B+A \operatorname{Cos}[c+d x])\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)+$$
$$\left(\operatorname{Cos}[c+d x]^4(a+b \operatorname{Sec}[c+d x])^3(A+B \operatorname{Sec}[c+d x])\left(A b^3 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+3 a b^2 B \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/$$

$$\left(6\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$
$$\left(\text{Cos}[c+d\,x]^4\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,\left(9\,a^2\,A\,b\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.\right.$$
$$\left.\left.2\,A\,b^3\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,a^3\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+6\,a\,b^2\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)+$$
$$\left(\text{Cos}[c+d\,x]^4\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,\left(9\,a^2\,A\,b\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.\right.$$
$$\left.\left.2\,A\,b^3\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,a^3\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+6\,a\,b^2\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$\left(3\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)$$

Problem 296: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 137 leaves, 6 steps):

$$a^3\,A\,x+\frac{\left(6\,a^2\,A\,b+A\,b^3+2\,a^3\,B+3\,a\,b^2\,B\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+$$
$$\frac{b\,\left(9\,a\,A\,b+8\,a^2\,B+2\,b^2\,B\right)\,\text{Tan}[c+d\,x]}{3\,d}+$$
$$\frac{b^2\,\left(3\,A\,b+5\,a\,B\right)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{6\,d}+\frac{b\,B\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\text{Tan}[c+d\,x]}{3\,d}$$

Result (type 3, 968 leaves):

$$\frac{a^3 A\,(c+d\,x)\,\mathrm{Cos}[c+d\,x]^4\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])}{d\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,(B+A\,\mathrm{Cos}[c+d\,x])}+$$

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

$$\left(\left(6\,a^2\,A\,b+A\,b^3+2\,a^3\,B+3\,a\,b^2\,B\right)\mathrm{Cos}[c+d\,x]^4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right.$$
$$\left.(a+b\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/\left(2\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,(B+A\,\mathrm{Cos}[c+d\,x])\right)+$$

$$\left(\left(3\,A\,b^3+9\,a\,b^2\,B+b^3\,B\right)\mathrm{Cos}[c+d\,x]^4\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/$$
$$\left(12\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,(B+A\,\mathrm{Cos}[c+d\,x])\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)+$$

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

$$\left(b^3\,B\,\mathrm{Cos}[c+d\,x]^4\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(6\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,(B+A\,\mathrm{Cos}[c+d\,x])\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$

$$\left(\left(-3\,A\,b^3-9\,a\,b^2\,B-b^3\,B\right)\mathrm{Cos}[c+d\,x]^4\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\right)\Big/$$
$$\left(12\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,(B+A\,\mathrm{Cos}[c+d\,x])\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)+$$

$$\left(\mathrm{Cos}[c+d\,x]^4\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\right.$$
$$\left.\left(9\,a\,A\,b^2\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+9\,a^2\,b\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,b^3\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$\left(3\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,(B+A\,\mathrm{Cos}[c+d\,x])\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)+$$

$$\left(\mathrm{Cos}[c+d\,x]^4\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\right.$$
$$\left.\left(9\,a\,A\,b^2\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+9\,a^2\,b\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,b^3\,B\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$\left(3\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^3\,(B+A\,\mathrm{Cos}[c+d\,x])\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)$$

Problem 297: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]\,(a+b\,\mathrm{Sec}[c+d\,x])^3\,(A+B\,\mathrm{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 119 leaves, 6 steps):

$$a^2 (3 A b + a B) x + \frac{b (6 a A b + 6 a^2 B + b^2 B) \text{ArcTanh}[\text{Sin}[c + d x]]}{2 d} + \frac{a^2 (2 a A - b B) \text{Sin}[c + d x]}{2 d} + \frac{b B (a + b \text{Sec}[c + d x])^2 \text{Sin}[c + d x]}{2 d} + \frac{b^2 (A b + 2 a B) \text{Tan}[c + d x]}{d}$$

Result (type 3, 399 leaves):

$$\frac{1}{4 d} \text{Sec}[c + d x]^2 \Big(6 a^2 A b c + 2 a^3 B c + 6 a^2 A b d x + 2 a^3 B d x - 6 a A b^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] - 6 a^2 b B \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] - b^3 B \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] + 6 a A b^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] + 6 a^2 b B \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] + b^3 B \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] + \text{Cos}[2 (c + d x)] \Big(2 a^2 (3 A b + a B) (c + d x) - b (6 a A b + 6 a^2 B + b^2 B) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] - \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right] + b (6 a A b + 6 a^2 B + b^2 B) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c + d x)\right] + \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right]\Big) + (a^3 A + 2 b^3 B) \text{Sin}[c + d x] + 2 A b^3 \text{Sin}[2 (c + d x)] + 6 a b^2 B \text{Sin}[2 (c + d x)] + a^3 A \text{Sin}[3 (c + d x)]\Big)$$

Problem 304: Result more than twice size of optimal antiderivative.

$$\int (a + b \text{Sec}[c + d x])^4 (A + B \text{Sec}[c + d x]) \, dx$$

Optimal (type 3, 200 leaves, 7 steps):

$$a^4 A x + \frac{1}{8 d} (32 a^3 A b + 16 a A b^3 + 8 a^4 B + 24 a^2 b^2 B + 3 b^4 B) \text{ArcTanh}[\text{Sin}[c + d x]] + \frac{b (34 a^2 A b + 4 A b^3 + 19 a^3 B + 16 a b^2 B) \text{Tan}[c + d x]}{6 d} + \frac{b^2 (32 a A b + 26 a^2 B + 9 b^2 B) \text{Sec}[c + d x] \text{Tan}[c + d x]}{24 d} + \frac{b (4 A b + 7 a B) (a + b \text{Sec}[c + d x])^2 \text{Tan}[c + d x]}{12 d} + \frac{b B (a + b \text{Sec}[c + d x])^3 \text{Tan}[c + d x]}{4 d}$$

Result (type 3, 455 leaves):

$$\frac{1}{96\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^4\,\left(B+A\,\text{Cos}[c+d\,x]\right)}\text{Cos}[c+d\,x]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^4$$
$$\left(A+B\,\text{Sec}[c+d\,x]\right)\,\Big(36\,a^4\,A\,(c+d\,x)+48\,a^4\,A\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+$$
$$12\,a^4\,A\,(c+d\,x)\,\text{Cos}[4\,(c+d\,x)]-12\,\left(32\,a^3\,A\,b+16\,a\,A\,b^3+8\,a^4\,B+24\,a^2\,b^2\,B+3\,b^4\,B\right)$$
$$\text{Cos}[c+d\,x]^4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$12\,\left(32\,a^3\,A\,b+16\,a\,A\,b^3+8\,a^4\,B+24\,a^2\,b^2\,B+3\,b^4\,B\right)\,\text{Cos}[c+d\,x]^4$$
$$\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+48\,a\,A\,b^3\,\text{Sin}[c+d\,x]+72\,a^2\,b^2\,B\,\text{Sin}[c+d\,x]+$$
$$33\,b^4\,B\,\text{Sin}[c+d\,x]+144\,a^2\,A\,b^2\,\text{Sin}[2\,(c+d\,x)]+32\,A\,b^4\,\text{Sin}[2\,(c+d\,x)]+$$
$$96\,a^3\,b\,B\,\text{Sin}[2\,(c+d\,x)]+128\,a\,b^3\,B\,\text{Sin}[2\,(c+d\,x)]+48\,a\,A\,b^3\,\text{Sin}[3\,(c+d\,x)]+$$
$$72\,a^2\,b^2\,B\,\text{Sin}[3\,(c+d\,x)]+9\,b^4\,B\,\text{Sin}[3\,(c+d\,x)]+72\,a^2\,A\,b^2\,\text{Sin}[4\,(c+d\,x)]+$$
$$8\,A\,b^4\,\text{Sin}[4\,(c+d\,x)]+48\,a^3\,b\,B\,\text{Sin}[4\,(c+d\,x)]+32\,a\,b^3\,B\,\text{Sin}[4\,(c+d\,x)]\Big)$$

Problem 305: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 195 leaves, 7 steps):

$$a^3\,(4\,A\,b+a\,B)\,x+\frac{b\,\left(12\,a^2\,A\,b+A\,b^3+8\,a^3\,B+4\,a\,b^2\,B\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+$$
$$\frac{a\,A\,\left(a+b\,\text{Sec}[c+d\,x]\right)^3\,\text{Sin}[c+d\,x]}{d}-\frac{b\,\left(6\,a^3\,A-12\,a\,A\,b^2-17\,a^2\,b\,B-2\,b^3\,B\right)\,\text{Tan}[c+d\,x]}{3\,d}-$$
$$\frac{b^2\,\left(6\,a^2\,A-3\,A\,b^2-8\,a\,b\,B\right)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{6\,d}-\frac{b\,(3\,a\,A-b\,B)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2\,\text{Tan}[c+d\,x]}{3\,d}$$

Result (type 3, 1051 leaves):

$$\left(a^3\,(4\,A\,b+a\,B)\,(c+d\,x)\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(B+A\,\text{Cos}[c+d\,x])\right)+$$
$$\left(\left(-12\,a^2\,A\,b^2-A\,b^4-8\,a^3\,b\,B-4\,a\,b^3\,B\right)\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(2\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(B+A\,\text{Cos}[c+d\,x])\right)+$$
$$\left(\left(12\,a^2\,A\,b^2+A\,b^4+8\,a^3\,b\,B+4\,a\,b^3\,B\right)\text{Cos}[c+d\,x]^5\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right.$$
$$\left.(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/\left(2\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(B+A\,\text{Cos}[c+d\,x])\right)+$$
$$\left(\left(3\,A\,b^4+12\,a\,b^3\,B+b^4\,B\right)\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/$$
$$\left(12\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)+$$
$$\left(b^4\,B\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(6\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$
$$\left(b^4\,B\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Big/$$
$$\left(6\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$
$$\left(\left(-3\,A\,b^4-12\,a\,b^3\,B-b^4\,B\right)\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right)\Big/$$
$$\left(12\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)+$$
$$\left(2\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right.$$
$$\left.\left(6\,a\,A\,b^3\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+9\,a^2\,b^2\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+b^4\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)+$$
$$\left(2\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\right.$$
$$\left.\left(6\,a\,A\,b^3\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+9\,a^2\,b^2\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+b^4\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/$$
$$\left(3\,d\,(b+a\,\text{Cos}[c+d\,x])^4\,(B+A\,\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)+$$
$$\left(a^4\,A\,\text{Cos}[c+d\,x]^5\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]\right)\Big/$$
$$\left(d\,(b+a\,\text{Cos}[c+d\,x])^4\,(B+A\,\text{Cos}[c+d\,x])\right)$$

Problem 311: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 187 leaves, 8 steps):

$$\frac{\left(2 a^2+b^2\right) (A b-a B) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 b^4 d}-\frac{2 a^3 (A b-a B) \text{ArcTanh}\left[\frac{\sqrt{a-b} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]}{\sqrt{a-b}\, b^4 \sqrt{a+b}\, d}-\frac{\left(3 a A b-3 a^2 B-2 b^2 B\right) \text{Tan}[c+d x]}{3 b^3 d}+\frac{(A b-a B) \text{Sec}[c+d x] \text{Tan}[c+d x]}{2 b^2 d}+\frac{B \text{Sec}[c+d x]^2 \text{Tan}[c+d x]}{3 b d}$$

Result (type 3, 422 leaves):

$$\frac{1}{12 b^4 d}\left(\frac{24 a^3 (A b-a B) \text{ArcTanh}\left[\frac{(-a+b) \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+6 \left(2 a^2+b^2\right) (-A b+a B) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-6 \left(2 a^2+b^2\right) (-A b+a B) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\frac{b^2 (3 A b+(-3 a+b) B)}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+\frac{2 b^3 B \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3}+\frac{4 b \left(-3 a A b+3 a^2 B+2 b^2 B\right) \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]}+\frac{2 b^3 B \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3}-\frac{b^2 (3 A b+(-3 a+b) B)}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+\frac{4 b \left(-3 a A b+3 a^2 B+2 b^2 B\right) \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]}\right)$$

Problem 312: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 143 leaves, 7 steps):

$$-\frac{\left(2 a A b-2 a^2 B-b^2 B\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 b^3 d}+\frac{2 a^2 (A b-a B) \text{ArcTanh}\left[\frac{\sqrt{a-b} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]}{\sqrt{a-b}\, b^3 \sqrt{a+b}\, d}+\frac{(A b-a B) \text{Tan}[c+d x]}{b^2 d}+\frac{B \text{Sec}[c+d x] \text{Tan}[c+d x]}{2 b d}$$

Result (type 3, 300 leaves):

$$\frac{1}{4\,b^3\,d}\left(\frac{8\,a^2\,(-A\,b+a\,B)\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}-\right.$$
$$2\,\left(-2\,a\,A\,b+2\,a^2\,B+b^2\,B\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$2\,\left(-2\,a\,A\,b+2\,a^2\,B+b^2\,B\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$\frac{b^2\,B}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{4\,b\,(A\,b-a\,B)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}-$$
$$\left.\frac{b^2\,B}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{4\,b\,(A\,b-a\,B)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}\right)$$

Problem 341: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 292 leaves, 7 steps):

$$\frac{A\,x}{a^4}-\left(\left(8\,a^6\,A\,b-8\,a^4\,A\,b^3+7\,a^2\,A\,b^5-2\,A\,b^7-2\,a^7\,B-3\,a^5\,b^2\,B\right)\,\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}\right]\right)\Big/$$
$$\left(a^4\,(a-b)^{7/2}\,(a+b)^{7/2}\,d\right)+$$
$$\frac{b\,(A\,b-a\,B)\,\text{Tan}[c+d\,x]}{3\,a\,\left(a^2-b^2\right)\,d\,(a+b\,\text{Sec}[c+d\,x])^3}+\frac{b\,\left(8\,a^2\,A\,b-3\,A\,b^3-5\,a^3\,B\right)\,\text{Tan}[c+d\,x]}{6\,a^2\,\left(a^2-b^2\right)^2\,d\,(a+b\,\text{Sec}[c+d\,x])^2}+$$
$$\frac{b\,\left(26\,a^4\,A\,b-17\,a^2\,A\,b^3+6\,A\,b^5-11\,a^5\,B-4\,a^3\,b^2\,B\right)\,\text{Tan}[c+d\,x]}{6\,a^3\,\left(a^2-b^2\right)^3\,d\,(a+b\,\text{Sec}[c+d\,x])}$$

Result (type 3, 769 leaves):

$$\frac{1}{24 a^4 d \left(B + A \operatorname{Cos}[c + d x]\right) \left(a + b \operatorname{Sec}[c + d x]\right)^4} \left(b + a \operatorname{Cos}[c + d x]\right) \operatorname{Sec}[c + d x]^3$$
$$\left(A + B \operatorname{Sec}[c + d x]\right) \left(-\frac{1}{\left(a^2 - b^2\right)^{7/2}} 24 \left(-8 a^6 A b + 8 a^4 A b^3 - 7 a^2 A b^5 + 2 A b^7 + 2 a^7 B + 3 a^5 b^2 B\right)\right.$$
$$\operatorname{ArcTanh}\left[\frac{(-a + b) \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]}{\sqrt{a^2 - b^2}}\right] \left(b + a \operatorname{Cos}[c + d x]\right)^3 + \frac{1}{\left(a^2 - b^2\right)^3}$$
$$\left(36 a^8 A b c - 84 a^6 A b^3 c + 36 a^4 A b^5 c + 36 a^2 A b^7 c - 24 A b^9 c + 36 a^8 A b d x - 84 a^6 A b^3 d x + \right.$$
$$36 a^4 A b^5 d x + 36 a^2 A b^7 d x - 24 A b^9 d x + 18 a A \left(a^2 - b^2\right)^3 \left(a^2 + 4 b^2\right) (c + d x) \operatorname{Cos}[c + d x] +$$
$$36 a^2 A b \left(a^2 - b^2\right)^3 (c + d x) \operatorname{Cos}[2 (c + d x)] + 6 a^9 A c \operatorname{Cos}[3 (c + d x)] -$$
$$18 a^7 A b^2 c \operatorname{Cos}[3 (c + d x)] + 18 a^5 A b^4 c \operatorname{Cos}[3 (c + d x)] - 6 a^3 A b^6 c \operatorname{Cos}[3 (c + d x)] +$$
$$6 a^9 A d x \operatorname{Cos}[3 (c + d x)] - 18 a^7 A b^2 d x \operatorname{Cos}[3 (c + d x)] + 18 a^5 A b^4 d x \operatorname{Cos}[3 (c + d x)] -$$
$$6 a^3 A b^6 d x \operatorname{Cos}[3 (c + d x)] + 36 a^7 A b^2 \operatorname{Sin}[c + d x] + 72 a^5 A b^4 \operatorname{Sin}[c + d x] -$$
$$57 a^3 A b^6 \operatorname{Sin}[c + d x] + 24 a A b^8 \operatorname{Sin}[c + d x] - 18 a^8 b B \operatorname{Sin}[c + d x] - 39 a^6 b^3 B \operatorname{Sin}[c + d x] -$$
$$18 a^4 b^5 B \operatorname{Sin}[c + d x] + 120 a^6 A b^3 \operatorname{Sin}[2 (c + d x)] - 90 a^4 A b^5 \operatorname{Sin}[2 (c + d x)] +$$
$$30 a^2 A b^7 \operatorname{Sin}[2 (c + d x)] - 54 a^7 b^2 B \operatorname{Sin}[2 (c + d x)] - 6 a^5 b^4 B \operatorname{Sin}[2 (c + d x)] +$$
$$36 a^7 A b^2 \operatorname{Sin}[3 (c + d x)] - 32 a^5 A b^4 \operatorname{Sin}[3 (c + d x)] + 11 a^3 A b^6 \operatorname{Sin}[3 (c + d x)] -$$
$$\left.\left.18 a^8 b B \operatorname{Sin}[3 (c + d x)] + 5 a^6 b^3 B \operatorname{Sin}[3 (c + d x)] - 2 a^4 b^5 B \operatorname{Sin}[3 (c + d x)]\right)\right)$$

Problem 342: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c + d x] \left(A + B \operatorname{Sec}[c + d x]\right)}{\left(a + b \operatorname{Sec}[c + d x]\right)^4} \, dx$$

Optimal (type 3, 411 leaves, 8 steps):

$$-\frac{(4 A b - a B) x}{a^5} + \left(b \left(20 a^6 A b - 35 a^4 A b^3 + 28 a^2 A b^5 - 8 A b^7 - 8 a^7 B + 8 a^5 b^2 B - 7 a^3 b^4 B + 2 a b^6 B\right)\right.$$
$$\left.\operatorname{ArcTanh}\left[\frac{\sqrt{a - b} \operatorname{Tan}\left[\frac{1}{2} (c + d x)\right]}{\sqrt{a + b}}\right]\right) \Big/ \left(a^5 (a - b)^{7/2} (a + b)^{7/2} d\right) + \frac{1}{6 a^4 \left(a^2 - b^2\right)^3 d}$$
$$\left(6 a^6 A - 65 a^4 A b^2 + 68 a^2 A b^4 - 24 A b^6 + 26 a^5 b B - 17 a^3 b^3 B + 6 a b^5 B\right) \operatorname{Sin}[c + d x] +$$
$$\frac{b (A b - a B) \operatorname{Sin}[c + d x]}{3 a \left(a^2 - b^2\right) d \left(a + b \operatorname{Sec}[c + d x]\right)^3} + \frac{b \left(9 a^2 A b - 4 A b^3 - 6 a^3 B + a b^2 B\right) \operatorname{Sin}[c + d x]}{6 a^2 \left(a^2 - b^2\right)^2 d \left(a + b \operatorname{Sec}[c + d x]\right)^2} +$$
$$\frac{b \left(12 a^4 A b - 11 a^2 A b^3 + 4 A b^5 - 6 a^5 B + 2 a^3 b^2 B - a b^4 B\right) \operatorname{Sin}[c + d x]}{2 a^3 \left(a^2 - b^2\right)^3 d \left(a + b \operatorname{Sec}[c + d x]\right)}$$

Result (type 3, 1372 leaves):

$$-\left(\left(b\left(-20 a^6 A b+35 a^4 A b^3-28 a^2 A b^5+8 A b^7+8 a^7 B-8 a^5 b^2 B+7 a^3 b^4 B-2 a b^6 B\right)\right.\right.$$
$$\left.\text{ArcTanh}\left[\frac{(-a+b) \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right](b+a \text{Cos}[c+d x])^4 \text{Sec}[c+d x]^3(A+B \text{Sec}[c+d x])\right) \Big/$$
$$\left.\left(a^5 \sqrt{a^2-b^2}\left(-a^2+b^2\right)^3 d(B+A \text{Cos}[c+d x])(a+b \text{Sec}[c+d x])^4\right)\right)+$$
$$\frac{1}{24 a^5\left(a^2-b^2\right)^3 d(B+A \text{Cos}[c+d x])(a+b \text{Sec}[c+d x])^4}$$
$$(b+a \text{Cos}[c+d x]) \text{Sec}[c+d x]^3(A+B \text{Sec}[c+d x])$$
$$\left(-144 a^8 A b^2(c+d x)+336 a^6 A b^4(c+d x)-144 a^4 A b^6(c+d x)-144 a^2 A b^8(c+d x)+\right.$$
$$96 A b^{10}(c+d x)+36 a^9 b B(c+d x)-84 a^7 b^3 B(c+d x)+36 a^5 b^5 B(c+d x)+$$
$$36 a^3 b^7 B(c+d x)-24 a b^9 B(c+d x)-72 a^9 A b(c+d x) \text{Cos}[c+d x]-72 a^7 A b^3(c+d x)$$
$$\text{Cos}[c+d x]+648 a^5 A b^5(c+d x) \text{Cos}[c+d x]-792 a^3 A b^7(c+d x) \text{Cos}[c+d x]+$$
$$288 a A b^9(c+d x) \text{Cos}[c+d x]+18 a^{10} B(c+d x) \text{Cos}[c+d x]+18 a^8 b^2 B(c+d x) \text{Cos}[c+d x]-$$
$$162 a^6 b^4 B(c+d x) \text{Cos}[c+d x]+198 a^4 b^6 B(c+d x) \text{Cos}[c+d x]-$$
$$72 a^2 b^8 B(c+d x) \text{Cos}[c+d x]-144 a^8 A b^2(c+d x) \text{Cos}[2(c+d x)]+$$
$$432 a^6 A b^4(c+d x) \text{Cos}[2(c+d x)]-432 a^4 A b^6(c+d x) \text{Cos}[2(c+d x)]+$$
$$144 a^2 A b^8(c+d x) \text{Cos}[2(c+d x)]+36 a^9 b B(c+d x) \text{Cos}[2(c+d x)]-$$
$$108 a^7 b^3 B(c+d x) \text{Cos}[2(c+d x)]+108 a^5 b^5 B(c+d x) \text{Cos}[2(c+d x)]-$$
$$36 a^3 b^7 B(c+d x) \text{Cos}[2(c+d x)]-24 a^9 A b(c+d x) \text{Cos}[3(c+d x)]+$$
$$72 a^7 A b^3(c+d x) \text{Cos}[3(c+d x)]-72 a^5 A b^5(c+d x) \text{Cos}[3(c+d x)]+$$
$$24 a^3 A b^7(c+d x) \text{Cos}[3(c+d x)]+6 a^{10} B(c+d x) \text{Cos}[3(c+d x)]-$$
$$18 a^8 b^2 B(c+d x) \text{Cos}[3(c+d x)]+18 a^6 b^4 B(c+d x) \text{Cos}[3(c+d x)]-$$
$$6 a^4 b^6 B(c+d x) \text{Cos}[3(c+d x)]+18 a^9 A b \text{Sin}[c+d x]-90 a^7 A b^3 \text{Sin}[c+d x]-$$
$$135 a^5 A b^5 \text{Sin}[c+d x]+228 a^3 A b^7 \text{Sin}[c+d x]-96 a A b^9 \text{Sin}[c+d x]+36 a^8 b^2 B \text{Sin}[c+d x]+$$
$$72 a^6 b^4 B \text{Sin}[c+d x]-57 a^4 b^6 B \text{Sin}[c+d x]+24 a^2 b^8 B \text{Sin}[c+d x]+6 a^{10} A \text{Sin}[2(c+d x)]+$$
$$18 a^8 A b^2 \text{Sin}[2(c+d x)]-300 a^6 A b^4 \text{Sin}[2(c+d x)]+336 a^4 A b^6 \text{Sin}[2(c+d x)]-$$
$$120 a^2 A b^8 \text{Sin}[2(c+d x)]+120 a^7 b^3 B \text{Sin}[2(c+d x)]-90 a^5 b^5 B \text{Sin}[2(c+d x)]+$$
$$30 a^3 b^7 B \text{Sin}[2(c+d x)]+18 a^9 A b \text{Sin}[3(c+d x)]-114 a^7 A b^3 \text{Sin}[3(c+d x)]+$$
$$125 a^5 A b^5 \text{Sin}[3(c+d x)]-44 a^3 A b^7 \text{Sin}[3(c+d x)]+36 a^8 b^2 B \text{Sin}[3(c+d x)]-$$
$$32 a^6 b^4 B \text{Sin}[3(c+d x)]+11 a^4 b^6 B \text{Sin}[3(c+d x)]+3 a^{10} A \text{Sin}[4(c+d x)]-$$
$$\left.9 a^8 A b^2 \text{Sin}[4(c+d x)]+9 a^6 A b^4 \text{Sin}[4(c+d x)]-3 a^4 A b^6 \text{Sin}[4(c+d x)]\right)$$

Problem 343: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 538 leaves, 9 steps):

$$\frac{\left(a^2 A+20 A b^2-8 a b B\right) x}{2 a^6}-\left(b^2 \left(40 a^6 A b-84 a^4 A b^3+69 a^2 A b^5-20 A b^7-20 a^7 B+35 a^5 b^2 B-28 a^3 b^4 B+8 a b^6 B\right)\right.$$

$$\left.\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a+b}}\right]\right)\Big/\left(a^6 (a-b)^{7/2} (a+b)^{7/2} d\right)-\frac{1}{6 a^5 \left(a^2-b^2\right)^3 d}$$

$$\left(24 a^6 A b-146 a^4 A b^3+167 a^2 A b^5-60 A b^7-6 a^7 B+65 a^5 b^2 B-68 a^3 b^4 B+24 a b^6 B\right) \text{Sin}[c+d x]+$$

$$\frac{1}{2 a^4 \left(a^2-b^2\right)^3 d}\left(a^6 A-23 a^4 A b^2+27 a^2 A b^4-10 A b^6+12 a^5 b B-11 a^3 b^3 B+4 a b^5 B\right)$$

$$\text{Cos}[c+d x]\,\text{Sin}[c+d x]+\frac{b (A b-a B)\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{3 a \left(a^2-b^2\right) d\,(a+b\,\text{Sec}[c+d x])^3}+$$

$$\frac{b \left(10 a^2 A b-5 A b^3-7 a^3 B+2 a b^2 B\right) \text{Cos}[c+d x]\,\text{Sin}[c+d x]}{6 a^2 \left(a^2-b^2\right)^2 d\,(a+b\,\text{Sec}[c+d x])^2}+$$

$$\left(b \left(48 a^4 A b-53 a^2 A b^3+20 A b^5-27 a^5 B+20 a^3 b^2 B-8 a b^4 B\right) \text{Cos}[c+d x]\,\text{Sin}[c+d x]\right)\Big/$$
$$\left(6 a^3 \left(a^2-b^2\right)^3 d\,(a+b\,\text{Sec}[c+d x])\right)$$

Result (type 3, 1578 leaves) :

$$\left(b^2\left(-40 a^6 A b+84 a^4 A b^3-69 a^2 A b^5+20 A b^7+20 a^7 B-35 a^5 b^2 B+28 a^3 b^4 B-8 a b^6 B\right)\right.$$

$$\left.\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]\right)\Big/\left(a^6\sqrt{a^2-b^2}\left(-a^2+b^2\right)^3 d\right)+$$

$$\frac{1}{96 a^6\left(a^2-b^2\right)^3 d\,(b+a\,\text{Cos}[c+d x])^3}\left(72 a^{10} A b\,(c+d x)+1272 a^8 A b^3\,(c+d x)-\right.$$

$$3288 a^6 A b^5 (c+d x)+1512 a^4 A b^7 (c+d x)+1392 a^2 A b^9 (c+d x)-960 A b^{11} (c+d x)-$$
$$576 a^9 b^2 B (c+d x)+1344 a^7 b^4 B (c+d x)-576 a^5 b^6 B (c+d x)-576 a^3 b^8 B (c+d x)+$$
$$384 a b^{10} B (c+d x)+36 a^{11} A (c+d x)\,\text{Cos}[c+d x]+756 a^9 A b^2 (c+d x)\,\text{Cos}[c+d x]+$$
$$396 a^7 A b^4 (c+d x)\,\text{Cos}[c+d x]-6084 a^5 A b^6 (c+d x)\,\text{Cos}[c+d x]+$$
$$7776 a^3 A b^8 (c+d x)\,\text{Cos}[c+d x]-2880 a A b^{10} (c+d x)\,\text{Cos}[c+d x]-$$
$$288 a^{10} b B (c+d x)\,\text{Cos}[c+d x]-288 a^8 b^3 B (c+d x)\,\text{Cos}[c+d x]+$$
$$2592 a^6 b^5 B (c+d x)\,\text{Cos}[c+d x]-3168 a^4 b^7 B (c+d x)\,\text{Cos}[c+d x]+$$
$$1152 a^2 b^9 B (c+d x)\,\text{Cos}[c+d x]+72 a^{10} A b (c+d x)\,\text{Cos}[2 (c+d x)]+$$
$$1224 a^8 A b^3 (c+d x)\,\text{Cos}[2 (c+d x)]-4104 a^6 A b^5 (c+d x)\,\text{Cos}[2 (c+d x)]+$$
$$4248 a^4 A b^7 (c+d x)\,\text{Cos}[2 (c+d x)]-1440 a^2 A b^9 (c+d x)\,\text{Cos}[2 (c+d x)]-$$
$$576 a^9 b^2 B (c+d x)\,\text{Cos}[2 (c+d x)]+1728 a^7 b^4 B (c+d x)\,\text{Cos}[2 (c+d x)]-$$
$$1728 a^5 b^6 B (c+d x)\,\text{Cos}[2 (c+d x)]+576 a^3 b^8 B (c+d x)\,\text{Cos}[2 (c+d x)]+$$
$$12 a^{11} A (c+d x)\,\text{Cos}[3 (c+d x)]+204 a^9 A b^2 (c+d x)\,\text{Cos}[3 (c+d x)]-$$
$$684 a^7 A b^4 (c+d x)\,\text{Cos}[3 (c+d x)]+708 a^5 A b^6 (c+d x)\,\text{Cos}[3 (c+d x)]-$$
$$240 a^3 A b^8 (c+d x)\,\text{Cos}[3 (c+d x)]-96 a^{10} b B (c+d x)\,\text{Cos}[3 (c+d x)]+$$
$$288 a^8 b^3 B (c+d x)\,\text{Cos}[3 (c+d x)]-288 a^6 b^5 B (c+d x)\,\text{Cos}[3 (c+d x)]+$$
$$96 a^4 b^7 B (c+d x)\,\text{Cos}[3 (c+d x)]+6 a^{11} A\,\text{Sin}[c+d x]-270 a^9 A b^2\,\text{Sin}[c+d x]+$$
$$750 a^7 A b^4\,\text{Sin}[c+d x]+1086 a^5 A b^6\,\text{Sin}[c+d x]-2232 a^3 A b^8\,\text{Sin}[c+d x]+$$
$$960 a A b^{10}\,\text{Sin}[c+d x]+72 a^{10} b B\,\text{Sin}[c+d x]-360 a^8 b^3 B\,\text{Sin}[c+d x]-540 a^6 b^5 B\,\text{Sin}[c+d x]+$$
$$912 a^4 b^7 B\,\text{Sin}[c+d x]-384 a^2 b^9 B\,\text{Sin}[c+d x]-60 a^{10} A b\,\text{Sin}[2 (c+d x)]-$$
$$372 a^8 A b^3\,\text{Sin}[2 (c+d x)]+2772 a^6 A b^5\,\text{Sin}[2 (c+d x)]-3300 a^4 A b^7\,\text{Sin}[2 (c+d x)]+$$
$$1200 a^2 A b^9\,\text{Sin}[2 (c+d x)]+24 a^{11} B\,\text{Sin}[2 (c+d x)]+72 a^9 b^2 B\,\text{Sin}[2 (c+d x)]-$$
$$1200 a^7 b^4 B\,\text{Sin}[2 (c+d x)]+1344 a^5 b^6 B\,\text{Sin}[2 (c+d x)]-480 a^3 b^8 B\,\text{Sin}[2 (c+d x)]+$$
$$9 a^{11} A\,\text{Sin}[3 (c+d x)]-279 a^9 A b^2\,\text{Sin}[3 (c+d x)]+1143 a^7 A b^4\,\text{Sin}[3 (c+d x)]-$$
$$1253 a^5 A b^6\,\text{Sin}[3 (c+d x)]+440 a^3 A b^8\,\text{Sin}[3 (c+d x)]+72 a^{10} b B\,\text{Sin}[3 (c+d x)]-$$
$$456 a^8 b^3 B\,\text{Sin}[3 (c+d x)]+500 a^6 b^5 B\,\text{Sin}[3 (c+d x)]-176 a^4 b^7 B\,\text{Sin}[3 (c+d x)]-$$
$$30 a^{10} A b\,\text{Sin}[4 (c+d x)]+90 a^8 A b^3\,\text{Sin}[4 (c+d x)]-90 a^6 A b^5\,\text{Sin}[4 (c+d x)]+$$
$$30 a^4 A b^7\,\text{Sin}[4 (c+d x)]+12 a^{11} B\,\text{Sin}[4 (c+d x)]-36 a^9 b^2 B\,\text{Sin}[4 (c+d x)]+$$
$$36 a^7 b^4 B\,\text{Sin}[4 (c+d x)]-12 a^5 b^6 B\,\text{Sin}[4 (c+d x)]+3 a^{11} A\,\text{Sin}[5 (c+d x)]-$$
$$\left.9 a^9 A b^2\,\text{Sin}[5 (c+d x)]+9 a^7 A b^4\,\text{Sin}[5 (c+d x)]-3 a^5 A b^6\,\text{Sin}[5 (c+d x)]\right)$$

Problem 348: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^4\sqrt{a+b\,\text{Sec}[c+d x]}\,(A+B\,\text{Sec}[c+d x])\,dx$$

Optimal (type 4, 485 leaves, 7 steps):

$$-\frac{1}{315 b^5 d}2 (a-b) \sqrt{a+b} \left(24 a^3 A b+57 a A b^3-16 a^4 B-24 a^2 b^2 B+147 b^4 B\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{315 b^4 d}2 (a-b) \sqrt{a+b} \left(3 b^3 (25 A-49 B)+18 a b^2 (A-2 B)+12 a^2 b (2 A-B)-16 a^3 B\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{315 b^3 d}2 \left(12 a^2 A b-75 A b^3-8 a^3 B-13 a b^2 B\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]+\frac{1}{315 b^2 d}2 \left(9 a A b-6 a^2 B+49 b^2 B\right) \text{Sec}[c+d x] \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]+\frac{2 (9 A b+a B) \text{Sec}[c+d x]^2 \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{63 b d}+\frac{2 B \text{Sec}[c+d x]^3 \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{9 d}$$

Result (type 1, 1 leaves) :

???

Problem 349: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^3 \sqrt{a+b \text{Sec}[c+d x]} (A+B \text{Sec}[c+d x]) \, dx$$

Optimal (type 4, 397 leaves, 6 steps) :

$$\frac{1}{105\, b^4\, d} 2\, (a-b)\, \sqrt{a+b}\, \left(14\, a^2\, A\, b - 63\, A\, b^3 - 8\, a^3\, B - 19\, a\, b^2\, B\right)\, \text{Cot}[c+d\,x]$$

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

$$\frac{1}{105\, b^3\, d} 2\, (a-b)\, \sqrt{a+b}\, \left(b^2\, (63\, A - 25\, B) + 2\, a\, b\, (7\, A - 3\, B) - 8\, a^2\, B\right)\, \text{Cot}[c+d\,x]$$

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

$$\frac{2\,\left(7\, a\, A\, b - 4\, a^2\, B + 25\, b^2\, B\right)\, \sqrt{a+b\,\text{Sec}[c+d\,x]}\, \text{Tan}[c+d\,x]}{105\, b^2\, d} +$$

$$\frac{2\,(7\, A\, b + a\, B)\, \text{Sec}[c+d\,x]\, \sqrt{a+b\,\text{Sec}[c+d\,x]}\, \text{Tan}[c+d\,x]}{35\, b\, d} +$$

$$\frac{2\, B\, \text{Sec}[c+d\,x]^2\, \sqrt{a+b\,\text{Sec}[c+d\,x]}\, \text{Tan}[c+d\,x]}{7\, d}$$

Result (type 1, 1 leaves):

???

Problem 350: Unable to integrate problem.

$$\int \text{Sec}[c+d\,x]^2\, \sqrt{a+b\,\text{Sec}[c+d\,x]}\, (A+B\,\text{Sec}[c+d\,x])\, dx$$

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

$$-\frac{1}{15\, b^3\, d} 2\, (a-b)\, \sqrt{a+b}\, \left(5\, a\, A\, b - 2\, a^2\, B + 9\, b^2\, B\right)$$

$$\text{Cot}[c+d\,x]\, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\, \sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}} - \frac{1}{15\, b^2\, d}$$

$$2\, (a-b)\, \sqrt{a+b}\, (5\, A\, b - 2\, a\, B - 9\, b\, B)\, \text{Cot}[c+d\,x]\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\, \sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}} +$$

$$\frac{2\,(5\, A\, b - 2\, a\, B)\, \sqrt{a+b\,\text{Sec}[c+d\,x]}\, \text{Tan}[c+d\,x]}{15\, b\, d} + \frac{2\, B\, (a+b\,\text{Sec}[c+d\,x])^{3/2}\, \text{Tan}[c+d\,x]}{5\, b\, d}$$

Result (type 8, 35 leaves):

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

Problem 351: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

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

$$-\frac{1}{3\,b^2\,d}2\,(a-b)\,\sqrt{a+b}\,\left(3\,A\,b+a\,B\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{3\,b\,d}$$
$$2\,(a-b)\,\sqrt{a+b}\,(3\,A-B)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{2\,B\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{3\,d}$$

Result (type 1, 1 leaves):

???

Problem 352: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 320 leaves, 5 steps):

$$-\frac{1}{b\,d}2\,(a-b)\,\sqrt{a+b}\,B\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{b\,d}$$

$$2\,\sqrt{a+b}\,(A\,b+(a-b)\,B)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{1}{d}$$

$$2\,A\,\sqrt{a+b}\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\Big[\frac{a+b}{a},\mathrm{ArcSin}\Big[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}$$

Result (type 4, 913 leaves):

$$\frac{2\,B\,\mathrm{Cos}[c+d\,x]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sin}[c+d\,x]}{d\,(B+A\,\mathrm{Cos}[c+d\,x])}+$$

$$\Bigg(2\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,(A+B\,\mathrm{Sec}[c+d\,x])$$

$$\Bigg(a\,\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-2\,a\,\sqrt{\frac{-a+b}{a+b}}\,B$$

$$\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3+a\,\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5+$$

$$2\,i\,a\,A\,\mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},\,i\,\mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2+b\,\mathrm{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}{a+b}}+$$

$$2\,i\,a\,A\,\mathrm{EllipticPi}\Big[-\frac{a+b}{a-b},\,i\,\mathrm{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]\,\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2$$

$$\sqrt{1-\mathrm{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2+b\,\mathrm{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}{a+b}}-$$

$$\mathrm{i}\,(a-b)\,B\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

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

$$(A-B)\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

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

$$\left(\sqrt{\frac{-a+b}{a+b}}\,d\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{3/2}\right.$$

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

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

Problem 353: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 344 leaves, 6 steps):

$$\frac{1}{b\,d}A\,(a-b)\,\sqrt{a+b}\;\text{Cot}[c+d\,x]\;\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{d}\sqrt{a+b}\;(A+2\,B)\;\text{Cot}[c+d\,x]$$

$$\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\;\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$

$$\frac{1}{a\,d}\sqrt{a+b}\;(A\,b+2\,a\,B)\;\text{Cot}[c+d\,x]\;\text{EllipticPi}\Big[\frac{a+b}{a},\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{A\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{d}$$

Result (type 4, 1107 leaves) :

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

$$\left(a\,A\,\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+A\,b\,\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-2\,a\,A\,\sqrt{\frac{-a+b}{a+b}}\right.$$

$$\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3+a\,A\,\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-A\,b\,\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-$$

$$2\,i\,A\,b\,\text{EllipticPi}\Big[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{1-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\;\sqrt{\frac{a+b-a\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2+b\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}{a+b}}-$$

$$4\,i\,a\,B\,\text{EllipticPi}\Big[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{1-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\;\sqrt{\frac{a+b-a\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2+b\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}{a+b}}-$$

$$2\,i\,A\,b\,\text{EllipticPi}\Big[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\Big[\sqrt{\frac{-a+b}{a+b}}\;\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a+b}{a-b}\Big]$$

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

$$4\,\mathrm{i}\,a\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\ \mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\ \frac{a+b}{a-b}\right]$$

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

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

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

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

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

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

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

Problem 354: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2 \sqrt{a+b\,\text{Sec}[c+d x]}\ (A+B\,\text{Sec}[c+d x])\, dx$$

Optimal (type 4, 429 leaves, 7 steps):

$$\frac{1}{4\,a\,b\,d}(a-b)\sqrt{a+b}\,(A\,b+4\,a\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{4\,a\,d}$$

$$\sqrt{a+b}\,(A\,b+2\,a\,(A+2\,B))\,\text{Cot}[c+d\,x]\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{4\,a^2\,d}$$

$$\sqrt{a+b}\,(4\,a^2\,A-A\,b^2+4\,a\,b\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\Big[\frac{a+b}{a},\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$

$$\frac{(A\,b+4\,a\,B)\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,a\,d}+\frac{A\,\text{Cos}[c+d\,x]\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 1161 leaves):

$$\frac{A\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[2\,(c+d\,x)]}{4\,d}+$$

$$\Bigg(\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\sqrt{\frac{1}{1-\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}}\,\Bigg(a\,A\,b\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+A\,b^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+$$

$$4\,a^2\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+4\,a\,b\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-2\,a\,A\,b\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3-8\,a^2\,B$$

$$\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3+a\,A\,b\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-A\,b^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5+4\,a^2\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-$$

$$4\,a\,b\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-8\,a^2\,A\,\text{EllipticPi}\Big[-1,-\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]$$

$$\sqrt{1-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2+b\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}{a+b}}+$$

$$2\,A\,b^2\,\text{EllipticPi}\Big[-1,-\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]\sqrt{1-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2+b\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}{a+b}}-$$

$$8\,a\,b\,B\,\text{EllipticPi}\Big[-1,-\text{ArcSin}\Big[\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big],\frac{a-b}{a+b}\Big]$$

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

$$8\,a^2\,A\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

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

$$2\,A\,b^2\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

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

$$8\,a\,b\,B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

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

$$(a+b)\,(A\,b+4\,a\,B)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

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

$$2\,a\,(2\,a\,A-A\,b+4\,b\,B)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

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

$$\left(4\,a\,d\,\sqrt{b+a\,\text{Cos}[c+d x]}\ \sqrt{\text{Sec}[c+d x]}\ \left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}\right.$$

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

Problem 355: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^3 \sqrt{a+b \,\text{Sec}[c+d x]}\, (A+B \,\text{Sec}[c+d x])\, dx$$

Optimal (type 4, 509 leaves, 8 steps):

$$\frac{1}{24 a^2 b d}(a-b)\sqrt{a+b}\left(16 a^2 A-3 A b^2+6 a b B\right) \text{Cot}[c+d x]\ \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{24 a^2 d}\sqrt{a+b}\,(2 a+b)\,(8 a A-3 A b+6 a B)\,\text{Cot}[c+d x]\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{8 a^3 d}\sqrt{a+b}\left(4 a^2 A b+A b^3+8 a^3 B-2 a b^2 B\right)\text{Cot}[c+d x]\ \text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{\left(16 a^2 A-3 A b^2+6 a b B\right)\sqrt{a+b\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{24 a^2 d}+\frac{(A b+6 a B)\,\text{Cos}[c+d x]\sqrt{a+b\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{12 a d}+\frac{A\,\text{Cos}[c+d x]^2\sqrt{a+b\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{3 d}$$

Result (type 4, 1565 leaves):

$$\frac{1}{d}\sqrt{a+b\,\text{Sec}[c+d x]}\left(\frac{1}{12}A\,\text{Sin}[c+d x]+\frac{(A b+6 a B)\,\text{Sin}[2\,(c+d x)]}{24 a}+\frac{1}{12}A\,\text{Sin}[3\,(c+d x)]\right)+$$

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

$$\left(-16 a^3 A\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-16 a^2 A b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+3 a A b^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\right.$$

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

$$32 a^3 A\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3-6 a A b^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+12 a^2 b B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3-$$

$$16 a^3 A\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+16 a^2 A b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5+3 a A b^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^5-$$

$$3\,A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-6\,a^2\,b\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+6\,a\,b^2\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$24\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

$$6\,A\,b^3\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

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

$$48\,a^3\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

$$12\,a\,b^2\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

$$24\,a^2\,A\,b\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$6\,A\,b^3\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$48\,a^3\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$12\,a\,b^2\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$\left(a+b\right)\left(16\,a^{2}\,A-3\,A\,b^{2}+6\,a\,b\,B\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}{a+b}}\;+2\,a\,\left(-A\,b^{2}+2\,a\,b\,\left(7\,A-3\,B\right)+12\,a^{2}\,B\right)$$

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

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

$$\left(24\,a^{2}\,d\,\sqrt{b+a\,\text{Cos}\left[c+d\,x\right]}\,\sqrt{\text{Sec}\left[c+d\,x\right]}\,\sqrt{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}\right.$$

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

Problem 356: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 475 leaves, 7 steps):

$$\frac{1}{315\,b^4\,d}2\,(a-b)\,\sqrt{a+b}\,\left(18\,a^3\,A\,b-246\,a\,A\,b^3-8\,a^4\,B-33\,a^2\,b^2\,B-147\,b^4\,B\right)$$
$$\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{315\,b^3\,d}$$
$$2\,(a-b)\,\sqrt{a+b}\,\left(3\,b^3\,(25\,A-49\,B)-3\,a\,b^2\,(57\,A-13\,B)-6\,a^2\,b\,(3\,A-B)+8\,a^3\,B\right)\,\text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$
$$\frac{1}{315\,b^2\,d}2\,\left(18\,a^2\,A\,b-75\,A\,b^3-8\,a^3\,B-39\,a\,b^2\,B\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]-$$
$$\frac{2\,\left(18\,a\,A\,b-8\,a^2\,B-49\,b^2\,B\right)\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]}{315\,b^2\,d}+$$
$$\frac{2\,(9\,A\,b-4\,a\,B)\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]}{63\,b^2\,d}+$$
$$\frac{2\,B\,\text{Sec}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]}{9\,b\,d}$$

Result (type 1, 1 leaves) :

???

Problem 357: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 388 leaves, 6 steps) :

$$-\frac{1}{105\, b^3\, d}2\,(a-b)\,\sqrt{a+b}\,\left(21\,a^2\,A\,b+63\,A\,b^3-6\,a^3\,B+82\,a\,b^2\,B\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{105\,b^2\,d}2\,(a-b)\,\sqrt{a+b}\,\left(b^2\,(63\,A-25\,B)+6\,a^2\,B-a\,(21\,A\,b-57\,b\,B)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{2\,\left(21\,a\,A\,b-6\,a^2\,B+25\,b^2\,B\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{105\,b\,d}+\frac{2\,(7\,A\,b-2\,a\,B)\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]}{35\,b\,d}+\frac{2\,B\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]}{7\,b\,d}$$

Result (type 1, 1 leaves):

???

Problem 358: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 312 leaves, 5 steps):

$$-\frac{1}{15\,b^2\,d}2\,(a-b)\,\sqrt{a+b}\,\left(20\,a\,A\,b+3\,a^2\,B+9\,b^2\,B\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{15\,b\,d}2\,(a-b)\,\sqrt{a+b}\,(15\,a\,A-5\,A\,b-3\,a\,B+9\,b\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{2\,(5\,A\,b+3\,a\,B)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{15\,d}+\frac{2\,B\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]}{5\,d}$$

Result (type 1, 1 leaves):

???

Problem 359: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 381 leaves, 6 steps):

$$-\frac{1}{3\,b\,d}2\,(a-b)\,\sqrt{a+b}\,(3\,A\,b+4\,a\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{3\,b\,d}2\,\sqrt{a+b}\,\left(b^2\,(3\,A-B)-3\,a^2\,B-a\,(6\,A\,b-4\,b\,B)\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{d}2\,a\,A\,\sqrt{a+b}\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\Big[\frac{a+b}{a},\text{ArcSin}\Big[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\Big],\frac{a+b}{a-b}\Big]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{2\,b\,B\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{3\,d}$$

Result (type 4, 1145 leaves):

$$\Bigg(2\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,(A+B\,\text{Sec}[c+d\,x])$$

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

$$4\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]+4\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]-$$

$$6\,a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3-8\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^3+$$

$$3\,a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-3\,A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5+$$

$$4\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5-4\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^5+$$

$$6\,i\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$6\,i\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$i\,(a-b)\,(3\,A\,b+4\,a\,B)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

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

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

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

$$\left(3\,\sqrt{\frac{-a+b}{a+b}}\,d\,(b+a\,\text{Cos}[c+d\,x])^{3/2}\,(B+A\,\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]^{5/2}\right.$$

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

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

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

$$\Big(\text{Cos}[c+d\,x]^2\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,(A+B\,\text{Sec}[c+d\,x])$$

$$\left(\frac{2}{3}\left(3\,A\,b+4\,a\,B\right)\,\mathrm{Sin}[c+d\,x]+\frac{2}{3}\,b\,B\,\mathrm{Tan}[c+d\,x]\right)\Big)\Big/$$
$$\left(d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\,\left(B+A\,\mathrm{Cos}[c+d\,x]\right)\right)$$

Problem 360: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 361 leaves, 6 steps):

$$\frac{1}{b\,d}\left(a-b\right)\,\sqrt{a+b}\,\left(a\,A-2\,b\,B\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,\left(1-\mathrm{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\mathrm{Sec}[c+d\,x]\right)}{a-b}}+\frac{1}{d}\sqrt{a+b}\,\left(2\,b\,\left(A-B\right)+a\,\left(A+4\,B\right)\right)\,\mathrm{Cot}[c+d\,x]$$
$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,\left(1-\mathrm{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\mathrm{Sec}[c+d\,x]\right)}{a-b}}-$$
$$\frac{1}{d}\sqrt{a+b}\,\left(3\,A\,b+2\,a\,B\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,\left(1-\mathrm{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\mathrm{Sec}[c+d\,x]\right)}{a-b}}+\frac{a\,A\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{d}$$

Result (type 4, 979 leaves):

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

$$4\,a^2\,B\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

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

$$6\,a\,A\,b\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$4\,a^2\,B\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

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

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

$$2\,\left(2\,a\,b\,(A-B)+a^2\,B-b^2\,(A+B)\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

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

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

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

Problem 361: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 428 leaves, 7 steps):

$$\frac{1}{4\,b\,d}(a-b)\,\sqrt{a+b}\,\left(5\,A\,b+4\,a\,B\right)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}+\frac{1}{4\,d}\sqrt{a+b}\,\left(2\,a\,A+5\,A\,b+4\,a\,B+8\,b\,B\right)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}-\frac{1}{4\,a\,d}\sqrt{a+b}\,\left(4\,a^2\,A+3\,A\,b^2+12\,a\,b\,B\right)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}+\frac{\left(5\,A\,b+4\,a\,B\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d}+\frac{a\,A\,\text{Cos}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 1598 leaves):

$$\frac{a\,A\,\text{Cos}[c+d\,x]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]}{4\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)}-\left(\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(5\,a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+5\,A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+4\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+4\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-10\,a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^3-8\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^3+5\,a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5-5\,A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5+4\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5-4\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5-\right.\right.$$

$$8\,\mathrm{i}\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$6\,\mathrm{i}\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$24\,\mathrm{i}\,a\,b\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$8\,\mathrm{i}\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$6\,\mathrm{i}\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-24\,\mathrm{i}\,a\,b\,B$$

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

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

$$\mathrm{i}\,(a-b)\,(5\,A\,b+4\,a\,B)\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

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

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+2\,\text{i}\,(a-b)\,(2\,a\,A+b\,(A+4\,B))$$

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

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

$$\left(4\sqrt{\frac{-a+b}{a+b}}\,d\,(b+a\,\text{Cos}[c+d x])^{3/2}\,\text{Sec}[c+d x]^{3/2}\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$

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

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

Problem 362: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 520 leaves, 8 steps):

$$\frac{1}{24\,a\,b\,d}(a-b)\sqrt{a+b}\left(16\,a^2\,A+3\,A\,b^2+30\,a\,b\,B\right)\,\text{Cot}[c+d\,x]\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{1}{24\,a\,d}\sqrt{a+b}\left(16\,a^2\,A+14\,a\,A\,b+3\,A\,b^2+12\,a^2\,B+30\,a\,b\,B\right)\,\text{Cot}[c+d\,x]\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$
$$\frac{1}{8\,a^2\,d}\sqrt{a+b}\left(12\,a^2\,A\,b-A\,b^3+8\,a^3\,B+6\,a\,b^2\,B\right)\,\text{Cot}[c+d\,x]\;\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{\left(16\,a^2\,A+3\,A\,b^2+30\,a\,b\,B\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{24\,a\,d}+$$
$$\frac{(7\,A\,b+6\,a\,B)\,\text{Cos}[c+d\,x]\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{12\,d}+\frac{a\,A\,\text{Cos}[c+d\,x]^2\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 1551 leaves):

$$\left(\text{Cos}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\left(\frac{1}{12}\,a\,A\,\text{Sin}[c+d\,x]+\frac{1}{24}\,(7\,A\,b+6\,a\,B)\,\text{Sin}[2\,(c+d\,x)]+\frac{1}{12}\,a\,A\,\text{Sin}[3\,(c+d\,x)]\right)\right)\Big/$$
$$(d\,(b+a\,\text{Cos}[c+d\,x]))+\left((a+b\,\text{Sec}[c+d\,x])^{3/2}\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$
$$\left(16\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+16\,a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$
$$3\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+30\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+30\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$32\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-6\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-60\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$
$$16\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-16\,a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+3\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$
$$3\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+30\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-30\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$72\, a^2\, A\, b\, \text{EllipticPi}\left[-1,\, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\, +$$

$$6\, A\, b^3\, \text{EllipticPi}\left[-1,\, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\, -$$

$$48\, a^3\, B\, \text{EllipticPi}\left[-1,\, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\, -$$

$$36\, a\, b^2\, B\, \text{EllipticPi}\left[-1,\, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\, -$$

$$72\, a^2\, A\, b\, \text{EllipticPi}\left[-1,\, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\, +$$

$$6\, A\, b^3\, \text{EllipticPi}\left[-1,\, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\, -$$

$$48\, a^3\, B\, \text{EllipticPi}\left[-1,\, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\, -$$

$$36\, a\, b^2\, B\, \text{EllipticPi}\left[-1,\, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\, \frac{a-b}{a+b}\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\, +$$

$$(a+b)\left(16 a^2 A+3 A b^2+30 a b B\right) \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$
$$\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$
$$2 a\left(12 a^2 B+b^2(-7 A+24 B)+a(26 A b-6 b B)\right) \text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$
$$\left.\left.\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right) \Big/$$
$$\left(24 a d\,(b+a \text{Cos}[c+d x])^{3/2} \text{Sec}[c+d x]^{3/2}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}\right.$$
$$\left.\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)$$

Problem 363: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^3\,(a+b \text{Sec}[c+d x])^{5/2}\,(A+B \text{Sec}[c+d x])\, dx$$

Optimal (type 4, 566 leaves, 8 steps):

$$\frac{1}{3465 b^4 d} 2 (a-b) \sqrt{a+b} \left(110 a^4 A b - 3069 a^2 A b^3 - 1617 A b^5 - 40 a^5 B - 255 a^3 b^2 B - 3705 a b^4 B\right)$$
$$\text{Cot}[c+d x] \,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} - \frac{1}{3465 b^3 d} 2 (a-b) \sqrt{a+b}$$
$$\left(6 a b^3 (209 A - 505 B) - 3 b^4 (539 A - 225 B) - 15 a^2 b^2 (121 A - 19 B) + 40 a^4 B - a^3 (110 A b - 30 b B)\right)$$
$$\text{Cot}[c+d x] \,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} - \frac{1}{3465 b^2 d}$$
$$2 \left(110 a^3 A b - 1254 a A b^3 - 40 a^4 B - 285 a^2 b^2 B - 675 b^4 B\right) \sqrt{a+b\,\text{Sec}[c+d x]} \,\text{Tan}[c+d x] -$$
$$\frac{1}{3465 b^2 d} 2 \left(110 a^2 A b - 539 A b^3 - 40 a^3 B - 335 a b^2 B\right) (a+b\,\text{Sec}[c+d x])^{3/2} \,\text{Tan}[c+d x] -$$
$$\frac{2 \left(22 a A b - 8 a^2 B - 81 b^2 B\right) (a+b\,\text{Sec}[c+d x])^{5/2} \,\text{Tan}[c+d x]}{693 b^2 d} +$$
$$\frac{2 (11 A b - 4 a B) (a+b\,\text{Sec}[c+d x])^{7/2} \,\text{Tan}[c+d x]}{99 b^2 d} +$$
$$\frac{2 B\,\text{Sec}[c+d x] (a+b\,\text{Sec}[c+d x])^{7/2} \,\text{Tan}[c+d x]}{11 b d}$$

Result (type 1, 1 leaves):

???

Problem 364: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d x]^2 (a+b\,\text{Sec}[c+d x])^{5/2} (A+B\,\text{Sec}[c+d x]) \, dx$$

Optimal (type 4, 469 leaves, 7 steps):

$$-\frac{1}{315\, b^3\, d}2\,(a-b)\,\sqrt{a+b}\,\left(45\, a^3\, A\, b+435\, a\, A\, b^3-10\, a^4\, B+279\, a^2\, b^2\, B+147\, b^4\, B\right)$$
$$\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{315\, b^2\, d}$$
$$2\,(a-b)\,\sqrt{a+b}\,\left(3\, b^3\,(25\, A-49\, B)-6\, a\, b^2\,(60\, A-19\, B)+15\, a^2\, b\,(3\, A-11\, B)-10\, a^3\, B\right)\,\text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{1}{315\, b\, d}2\,\left(45\, a^2\, A\, b+75\, A\, b^3-10\, a^3\, B+114\, a\, b^2\, B\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]+$$
$$\frac{2\,\left(45\, a\, A\, b-10\, a^2\, B+49\, b^2\, B\right)\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]}{315\, b\, d}+$$
$$\frac{2\,(9\, A\, b-2\, a\, B)\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]}{63\, b\, d}+\frac{2\, B\,(a+b\,\text{Sec}[c+d\,x])^{7/2}\,\text{Tan}[c+d\,x]}{9\, b\, d}$$

Result (type 1, 1 leaves):

???

Problem 365: Attempted integration timed out after 120 seconds.

$$\int \text{Sec}[c+d\,x]\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 384 leaves, 6 steps):

$$-\frac{1}{105\, b^2\, d}2\,(a-b)\,\sqrt{a+b}\,\left(161\, a^2\, A\, b+63\, A\, b^3+15\, a^3\, B+145\, a\, b^2\, B\right)$$
$$\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{105\, b\, d}$$
$$2\,(a-b)\,\sqrt{a+b}\,\left(b^2\,(63\, A-25\, B)-8\, a\, b\,(7\, A-15\, B)+15\, a^2\,(7\, A-B)\right)\,\text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{2\,\left(56\, a\, A\, b+15\, a^2\, B+25\, b^2\, B\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{105\, d}+$$
$$\frac{2\,(7\, A\, b+5\, a\, B)\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]}{35\, d}+\frac{2\, B\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]}{7\, d}$$

Result (type 1, 1 leaves):

???

Problem 367: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 433 leaves, 7 steps):

$$\frac{1}{3 b d}(a-b) \sqrt{a+b} \left(3 a^2 A-6 A b^2-14 a b B\right) \text{Cot}[c+d x] \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b \left(1-\text{Sec}[c+d x]\right)}{a+b}} \sqrt{-\frac{b \left(1+\text{Sec}[c+d x]\right)}{a-b}}+\frac{1}{3 d}\sqrt{a+b} \left(2 a b \left(9 A-7 B\right)-2 b^2 \left(3 A-B\right)+3 a^2 \left(A+6 B\right)\right) \text{Cot}[c+d x] \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b \left(1-\text{Sec}[c+d x]\right)}{a+b}} \sqrt{-\frac{b \left(1+\text{Sec}[c+d x]\right)}{a-b}}-\frac{1}{d}a \sqrt{a+b} \left(5 A b+2 a B\right) \text{Cot}[c+d x] \text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b \left(1-\text{Sec}[c+d x]\right)}{a+b}} \sqrt{-\frac{b \left(1+\text{Sec}[c+d x]\right)}{a-b}}+\frac{a A \left(a+b \text{Sec}[c+d x]\right)^{3/2} \text{Sin}[c+d x]}{d}-\frac{b \left(3 a A-2 b B\right) \sqrt{a+b \text{Sec}[c+d x]} \text{Tan}[c+d x]}{3 d}$$

Result (type 4, 1146 leaves):

$$\left(\left(a+b \text{Sec}[c+d x]\right)^{5/2} \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^2}} \left(3 a^3 A \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]+3 a^2 A b \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]-6 a A b^2 \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]-6 A b^3 \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]-14 a^2 b B \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]-14 a b^2 B \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]-6 a^3 A \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^3+12 a A b^2 \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^3+28 a^2 b B \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^3+3 a^3 A \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^5-3 a^2 A b \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^5-6 a A b^2 \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^5+6 A b^3 \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^5-14 a^2 b B \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^5+14 a b^2 B \text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]^5-30 a^2 A b \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} \left(c+d x\right)\right]\right], \frac{a-b}{a+b}\right]\right.\right.$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$12 a^3 B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$30 a^2 A b\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$12 a^3 B\,\text{EllipticPi}\left[-1,-\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$(a+b)\left(3 a^2 A-6 A b^2-14 a b B\right)\text{EllipticE}\left[\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$2\left(9 a^2 b\,(A-B)+3 a^3 B-b^3(3 A+B)-a b^2(9 A+7 B)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(3 d\,(b+a\operatorname{Cos}[c+d x])^{5/2}\operatorname{Sec}[c+d x]^{5/2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b-a\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)+$$

$$\left(\text{Cos}[c+d x]^2\,(a+b\,\text{Sec}[c+d x])^{5/2}\left(\frac{2}{3}b\,(3\,A\,b+7\,a\,B)\,\text{Sin}[c+d x]+\frac{2}{3}b^2\,B\,\text{Tan}[c+d x]\right)\right)\Big/\left(d\,(b+a\,\text{Cos}[c+d x])^2\right)$$

Problem 368: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2\,(a+b\,\text{Sec}[c+d x])^{5/2}\,(A+B\,\text{Sec}[c+d x])\,dx$$

Optimal (type 4, 450 leaves, 7 steps):

$$\frac{1}{4\,b\,d}(a-b)\sqrt{a+b}\,\left(9\,a\,A\,b+4\,a^2\,B-8\,b^2\,B\right)\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{4\,d}\sqrt{a+b}\,\left(8\,b^2\,(A-B)+2\,a^2\,(A+2\,B)+3\,a\,b\,(3\,A+8\,B)\right)\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{4\,d}\sqrt{a+b}\,\left(4\,a^2\,A+15\,A\,b^2+20\,a\,b\,B\right)\text{Cot}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{a\,(7\,A\,b+4\,a\,B)\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{4\,d}+\frac{a\,A\,\text{Cos}[c+d x]\,(a+b\,\text{Sec}[c+d x])^{3/2}\,\text{Sin}[c+d x]}{2\,d}$$

Result (type 4, 1338 leaves):

$$\left(\text{Cos}[c+d x]^2\,(a+b\,\text{Sec}[c+d x])^{5/2}\left(2\,b^2\,B\,\text{Sin}[c+d x]+\frac{1}{4}a^2\,A\,\text{Sin}[2\,(c+d x)]\right)\right)\Big/\left(d\,(b+a\,\text{Cos}[c+d x])^2\right)+\left((a+b\,\text{Sec}[c+d x])^{5/2}\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$
$$\left(9\,a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+9\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+4\,a^3\,B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\right.$$
$$4\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-8\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-8\,b^3\,B\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$18 a^2 A b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^3 - 8 a^3 B \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^3 + 16 a b^2 B \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^3 +$$

$$9 a^2 A b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^5 - 9 a A b^2 \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^5 + 4 a^3 B \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^5 -$$

$$4 a^2 b B \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^5 - 8 a b^2 B \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^5 + 8 b^3 B \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^5 -$$

$$8 a^3 A \operatorname{EllipticPi}\left[-1, -\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}} -$$

$$30 a A b^2 \operatorname{EllipticPi}\left[-1, -\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}} -$$

$$40 a^2 b B \operatorname{EllipticPi}\left[-1, -\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}} -$$

$$8 a^3 A \operatorname{EllipticPi}\left[-1, -\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right] \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}} -$$

$$30 a A b^2 \operatorname{EllipticPi}\left[-1, -\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right] \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}} -$$

$$40 a^2 b B \operatorname{EllipticPi}\left[-1, -\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right] \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}} +$$

$$(a+b) \left(9 a A b+4 a^2 B-8 b^2 B\right) \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2} \left(1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$2\,\left(2\,a^3\,A-a^2\,b\,(A-12\,B)+12\,a\,b^2\,(A-B)-4\,b^3\,(A+B)\right)$$

$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(4\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^{5/2}\,\mathrm{Sec}[c+d\,x]^{5/2}\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)$$

Problem 369: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^3\,(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}\,(A+B\,\mathrm{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 518 leaves, 8 steps):

$$\frac{1}{24\,b\,d}(a-b)\sqrt{a+b}\,\left(16\,a^2\,A+33\,A\,b^2+54\,a\,b\,B\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}+$$

$$\frac{1}{24\,d}\sqrt{a+b}\,\left(16\,a^2\,A+26\,a\,A\,b+33\,A\,b^2+12\,a^2\,B+54\,a\,b\,B+48\,b^2\,B\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}-$$

$$\frac{1}{8\,a\,d}\sqrt{a+b}\,\left(20\,a^2\,A\,b+5\,A\,b^3+8\,a^3\,B+30\,a\,b^2\,B\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sec}[c+d\,x]\right)}{a+b}}$$

$$\sqrt{-\frac{b\,\left(1+\text{Sec}[c+d\,x]\right)}{a-b}}+\frac{\left(16\,a^2\,A+33\,A\,b^2+54\,a\,b\,B\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,d}+$$

$$\frac{a\,\left(3\,A\,b+2\,a\,B\right)\,\text{Cos}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d}+$$

$$\frac{a\,A\,\text{Cos}[c+d\,x]^2\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 1567 leaves):

$$\Bigg(\text{Cos}[c+d\,x]^2\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}$$

$$\left(\frac{1}{12}\,a^2\,A\,\text{Sin}[c+d\,x]+\frac{1}{24}\,a\,\left(13\,A\,b+6\,a\,B\right)\,\text{Sin}\left[2\,\left(c+d\,x\right)\right]+\frac{1}{12}\,a^2\,A\,\text{Sin}\left[3\,\left(c+d\,x\right)\right]\right)\Bigg)\Bigg/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)+\Bigg(\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2}}$$

$$\Bigg(16\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+16\,a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+33\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+$$

$$33\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+54\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]+54\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]-$$

$$32\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^3-66\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^3-108\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^3+$$

$$16\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5-16\,a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5+33\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5-$$

$$33\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5+54\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5-54\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5-$$

$$120\, a^2\, A\, b\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\; -$$

$$30\, A\, b^3\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\; -$$

$$48\, a^3\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\; -$$

$$180\, a\, b^2\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\; -$$

$$120\, a^2\, A\, b\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\; -$$

$$30\, A\, b^3\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\; -$$

$$48\, a^3\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\; -$$

$$180\, a\, b^2\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\; +$$

$$(a+b)\,\left(16\, a^2\, A+33\, A\, b^2+54\, a\, b\, B\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$2\,\left(24\,b^3\,(A-B)+12\,a^3\,B+a\,b^2\,(-13\,A+72\,B)+a^2\,(38\,A\,b-6\,b\,B)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,\right)\right)\Bigg/$$

$$\left(24\,d\,(b+a\,\text{Cos}[c+d\,x])^{5/2}\,\text{Sec}[c+d\,x]^{5/2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)$$

Problem 371: Unable to integrate problem.

$$\int\frac{\text{Sec}[c+d\,x]^3\,(A+B\,\text{Sec}[c+d\,x])}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 329 leaves, 5 steps):

$$\frac{1}{15\,b^4\,d}2\,(a-b)\,\sqrt{a+b}\,\left(10\,a\,A\,b-8\,a^2\,B-9\,b^2\,B\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}\;+$$

$$\frac{1}{15\,b^3\,d}2\,\sqrt{a+b}\,\left(b^2\,(5\,A-9\,B)-8\,a^2\,B+2\,a\,b\,(5\,A+B)\right)\,\text{Cot}[c+d\,x]$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]\,\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}\;+$$

$$\frac{2\,(5\,A\,b-4\,a\,B)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{15\,b^2\,d}+\frac{2\,B\,\text{Sec}[c+d\,x]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Tan}[c+d\,x]}{5\,b\,d}$$

Result (type 8, 35 leaves):

$$\int \frac{\text{Sec}[c+d x]^3 \,(A+B\,\text{Sec}[c+d x])}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Problem 372: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Sec}[c+d x]^2 \,(A+B\,\text{Sec}[c+d x])}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 261 leaves, 4 steps):

$$-\frac{1}{3 b^3 d}2\,(a-b)\,\sqrt{a+b}\,(3 A b-2 a B)\,\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{3 b^2 d}2\,\sqrt{a+b}\,(3 A b-(2 a+b) B)\,\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{2 B\,\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{3 b d}$$

Result (type 1, 1 leaves):

???

Problem 373: Unable to integrate problem.

$$\int \frac{\text{Sec}[c+d x]\,(A+B\,\text{Sec}[c+d x])}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 210 leaves, 3 steps):

$$-\frac{1}{b^2 d}2\,(a-b)\,\sqrt{a+b}\,B\,\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{b d}2\,\sqrt{a+b}\,(A-B)\,\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}$$

Result (type 8, 33 leaves):

$$\int \frac{\text{Sec}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Problem 375: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 348 leaves, 6 steps):

$$\frac{1}{a\,b\,d}A\,(a-b)\,\sqrt{a+b}\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{a\,d}A\,\sqrt{a+b}\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{a^2\,d}\sqrt{a+b}\,(A\,b-2\,a\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{A\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{a\,d}$$

Result (type 4, 1027 leaves):

$$\Bigg(\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\,\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\,\Bigg(a\,A\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}+A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}-a\,A\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}+A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}+2\,i\,A\,b\,\text{EllipticPi}\left[-\frac{a+b}{a-b},i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$4\,i\,a\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$2\,i\,A\,b\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$4\,i\,a\,B\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$i\,A\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$2\,i\,(A\,b-a\,B)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\left(a\sqrt{\frac{-a+b}{a+b}}\,d\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)$$

Problem 376: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]^2 (A+B \operatorname{Sec}[c+d x])}{\sqrt{a+b \operatorname{Sec}[c+d x]}} \, dx$$

Optimal (type 4, 435 leaves, 7 steps):

$$-\frac{1}{4 a^2 b d}(a-b) \sqrt{a+b} (3 A b-4 a B) \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}} - \frac{1}{4 a^2 d} \sqrt{a+b} (3 A b-2 a (A+2 B)) \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}} - \frac{1}{4 a^3 d}\sqrt{a+b} \left(4 a^2 A+3 A b^2-4 a b B\right) \operatorname{Cot}[c+d x] \operatorname{EllipticPi}\left[\frac{a+b}{a}, \operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}} - \frac{(3 A b-4 a B) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{4 a^2 d} + \frac{A \operatorname{Cos}[c+d x] \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{2 a d}$$

Result (type 4, 1639 leaves):

$$\frac{A (b+a \operatorname{Cos}[c+d x]) \operatorname{Sec}[c+d x] \operatorname{Sin}[2 (c+d x)]}{4 a d \sqrt{a+b \operatorname{Sec}[c+d x]}} + \left(\sqrt{b+a \operatorname{Cos}[c+d x]} \sqrt{\operatorname{Sec}[c+d x]} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$
$$\left(-3 a A b \sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right] - 3 A b^2 \sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right] + 4 a^2 \sqrt{\frac{-a+b}{a+b}} B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right] + 4 a b \sqrt{\frac{-a+b}{a+b}} B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right] + 6 a A b \sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3 - 8 a^2 \sqrt{\frac{-a+b}{a+b}} B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3 - \right.$$

$$3\,a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+3\,A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$4\,a^2\,\sqrt{\frac{-a+b}{a+b}}\;B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-4\,a\,b\,\sqrt{\frac{-a+b}{a+b}}\;B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$8\,\mathrm{i}\,a^2\,A\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$6\,\mathrm{i}\,A\,b^2\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$8\,\mathrm{i}\,a\,b\,B\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$8\,\mathrm{i}\,a^2\,A\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$6\,\mathrm{i}\,A\,b^2\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+8\,\mathrm{i}\,a\,b\,B$$

$$\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\;\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$i(a-b)(-3 A b+4 a B)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+2 i\left(2 a^2 A+3 A b^2-a b(A+4 B)\right)$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\Bigg/$$

$$\left(4 a^2\sqrt{\frac{-a+b}{a+b}}\,d\sqrt{a+b\,\text{Sec}[c+d x]}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$

$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)$$

Problem 377: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d x]^3\,(A+B\,\text{Sec}[c+d x])}{\sqrt{a+b\,\text{Sec}[c+d x]}}\,dx$$

Optimal (type 4, 525 leaves, 8 steps):

$$\frac{1}{24 a^3 b d}(a-b)\sqrt{a+b}\left(16 a^2 A+15 A b^2-18 a b B\right)\text{Cot}[c+d x]$$
$$\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\left(1-\text{Sec}[c+d x]\right)}{a+b}}\sqrt{-\frac{b\left(1+\text{Sec}[c+d x]\right)}{a-b}}+$$
$$\frac{1}{24 a^3 d}\sqrt{a+b}\left(16 a^2 A-10 a A b+15 A b^2+12 a^2 B-18 a b B\right)\text{Cot}[c+d x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\left(1-\text{Sec}[c+d x]\right)}{a+b}}\sqrt{-\frac{b\left(1+\text{Sec}[c+d x]\right)}{a-b}}+$$
$$\frac{1}{8 a^4 d}\sqrt{a+b}\left(4 a^2 A b+5 A b^3-8 a^3 B-6 a b^2 B\right)\text{Cot}[c+d x]$$
$$\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\left(1-\text{Sec}[c+d x]\right)}{a+b}}$$
$$\sqrt{-\frac{b\left(1+\text{Sec}[c+d x]\right)}{a-b}}+\frac{\left(16 a^2 A+15 A b^2-18 a b B\right)\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{24 a^3 d}-$$
$$\frac{\left(5 A b-6 a B\right)\text{Cos}[c+d x]\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{12 a^2 d}+$$
$$\frac{A\,\text{Cos}[c+d x]^2\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Sin}[c+d x]}{3 a d}$$

Result (type 4, 1585 leaves):

$$\left(\left(b+a\,\text{Cos}[c+d x]\right)\text{Sec}[c+d x]\right.$$
$$\left.\left(\frac{A\,\text{Sin}[c+d x]}{12 a}+\frac{\left(-5 A b+6 a B\right)\text{Sin}\left[2\left(c+d x\right)\right]}{24 a^2}+\frac{A\,\text{Sin}\left[3\left(c+d x\right)\right]}{12 a}\right)\right)\Big/$$
$$\left(d\sqrt{a+b\,\text{Sec}[c+d x]}\right)-\left(\sqrt{b+a\,\text{Cos}[c+d x]}\sqrt{\text{Sec}[c+d x]}\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}}\right.$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}}$$
$$\left(16 a^3 A\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+16 a^2 A b\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+15 a A b^2\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+\right.$$
$$15 A b^3\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]-18 a^2 b B\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]-18 a b^2 B\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]-$$
$$32 a^3 A\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^3-30 a A b^2\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^3+36 a^2 b B\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^3+$$

$$16\,a^3\,A\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-16\,a^2\,A\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+15\,a\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$15\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-18\,a^2\,b\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+18\,a\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$24\,a^2\,A\,b\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$

$$30\,A\,b^3\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$48\,a^3\,B\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$36\,a\,b^2\,B\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$

$$24\,a^2\,A\,b\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$

$$30\,A\,b^3\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$48\,a^3\,B\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$36\,a\,b^2\,B\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$(a+b)\left(16 a^2 A+15 A b^2-18 a b B\right) \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-2 a\left(5 A b^2+2 a b(A-3 B)+12 a^2 B\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right) \Big/$$

$$\left(24 a^3 d \sqrt{a+b \text{Sec}[c+d x]} \sqrt{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right.$$

$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)$$

Problem 378: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Sec}[c+d x]^3 (A+B \text{Sec}[c+d x])}{(a+b \text{Sec}[c+d x])^{3/2}} \, dx$$

Optimal (type 4, 329 leaves, 5 steps):

$$-\frac{1}{3\, b^4 \sqrt{a+b}\; d} 2\left(6\, a^2\, A\, b-3\, A\, b^3-8\, a^3\, B+5\, a\, b^2\, B\right) \operatorname{Cot}[c+d\, x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d\, x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\operatorname{Sec}[c+d\, x])}{a+b}} \sqrt{-\frac{b\,(1+\operatorname{Sec}[c+d\, x])}{a-b}} - \frac{1}{3\, b^3 \sqrt{a+b}\; d} 2\,(2\, a+b)\,(3\, A\, b-(4\, a+b)\, B) \operatorname{Cot}[c+d\, x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d\, x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\operatorname{Sec}[c+d\, x])}{a+b}} \sqrt{-\frac{b\,(1+\operatorname{Sec}[c+d\, x])}{a-b}} - \frac{2\, a^2\,(A\, b-a\, B) \operatorname{Tan}[c+d\, x]}{b^2\,(a^2-b^2)\, d \sqrt{a+b \operatorname{Sec}[c+d\, x]}} + \frac{2\, B \sqrt{a+b \operatorname{Sec}[c+d\, x]}\; \operatorname{Tan}[c+d\, x]}{3\, b^2\, d}$$

Result (type 1, 1 leaves):

???

Problem 379: Attempted integration timed out after 120 seconds.

$$\int \frac{\operatorname{Sec}[c+d\, x]^2\,(A+B \operatorname{Sec}[c+d\, x])}{(a+b \operatorname{Sec}[c+d\, x])^{3/2}}\, dx$$

Optimal (type 4, 275 leaves, 4 steps):

$$\frac{1}{b^3 \sqrt{a+b}\; d} 2\left(a\, A\, b-2\, a^2\, B+b^2\, B\right) \operatorname{Cot}[c+d\, x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d\, x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\operatorname{Sec}[c+d\, x])}{a+b}} \sqrt{-\frac{b\,(1+\operatorname{Sec}[c+d\, x])}{a-b}} + \frac{1}{b^2 \sqrt{a+b}\; d} 2\,(A\, b-(2\, a+b)\, B) \operatorname{Cot}[c+d\, x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d\, x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\operatorname{Sec}[c+d\, x])}{a+b}} \sqrt{-\frac{b\,(1+\operatorname{Sec}[c+d\, x])}{a-b}} + \frac{2\, a\,(A\, b-a\, B) \operatorname{Tan}[c+d\, x]}{b\,(a^2-b^2)\, d \sqrt{a+b \operatorname{Sec}[c+d\, x]}}$$

Result (type 1, 1 leaves):

???

Problem 380: Attempted integration timed out after 120 seconds.

$$\int \frac{\operatorname{Sec}[c+d\, x]\,(A+B \operatorname{Sec}[c+d\, x])}{(a+b \operatorname{Sec}[c+d\, x])^{3/2}}\, dx$$

Optimal (type 4, 254 leaves, 4 steps):

$$-\frac{1}{b^2\sqrt{a+b}\,d}2\,(A\,b-a\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{1}{b\sqrt{a+b}\,d}2\,(A+B)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{2\,(A\,b-a\,B)\,\text{Tan}[c+d\,x]}{(a^2-b^2)\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 1, 1 leaves):

???

Problem 381: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 376 leaves, 6 steps):

$$\frac{1}{a\,b\sqrt{a+b}\,d}2\,(A\,b-a\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{a\,b\sqrt{a+b}\,d}2\,(A\,b-a\,B)\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{a^2\,d}2\,A\sqrt{a+b}\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{2\,b\,(A\,b-a\,B)\,\text{Tan}[c+d\,x]}{a\,(a^2-b^2)\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 1491 leaves):

$$\left((b+a\,\text{Cos}[c+d\,x])^2\,\text{Sec}[c+d\,x]\,(A+B\,\text{Sec}[c+d\,x])\left(\frac{2\,(-A\,b+a\,B)\,\text{Sin}[c+d\,x]}{a\,(a^2-b^2)}-\frac{2\,(-A\,b^2\,\text{Sin}[c+d\,x]+a\,b\,B\,\text{Sin}[c+d\,x])}{a\,(a^2-b^2)\,(b+a\,\text{Cos}[c+d\,x])}\right)\right)\Big/\left(d\,(B+A\,\text{Cos}[c+d\,x])\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\right)+$$

$$\left(2\,(b+a\,\text{Cos}[c+d\,x])^{3/2}\,\sqrt{\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\right.$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$

$$A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-a^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$

$$a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-2\,a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+2\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,B$$

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+a\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$a^2\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+a\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$2\,\mathrm{i}\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$2\,\mathrm{i}\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

$$2\,\mathrm{i}\,a^2\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$2\,\mathrm{i}\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}+$$

$$i\,(a-b)\,(-A\,b+a\,B)\,\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}+i\,(a-b)\,(2\,A\,b+a\,(A-B))$$

$$\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(a\sqrt{\frac{-a+b}{a+b}}\,(a^2-b^2)\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\right.$$

$$\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\sqrt{\frac{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}$$

$$\left.\left(a\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)$$

Problem 382: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[c+d\,x]\,(A+B\,\mathrm{Sec}[c+d\,x])}{(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 427 leaves, 7 steps):

$$\frac{1}{a^2\,b\,\sqrt{a+b}\;d}\left(a^2\,A-3\,A\,b^2+2\,a\,b\,B\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{a^2\,\sqrt{a+b}\;d}$$
$$\left(3\,A\,b+a\,(A-2\,B)\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+\frac{1}{a^3\,d}$$
$$\sqrt{a+b}\,\left(3\,A\,b-2\,a\,B\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{A\,\mathrm{Sin}[c+d\,x]}{a\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+\frac{b\,\left(a^2\,A-3\,A\,b^2+2\,a\,b\,B\right)\,\mathrm{Tan}[c+d\,x]}{a^2\,\left(a^2-b^2\right)\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 4, 1613 leaves):

$$\left((b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^2\right.$$
$$\left.\left(-\frac{2\,b\,(A\,b-a\,B)\,\mathrm{Sin}[c+d\,x]}{a^2\,\left(-a^2+b^2\right)}+\frac{2\,\left(-A\,b^3\,\mathrm{Sin}[c+d\,x]+a\,b^2\,B\,\mathrm{Sin}[c+d\,x]\right)}{a^2\,\left(a^2-b^2\right)\,(b+a\,\mathrm{Cos}[c+d\,x])}\right)\right)\Big/$$
$$\left(d\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\right)-\left((b+a\,\mathrm{Cos}[c+d\,x])^{3/2}\,\mathrm{Sec}[c+d\,x]^{3/2}\right.$$
$$\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$
$$\left(a^3\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+a^2\,A\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-3\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-\right.$$
$$3\,A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,a^2\,b\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,a\,b^2\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$2\,a^3\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+6\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3-4\,a^2\,b\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$
$$a^3\,A\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-a^2\,A\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-3\,a\,A\,b^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$
$$3\,A\,b^3\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+2\,a^2\,b\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-2\,a\,b^2\,B\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+$$

$$6\, a^2\, A\, b\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}\, \sqrt{\frac{a+b-a\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2+b\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}{a+b}} -$$

$$6\, A\, b^3\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}$$

$$\sqrt{\frac{a+b-a\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2+b\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}{a+b}} -$$

$$4\, a^3\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}$$

$$\sqrt{\frac{a+b-a\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2+b\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}{a+b}} +$$

$$4\, a\, b^2\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}\, \sqrt{\frac{a+b-a\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2+b\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}{a+b}} +$$

$$6\, a^2\, A\, b\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]\right], \frac{a-b}{a+b}\right] \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}\, \sqrt{\frac{a+b-a\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2+b\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}{a+b}} -$$

$$6\, A\, b^3\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]\right], \frac{a-b}{a+b}\right] \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}\, \sqrt{\frac{a+b-a\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2+b\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}{a+b}} -$$

$$4\, a^3\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]\right], \frac{a-b}{a+b}\right] \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}\, \sqrt{\frac{a+b-a\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2+b\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}{a+b}} +$$

$$4\, a\, b^2\, B\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]\right], \frac{a-b}{a+b}\right] \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}\, \sqrt{\frac{a+b-a\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2+b\, \text{Tan}\left[\frac{1}{2}\, (c+d\, x)\right]^2}{a+b}} + (a+b)$$

$$\left(a^2 A - 3 A b^2 + 2 a b B\right) \text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}} -$$

$$2 a (a+b)(-A b+a B) \text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right) \Big/$$

$$\left(a^2 \left(a^2-b^2\right) d\, (a+b\,\text{Sec}[c+d x])^{3/2} \sqrt{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right.$$

$$\left.\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) - b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)$$

Problem 383: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2 \,(A+B\,\text{Sec}[c+d x])}{(a+b\,\text{Sec}[c+d x])^{3/2}} \, dx$$

Optimal (type 4, 531 leaves, 8 steps):

$$-\frac{1}{4\,a^3\,b\,\sqrt{a+b}\,d}\left(7\,a^2\,A\,b-15\,A\,b^3-4\,a^3\,B+12\,a\,b^2\,B\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{1}{4\,a^3\,\sqrt{a+b}\,d}\left(15\,A\,b^2+a\,b\,(5\,A-12\,B)-2\,a^2\,(A+2\,B)\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{1}{4\,a^4\,d}\sqrt{a+b}\,\left(4\,a^2\,A+15\,A\,b^2-12\,a\,b\,B\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}-\frac{(5\,A\,b-4\,a\,B)\,\mathrm{Sin}[c+d\,x]}{4\,a^2\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+\frac{A\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{2\,a\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}-\frac{b\,\left(7\,a^2\,A\,b-15\,A\,b^3-4\,a^3\,B+12\,a\,b^2\,B\right)\,\mathrm{Tan}[c+d\,x]}{4\,a^3\,\left(a^2-b^2\right)\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 4, 47 132 leaves): Display of huge result suppressed!

Problem 384: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[c+d\,x]^3\,(A+B\,\mathrm{Sec}[c+d\,x])}{(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 630 leaves, 9 steps):

$$\frac{1}{24 a^4 b \sqrt{a+b}\, d}\left(16 a^4 A+41 a^2 A b^2-105 A b^4-42 a^3 b B+90 a b^3 B\right) \text{Cot}[c+d x]$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+$$

$$\frac{1}{24 a^4 \sqrt{a+b}\, d}\left(105 A b^3+5 a b^2 (7 A-18 B)+4 a^3 (4 A+3 B)-6 a^2 b\,(A+5 B)\right) \text{Cot}[c+d x]$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+$$

$$\frac{1}{8 a^5 d}\sqrt{a+b}\,\left(12 a^2 A b+35 A b^3-8 a^3 B-30 a b^2 B\right) \text{Cot}[c+d x]$$

$$\text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}$$

$$\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{\left(16 a^2 A+35 A b^2-30 a b B\right) \text{Sin}[c+d x]}{24 a^3 d \sqrt{a+b \,\text{Sec}[c+d x]}}-$$

$$\frac{(7 A b-6 a B) \text{Cos}[c+d x] \text{Sin}[c+d x]}{12 a^2 d \sqrt{a+b \,\text{Sec}[c+d x]}}+\frac{A \,\text{Cos}[c+d x]^2 \text{Sin}[c+d x]}{3 a d \sqrt{a+b \,\text{Sec}[c+d x]}}+$$

$$\frac{b\left(16 a^4 A+41 a^2 A b^2-105 A b^4-42 a^3 b B+90 a b^3 B\right) \text{Tan}[c+d x]}{24 a^4\left(a^2-b^2\right) d \sqrt{a+b \,\text{Sec}[c+d x]}}$$

Result (type 4, 2343 leaves):

$$\Bigg((b+a \,\text{Cos}[c+d x])^2 \text{Sec}[c+d x]^2$$

$$\left(-\frac{\left(a^4 A-a^2 A b^2+24 A b^4-24 a b^3 B\right) \text{Sin}[c+d x]}{12 a^4\left(-a^2+b^2\right)}-\frac{2\left(A b^5 \text{Sin}[c+d x]-a b^4 B \,\text{Sin}[c+d x]\right)}{a^4\left(a^2-b^2\right)(b+a \,\text{Cos}[c+d x])}+\right.$$

$$\left.\left.\frac{(-11 A b+6 a B) \text{Sin}[2 (c+d x)]}{24 a^3}+\frac{A \,\text{Sin}[3 (c+d x)]}{12 a^2}\right)\right) \Big/ \left(d\,(a+b \,\text{Sec}[c+d x])^{3/2}\right)-$$

$$\Bigg((b+a \,\text{Cos}[c+d x])^{3/2} \text{Sec}[c+d x]^{3/2} \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

$$\sqrt{\frac{a+b-a \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

$$\Bigg(16 a^5 A \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+16 a^4 A b \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+41 a^3 A b^2 \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$41 a^2 A b^3 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-105 a A b^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-105 A b^5 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$42 a^4 b B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-42 a^3 b^2 B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+90 a^2 b^3 B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$90 a b^4 B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-32 a^5 A \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3-82 a^3 A b^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3+$$

$$210 a A b^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3+84 a^4 b B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3-180 a^2 b^3 B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^3+$$

$$16 a^5 A \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-16 a^4 A b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+41 a^3 A b^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-$$

$$41 a^2 A b^3 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-105 a A b^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+105 A b^5 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-$$

$$42 a^4 b B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+42 a^3 b^2 B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+90 a^2 b^3 B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5-$$

$$90 a b^4 B \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^5+72 a^4 A b \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$138 a^2 A b^3 \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$210 A b^5 \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$48 a^5 B \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$132 a^3 b^2 B \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}+$$

$$180 a b^4 B \operatorname{EllipticPi}\left[-1,-\operatorname{ArcSin}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$72\,a^4\,A\,b\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$138\,a^2\,A\,b^3\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$210\,A\,b^5\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$48\,a^5\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$132\,a^3\,b^2\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$180\,a\,b^4\,B\,\mathrm{EllipticPi}\left[-1,\,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\;\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;+$$

$$(a+b)\,\left(16\,a^4\,A+41\,a^2\,A\,b^2-105\,A\,b^4-42\,a^3\,b\,B+90\,a\,b^3\,B\right)$$

$$\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\;-$$

$$2\,a\,(a+b)\,\left(-35\,A\,b^3+12\,a^3\,B-2\,a^2\,b\,(5\,A+9\,B)+3\,a\,b^2\,(7\,A+10\,B)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)\bigg/$$

$$\left(24\,a^4\,\left(a^2-b^2\right)\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\sqrt{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right.$$

$$\left.\left(a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)-b\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\right)$$

Problem 385: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+d\,x]^4\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 4, 510 leaves, 6 steps):

$$-\left(\left(2\left(8a^4 A b-15a^2 A b^3+3 A b^5-16a^5 B+28a^3 b^2 B-8 a b^4 B\right)\right.\right.$$
$$\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\left.\left.\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}\right)\Big/\left(3\,(a-b)\,b^5\,(a+b)^{3/2}\,d\right)\right)+$$
$$\left(2\left(9 a b^3\,(A-B)+b^4\,(3A-B)+16 a^4 B-2a^2 b^2\,(3A+8B)-a^3\,(8 A b-12 b B)\right)\right.$$
$$\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\left.\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}\right)\Big/$$
$$\left(3\,b^4\sqrt{a+b}\,\left(a^2-b^2\right)d\right)+\frac{2a\,(A b-a B)\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]}{3 b\left(a^2-b^2\right)d\,(a+b\,\text{Sec}[c+d x])^{3/2}}-$$
$$\frac{2a^2\left(3a^2 A b-7 A b^3-6a^3 B+10 a b^2 B\right)\text{Tan}[c+d x]}{3b^3\left(a^2-b^2\right)^2 d\sqrt{a+b\,\text{Sec}[c+d x]}}-$$
$$\frac{2\left(a A b-2a^2 B+b^2 B\right)\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{3b^3\left(a^2-b^2\right)d}$$

Result (type 1, 1 leaves):

???

Problem 386: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sec}[c+d x]^3\,(A+B\,\text{Sec}[c+d x])}{(a+b\,\text{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 4, 417 leaves, 5 steps):

$$\left(2\left(2 a^3 A b-6 a A b^3-8 a^4 B+15 a^2 b^2 B-3 b^4 B\right)\right.$$
$$\text{Cot}[c+d x]\ \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$
$$\left.\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\ \sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3\,(a-b)\, b^4\,(a+b)^{3/2}\, d\right)+$$
$$\left(2\left(2 a^2 b\,(A-3 B)-3 b^3\,(A-B)-8 a^3 B+3 a b^2\,(A+3 B)\right) \text{Cot}[c+d x]\ \text{EllipticF}\left[\right.\right.$$
$$\left.\left.\text{ArcSin}\left[\frac{\sqrt{a+b\, \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\ \sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}\right) \Big/$$
$$\left(3 b^3 \sqrt{a+b}\,\left(a^2-b^2\right) d\right)-\frac{2 a^2\,(A b-a B)\, \text{Tan}[c+d x]}{3 b^2\left(a^2-b^2\right) d\,(a+b\, \text{Sec}[c+d x])^{3/2}}+$$
$$\frac{2 a\left(2 a^2 A b-6 A b^3-5 a^3 B+9 a b^2 B\right) \text{Tan}[c+d x]}{3 b^2\left(a^2-b^2\right)^2 d \sqrt{a+b\, \text{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 387: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Sec}[c+d x]^2\,(A+B\, \text{Sec}[c+d x])}{(a+b\, \text{Sec}[c+d x])^{5/2}}\, dx$$

Optimal (type 4, 387 leaves, 5 steps):

$$\left(2\left(a^2 A b+3 A b^3+2 a^3 B-6 a b^2 B\right) \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3(a-b) b^3(a+b)^{3/2} d\right)+$$

$$\left(2\left(2 a^2 B-3 b^2(A+B)+a b(A+3 B)\right) \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3 b^2 \sqrt{a+b}\left(a^2-b^2\right) d\right)+$$

$$\frac{2 a(A b-a B) \operatorname{Tan}[c+d x]}{3 b\left(a^2-b^2\right) d(a+b \operatorname{Sec}[c+d x])^{3/2}}+\frac{2\left(a^2 A b+3 A b^3+2 a^3 B-6 a b^2 B\right) \operatorname{Tan}[c+d x]}{3 b\left(a^2-b^2\right)^2 d \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 388: Unable to integrate problem.

$$\int \frac{\operatorname{Sec}[c+d x](A+B \operatorname{Sec}[c+d x])}{(a+b \operatorname{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 4, 353 leaves, 5 steps):

$$-\left(\left(2\left(4 a A b-a^2 B-3 b^2 B\right) \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3(a-b) b^2(a+b)^{3/2} d\right)\right)+$$

$$\left(2(3 a A-A b+a B-3 b B) \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b(1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sec}[c+d x])}{a-b}}\right) \Big/ \left(3(a-b) b(a+b)^{3/2} d\right)-$$

$$\frac{2(A b-a B) \operatorname{Tan}[c+d x]}{3\left(a^2-b^2\right) d(a+b \operatorname{Sec}[c+d x])^{3/2}}-\frac{2\left(4 a A b-a^2 B-3 b^2 B\right) \operatorname{Tan}[c+d x]}{3\left(a^2-b^2\right)^2 d \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 8, 33 leaves):

$$\int \frac{\mathrm{Sec}[c+d\,x]\,(A+B\,\mathrm{Sec}[c+d\,x])}{(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}}\,dx$$

Problem 389: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\mathrm{Sec}[c+d\,x]}{(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 495 leaves, 7 steps):

$$\left(2\left(7\,a^2\,A\,b-3\,A\,b^3-4\,a^3\,B\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}\right)\Big/\left(3\,a^2\,(a-b)\,b\,(a+b)^{3/2}\,d\right)-$$
$$\left(2\left(6\,a^2\,A\,b-a\,A\,b^2-3\,A\,b^3-3\,a^3\,B+a^2\,b\,B\right)\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}\right)\Big/\left(3\,a^2\,(a-b)\,b\,(a+b)^{3/2}\,d\right)-$$
$$\frac{1}{a^3\,d}2\,A\,\sqrt{a+b}\,\mathrm{Cot}[c+d\,x]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\mathrm{Sec}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\mathrm{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{2\,b\,(A\,b-a\,B)\,\mathrm{Tan}[c+d\,x]}{3\,a\,(a^2-b^2)\,d\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}+\frac{2\,b\,\left(7\,a^2\,A\,b-3\,A\,b^3-4\,a^3\,B\right)\,\mathrm{Tan}[c+d\,x]}{3\,a^2\,(a^2-b^2)^2\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 4, 2083 leaves):

$$\left((b+a\,\mathrm{Cos}[c+d\,x])^3\,\mathrm{Sec}[c+d\,x]^2\,(A+B\,\mathrm{Sec}[c+d\,x])\right.$$
$$\left(\frac{2\left(-7\,a^2\,A\,b+3\,A\,b^3+4\,a^3\,B\right)\,\mathrm{Sin}[c+d\,x]}{3\,a^2\,(a^2-b^2)^2}-\frac{2\left(A\,b^3\,\mathrm{Sin}[c+d\,x]-a\,b^2\,B\,\mathrm{Sin}[c+d\,x]\right)}{3\,a^2\,(a^2-b^2)\,(b+a\,\mathrm{Cos}[c+d\,x])^2}-\right.$$
$$\left(2\left(-8\,a^2\,A\,b^2\,\mathrm{Sin}[c+d\,x]+4\,A\,b^4\,\mathrm{Sin}[c+d\,x]+5\,a^3\,b\,B\,\mathrm{Sin}[c+d\,x]-a\,b^3\,B\,\mathrm{Sin}[c+d\,x]\right)\right)\Big/$$
$$\left.\left.\left(3\,a^2\,(a^2-b^2)^2\,(b+a\,\mathrm{Cos}[c+d\,x])\right)\right)\right)\Big/\left(d\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}\right)+$$

$$\Bigg(2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Sec}[c+d\,x]^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\Bigg(7\,a^3\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+7\,a^2\,A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-3\,a\,A\,b^3\,\sqrt{\frac{-a+b}{a+b}}$$

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-3\,A\,b^4\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-4\,a^4\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$

$$4\,a^3\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-14\,a^3\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$

$$6\,a\,A\,b^3\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+8\,a^4\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+$$

$$7\,a^3\,A\,b\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-7\,a^2\,A\,b^2\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$3\,a\,A\,b^3\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+3\,A\,b^4\,\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$4\,a^4\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+4\,a^3\,b\,\sqrt{\frac{-a+b}{a+b}}\,B\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5-$$

$$6\,i\,a^4\,A\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}+$$

$$12\,i\,a^2\,A\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}-$$

$$6\,\mathrm{i}\,A\,b^4\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$6\,\mathrm{i}\,a^4\,A\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+12\,\mathrm{i}\,a^2\,A\,b^2$$

$$\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$6\,\mathrm{i}\,A\,b^4\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$

$$\mathrm{i}\,(a-b)\,\left(-7\,a^2\,A\,b+3\,A\,b^3+4\,a^3\,B\right)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$

$$\mathrm{i}\,(a-b)\,\left(-4\,a\,A\,b^2-6\,A\,b^3+3\,a^3\,(A-B)+a^2\,b\,(9\,A+B)\right)$$

$$\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left.\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\right)\Big/$$

$$\left(3\,a^2\,\sqrt{\frac{-a+b}{a+b}}\,\left(a^2-b^2\right)^2\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\right.$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\left.\left(a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)-b\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\right)$$

Problem 390: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 4, 582 leaves, 8 steps) :

$$\left(\left(3 a^4 A - 26 a^2 A b^2 + 15 A b^4 + 14 a^3 b B - 6 a b^3 B\right) \text{Cot}[c + d x] \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a + b \, \text{Sec}[c + d x]}}{\sqrt{a + b}}\right], \frac{a + b}{a - b}\right] \sqrt{\frac{b \left(1 - \text{Sec}[c + d x]\right)}{a + b}} \sqrt{-\frac{b \left(1 + \text{Sec}[c + d x]\right)}{a - b}}\right) \Big/ \left(3 a^3 \left(a - b\right) b \left(a + b\right)^{3/2} d\right) -$$

$$\left(\left(15 A b^3 + a b^2 (5 A - 6 B) - 3 a^3 (A - 4 B) - a^2 b \left(21 A + 2 B\right)\right) \text{Cot}[c + d x] \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a + b \, \text{Sec}[c + d x]}}{\sqrt{a + b}}\right], \frac{a + b}{a - b}\right] \sqrt{\frac{b \left(1 - \text{Sec}[c + d x]\right)}{a + b}} \sqrt{-\frac{b \left(1 + \text{Sec}[c + d x]\right)}{a - b}}\right) \Big/ \left(3 a^3 \sqrt{a + b} \left(a^2 - b^2\right) d\right) + \frac{1}{a^4 d}$$

$$\sqrt{a + b} \left(5 A b - 2 a B\right) \text{Cot}[c + d x] \, \text{EllipticPi}\left[\frac{a + b}{a}, \text{ArcSin}\left[\frac{\sqrt{a + b \, \text{Sec}[c + d x]}}{\sqrt{a + b}}\right], \frac{a + b}{a - b}\right] \sqrt{\frac{b \left(1 - \text{Sec}[c + d x]\right)}{a + b}} \sqrt{-\frac{b \left(1 + \text{Sec}[c + d x]\right)}{a - b}} +$$

$$\frac{A \, \text{Sin}[c + d x]}{a d \left(a + b \, \text{Sec}[c + d x]\right)^{3/2}} + \frac{b \left(3 a^2 A - 5 A b^2 + 2 a b B\right) \text{Tan}[c + d x]}{3 a^2 \left(a^2 - b^2\right) d \left(a + b \, \text{Sec}[c + d x]\right)^{3/2}} +$$

$$\frac{b \left(3 a^4 A - 26 a^2 A b^2 + 15 A b^4 + 14 a^3 b B - 6 a b^3 B\right) \text{Tan}[c + d x]}{3 a^3 \left(a^2 - b^2\right)^2 d \sqrt{a + b \, \text{Sec}[c + d x]}}$$

Result (type 4, 2390 leaves):

$$\left(\left(b + a \, \text{Cos}[c + d x]\right)^3 \text{Sec}[c + d x]^3 \left(-\frac{2 b \left(-10 a^2 A b + 6 A b^3 + 7 a^3 B - 3 a b^2 B\right) \text{Sin}[c + d x]}{3 a^3 \left(-a^2 + b^2\right)^2} + \frac{2 \left(A b^4 \, \text{Sin}[c + d x] - a b^3 B \, \text{Sin}[c + d x]\right)}{3 a^3 \left(a^2 - b^2\right) \left(b + a \, \text{Cos}[c + d x]\right)^2} + \left(2 \left(-11 a^2 A b^3 \, \text{Sin}[c + d x] + 7 A b^5 \, \text{Sin}[c + d x] + 8 a^3 b^2 B \, \text{Sin}[c + d x] - 4 a b^4 B \, \text{Sin}[c + d x]\right)\right) \Big/ \left(3 a^3 \left(a^2 - b^2\right)^2 \left(b + a \, \text{Cos}[c + d x]\right)\right)\right)\right) \Big/$$

$$\left(d \left(a + b \, \text{Sec}[c + d x]\right)^{5/2}\right) - \left(\left(b + a \, \text{Cos}[c + d x]\right)^{5/2} \text{Sec}[c + d x]^{5/2} \sqrt{\frac{1}{1 - \text{Tan}\left[\frac{1}{2} (c + d x)\right]^2}}\right.$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}}$$

$$\Bigg(3\,a^5\,A\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+3\,a^4\,A\,b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-26\,a^3\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-$$

$$26\,a^2\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+15\,a\,A\,b^4\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+15\,A\,b^5\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$

$$14\,a^4\,b\,B\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+14\,a^3\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-6\,a^2\,b^3\,B\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-$$

$$6\,a\,b^4\,B\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-6\,a^5\,A\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^3+52\,a^3\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^3-$$

$$30\,a\,A\,b^4\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^3-28\,a^4\,b\,B\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^3+12\,a^2\,b^3\,B\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^3+$$

$$3\,a^5\,A\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5-3\,a^4\,A\,b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5-26\,a^3\,A\,b^2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5+$$

$$26\,a^2\,A\,b^3\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5+15\,a\,A\,b^4\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5-15\,A\,b^5\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5+$$

$$14\,a^4\,b\,B\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5-14\,a^3\,b^2\,B\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5-6\,a^2\,b^3\,B\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5+$$

$$6\,a\,b^4\,B\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^5+30\,a^4\,A\,b\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\,-$$

$$60\,a^2\,A\,b^3\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\,+$$

$$30\,A\,b^5\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\,-$$

$$12\,a^5\,B\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\,+$$

$$24\,a^3\,b^2\,B\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -$$

$$12\,a\,b^4\,B\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ +$$

$$30\,a^4\,A\,b\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -$$

$$60\,a^2\,A\,b^3\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ +$$

$$30\,A\,b^5\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -$$

$$12\,a^5\,B\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ +$$

$$24\,a^3\,b^2\,B\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ -$$

$$12\,a\,b^4\,B\,\mathrm{EllipticPi}\left[-1,-\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\ \sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}\ +$$

$$(a+b)\,\left(3\,a^4\,A-26\,a^2\,A\,b^2+15\,A\,b^4+14\,a^3\,b\,B-6\,a\,b^3\,B\right)$$

$$\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a-b}{a+b}\right]\sqrt{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\,-$$
$$2\,a\,\left(a+b\right)\,\left(5\,A\,b^3+3\,a^3\,B+3\,a^2\,b\,\left(-2\,A+B\right)-a\,b^2\,\left(3\,A+2\,B\right)\right)$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right],\,\frac{a-b}{a+b}\right]\sqrt{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}$$
$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{a+b}}\right)\right)\Big/$$
$$\left(3\,a\,\left(a^3-a\,b^2\right)^2\,d\,\left(a+b\,\text{Sec}\left[c+d\,x\right]\right)^{5/2}\sqrt{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right.$$
$$\left.\left(a\,\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)-b\,\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\right)$$

Problem 391: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}\left[c+d\,x\right]^2\,\left(A+B\,\text{Sec}\left[c+d\,x\right]\right)}{\left(a+b\,\text{Sec}\left[c+d\,x\right]\right)^{5/2}}\,dx$$

Optimal (type 4, 686 leaves, 9 steps):

$$-\left(\left(\left(33 a^4 A b-170 a^2 A b^3+105 A b^5-12 a^5 B+104 a^3 b^2 B-60 a b^4 B\right)\right.\right.$$

$$\text{Cot}[c+d x] \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \, \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$

$$\left.\sqrt{\frac{b \, (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b \, (1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(12 a^4 \, (a-b) \, b \, (a+b)^{3/2} \, d\right)+$$

$$\left(\left(105 A b^4+5 a b^3 \, (7 A-12 B)+6 a^4 \, (A+2 B)-5 a^2 b^2 \, (27 A+4 B)-a^3 \, (27 A b-84 b B)\right)\right.$$

$$\text{Cot}[c+d x] \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \, \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$

$$\left.\sqrt{\frac{b \, (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b \, (1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(12 a^4 \sqrt{a+b} \, \left(a^2-b^2\right) \, d\right)-$$

$$\frac{1}{4 a^5 d} \sqrt{a+b} \, \left(4 a^2 A+35 A b^2-20 a b B\right) \, \text{Cot}[c+d x]$$

$$\text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b \, \text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b \, (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b \, (1+\text{Sec}[c+d x])}{a-b}}-$$

$$\frac{(7 A b-4 a B) \, \text{Sin}[c+d x]}{4 a^2 d \, (a+b \, \text{Sec}[c+d x])^{3/2}}+\frac{A \, \text{Cos}[c+d x] \, \text{Sin}[c+d x]}{2 a d \, (a+b \, \text{Sec}[c+d x])^{3/2}}-$$

$$\frac{b \, \left(27 a^2 A b-35 A b^3-12 a^3 B+20 a b^2 B\right) \, \text{Tan}[c+d x]}{12 a^3 \, \left(a^2-b^2\right) \, d \, (a+b \, \text{Sec}[c+d x])^{3/2}}-$$

$$\left(b \, \left(33 a^4 A b-170 a^2 A b^3+105 A b^5-12 a^5 B+104 a^3 b^2 B-60 a b^4 B\right) \, \text{Tan}[c+d x]\right) \Big/$$

$$\left(12 a^4 \, \left(a^2-b^2\right)^2 d \sqrt{a+b \, \text{Sec}[c+d x]}\right)$$

Result (type 4, 5217 leaves) :

$$\left((b+a \, \text{Cos}[c+d x])^3 \, \text{Sec}[c+d x]^3 \left(\frac{2 b^2 \, \left(-13 a^2 A b+9 A b^3+10 a^3 B-6 a b^2 B\right) \, \text{Sin}[c+d x]}{3 a^4 \, \left(-a^2+b^2\right)^2}-\right.\right.$$

$$\frac{2 \, \left(A b^5 \, \text{Sin}[c+d x]-a b^4 B \, \text{Sin}[c+d x]\right)}{3 a^4 \, \left(a^2-b^2\right) \, (b+a \, \text{Cos}[c+d x])^2}-\left(2 \, \left(-14 a^2 A b^4 \, \text{Sin}[c+d x]+\right.\right.$$

$$\left.\left.10 A b^6 \, \text{Sin}[c+d x]+11 a^3 b^3 B \, \text{Sin}[c+d x]-7 a b^5 B \, \text{Sin}[c+d x]\right)\right) \Big/$$

$$\left.\left.\left(3 a^4 \, \left(a^2-b^2\right)^2 \, (b+a \, \text{Cos}[c+d x])\right)+\frac{A \, \text{Sin}[2 \, (c+d x)]}{4 a^3}\right)\right) \Big/ \left(d \, (a+b \, \text{Sec}[c+d x])^{5/2}\right)+$$

$$\left((b+a\,\text{Cos}[c+d\,x])^{5/2}\left(\frac{a^2\,A}{2\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+\right.\right.$$

$$\frac{2\,A\,b^2}{(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}-$$

$$\frac{7\,A\,b^4}{6\,a^2\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}-$$

$$\frac{2\,a\,b\,B}{(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{2\,b^3\,B}{3\,a\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}-$$

$$\frac{9\,a\,A\,b\,\sqrt{\text{Sec}[c+d\,x]}}{8\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{31\,A\,b^3\,\sqrt{\text{Sec}[c+d\,x]}}{12\,a\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-$$

$$\frac{35\,A\,b^5\,\sqrt{\text{Sec}[c+d\,x]}}{24\,a^3\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{a^2\,B\,\sqrt{\text{Sec}[c+d\,x]}}{2\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-$$

$$\frac{4\,b^2\,B\,\sqrt{\text{Sec}[c+d\,x]}}{3\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{5\,b^4\,B\,\sqrt{\text{Sec}[c+d\,x]}}{6\,a^2\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-$$

$$\frac{11\,a\,A\,b\,\text{Cos}[2\,(c+d\,x)]\,\sqrt{\text{Sec}[c+d\,x]}}{8\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{85\,A\,b^3\,\text{Cos}[2\,(c+d\,x)]\,\sqrt{\text{Sec}[c+d\,x]}}{12\,a\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-$$

$$\frac{35\,A\,b^5\,\text{Cos}[2\,(c+d\,x)]\,\sqrt{\text{Sec}[c+d\,x]}}{8\,a^3\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{a^2\,B\,\text{Cos}[2\,(c+d\,x)]\,\sqrt{\text{Sec}[c+d\,x]}}{2\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-$$

$$\left.\frac{13\,b^2\,B\,\text{Cos}[2\,(c+d\,x)]\,\sqrt{\text{Sec}[c+d\,x]}}{3\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{5\,b^4\,B\,\text{Cos}[2\,(c+d\,x)]\,\sqrt{\text{Sec}[c+d\,x]}}{2\,a^2\,(a^2-b^2)^2\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}\right)$$

$$\text{Sec}[c+d\,x]^{5/2}\left(\left(\left((-33\,a^4\,A\,b+170\,a^2\,A\,b^3-105\,A\,b^5+12\,a^5\,B-104\,a^3\,b^2\,B+60\,a\,b^4\,B)\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)\Big/$$

$$\left(12\,a^4\,(a^2-b^2)^2\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)-\left((a+b)\,\left((33\,a^4\,A\,b-170\,a^2\,A\,b^3+105\,A\,b^5-\right.\right.$$

$$12\,a^5\,B+104\,a^3\,b^2\,B-60\,a\,b^4\,B)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+$$

$$2\,a\,(6\,a^4\,A-35\,A\,b^4+3\,a^2\,b^2\,(11\,A-4\,B)-3\,a^3\,b\,(3\,A+8\,B)+a\,b^3\,(21\,A+20\,B))$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] + 6 (a-b)^2 (a+b)$$
$$\left(4 a^2 A + 35 A b^2 - 20 a b B\right) \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]\Bigg)$$
$$\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}$$
$$\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4}\Bigg) \Big/$$
$$\left(12 a^4 \left(a^2-b^2\right)^2 \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right.$$
$$\left.\left(b - b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^4 + a \left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\right)\Bigg)\Bigg) \Big/$$
$$\left(d \left(a+b \text{Sec}[c+d x]\right)^{5/2} \left(\left(\left(-33 a^4 A b + 170 a^2 A b^3 - 105 A b^5 + 12 a^5 B - 104 a^3 b^2 B + 60 a b^4 B\right)\right.\right.\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right) \Big/$$
$$\left(24 a^4 \left(a^2-b^2\right)^2 \sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right) +$$
$$\Bigg((a+b) \Big(\big(33 a^4 A b - 170 a^2 A b^3 + 105 A b^5 - 12 a^5 B + 104 a^3 b^2 B - 60 a b^4 B\big)$$
$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] +$$
$$2 a \left(6 a^4 A - 35 A b^4 + 3 a^2 b^2 (11 A - 4 B) - 3 a^3 b (3 A + 8 B) + a b^3 (21 A + 20 B)\right)$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] + 6 (a-b)^2 (a+b)$$
$$\left(4 a^2 A + 35 A b^2 - 20 a b B\right) \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]\Big)$$
$$\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}\,\left(-2\,b\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+\right.$$

$$\left.\left.2\,a\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\right)\Bigg/\left(12\,a^4\,\left(a^2-b^2\right)^2\right.$$

$$\left.\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)^2\right)+$$

$$\left((a+b)\,\left(\left(33\,a^4\,A\,b-170\,a^2\,A\,b^3+105\,A\,b^5-12\,a^5\,B+104\,a^3\,b^2\,B-60\,a\,b^4\,B\right)\right.\right.$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+$$
$$2\,a\,\left(6\,a^4\,A-35\,A\,b^4+3\,a^2\,b^2\,(11\,A-4\,B)-3\,a^3\,b\,(3\,A+8\,B)+a\,b^3\,(21\,A+20\,B)\right)$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]+6\,(a-b)^2\,(a+b)$$
$$\left.\left(4\,a^2\,A+35\,A\,b^2-20\,a\,b\,B\right)\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}$$

$$\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)\Bigg/$$

$$\left(12\,a^4\,\left(a^2-b^2\right)^2\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}\right.$$

$$\left.\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\right)-$$

$$\left(\left(\left(33\,a^4\,A\,b-170\,a^2\,A\,b^3+105\,A\,b^5-12\,a^5\,B+104\,a^3\,b^2\,B-60\,a\,b^4\,B\right)\right.\right.$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] +$$
$$2 a \left(6 a^4 A - 35 A b^4 + 3 a^2 b^2 (11 A - 4 B) - 3 a^3 b (3 A + 8 B) + a b^3 (21 A + 20 B)\right)$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] + 6 (a-b)^2 (a+b)$$
$$\left.(4 a^2 A + 35 A b^2 - 20 a b B)\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]\right)$$
$$\left(-a \,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + b\, \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$
$$\left.\sqrt{\frac{a+b-a \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 + b\, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4}\right) \Bigg/$$
$$\left(24 a^4 (a^2-b^2)^2 \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 + b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right.$$
$$\left.\left(b - b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4 + a \left(-1 + \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\right) +$$
$$\left((a+b) \left(\left(33 a^4 A b - 170 a^2 A b^3 + 105 A b^5 - 12 a^5 B + 104 a^3 b^2 B - 60 a b^4 B\right)\right.\right.$$
$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] +$$
$$2 a \left(6 a^4 A - 35 A b^4 + 3 a^2 b^2 (11 A - 4 B) - 3 a^3 b (3 A + 8 B) + a b^3 (21 A + 20 B)\right)$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right] + 6 (a-b)^2 (a+b)$$
$$\left.(4 a^2 A + 35 A b^2 - 20 a b B)\, \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a-b}{a+b}\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] \sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$
$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 + b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}$$
$$\left.\sqrt{\frac{a+b-a \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 + b\, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4}\right) \Bigg/$$
$$\left(24 a^4 (a^2-b^2)^2 \left(b - b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4 + a \left(-1 + \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\right) -$$

$$\left(\left(-33 a^4 A b+170 a^2 A b^3-105 A b^5+12 a^5 B-104 a^3 b^2 B+60 a b^4 B\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right.$$

$$\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}} \left(\frac{\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}+\right.$$

$$\left(\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right] \left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right)\Big/$$

$$\left.\left.\left(1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^2\right)\right)\Big/\left(24 a^4 \left(a^2-b^2\right)^2 \left(\frac{1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}\right)^{3/2}\right)+$$

$$\left(\left(-33 a^4 A b+170 a^2 A b^3-105 A b^5+12 a^5 B-104 a^3 b^2 B+60 a b^4 B\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right.$$

$$\left(\left(-a \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]+b \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)\Big/\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)-\left(\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right] \left(a+b-\right.\right.$$

$$\left.\left.\left.\left.a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right)\Big/\left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^2\right)\right)\Big/\left(24 a^4\right.$$

$$\left.\left(a^2-b^2\right)^2 \sqrt{\frac{1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}} \sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}}\right)-$$

$$\left((a+b) \left(\left(33 a^4 A b-170 a^2 A b^3+105 A b^5-12 a^5 B+104 a^3 b^2 B-60 a b^4 B\right)\right.\right.$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]+$$

$$2 a \left(6 a^4 A-35 A b^4+3 a^2 b^2 (11 A-4 B)-3 a^3 b (3 A+8 B)+a b^3 (21 A+20 B)\right)$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]+6 (a-b)^2 (a+b)$$

$$\left.\left(4 a^2 A+35 A b^2-20 a b B\right) \text{EllipticPi}\left[-1, -\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a-b}{a+b}\right]\right)$$

$$\sqrt{\frac{a+b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}} \sqrt{1-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^4}$$

$$\left(\left(-a \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]+b \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)\Big/\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)-\left(\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right.$$

$$\left.\left.\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\Big/\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\Big/$$

$$\left(24\,a^4\,\left(a^2-b^2\right)^2\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right.$$

$$\left.\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\right)\right)-$$

$$\left((a+b)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right.$$

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4}$$

$$\left(\left(a\,\left(6\,a^4\,A-35\,A\,b^4+3\,a^2\,b^2\,(11\,A-4\,B)-3\,a^3\,b\,(3\,A+8\,B)+a\,b^3\,(21\,A+20\,B)\right)\right.\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/\left(\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{1-\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)-$$

$$\left(3\,(a-b)^2\,(a+b)\,\left(4\,a^2\,A+35\,A\,b^2-20\,a\,b\,B\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/$$

$$\left(\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{1-\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)+$$

$$\left(\left(33\,a^4\,A\,b-170\,a^2\,A\,b^3+105\,A\,b^5-12\,a^5\,B+104\,a^3\,b^2\,B-60\,a\,b^4\,B\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right.$$

$$\left.\left.\left.\sqrt{1-\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)\Big/\left(2\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)\right)\right)\Big/$$

$$\left(12\,a^4\,\left(a^2-b^2\right)^2\,\sqrt{\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(b-b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+\right.\right.$$

$$a\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 392: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[e+f\,x]\,\left(A+A\,\text{Sec}[e+f\,x]\right)}{\sqrt{a+b\,\text{Sec}[e+f\,x]}}\,dx$$

Optimal (type 4, 105 leaves, 1 step):

$$-\frac{1}{b^2\,f}2\,A\,(a-b)\,\sqrt{a+b}\,\text{Cot}[e+f\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[e+f\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[e+f\,x])}{a-b}}$$

Result (type 4, 283 leaves):

$$A\left(\frac{\left(b+a\,\text{Cos}[e+f\,x]\right)\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\left(1+\text{Sec}[e+f\,x]\right)\,\text{Sin}[e+f\,x]}{b\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\,\sqrt{\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Sec}[e+f\,x]}\,\left(1+\text{Sec}[e+f\,x]\right)\right.$$

$$\left(\frac{1}{\sqrt{\frac{\text{Cos}[e+f\,x]}{1+\text{Cos}[e+f\,x]}}}\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\sqrt{\frac{b+a\,\text{Cos}[e+f\,x]}{(a+b)\,\left(1+\text{Cos}[e+f\,x]\right)}}\,\text{EllipticE}\left[\right.\right.$$

$$\left.\text{ArcSin}\left[\sqrt{\frac{a-b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right],\frac{a+b}{a-b}\right]+\left(b+a\,\text{Cos}[e+f\,x]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Bigg)$$

$$\left.\left(-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\Bigg)\right/\left(b\,f\,\sqrt{\text{Sec}[e+f\,x]}\,\sqrt{a+b\,\text{Sec}[e+f\,x]}\right)\Bigg)$$

Problem 393: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[e+f x]\,(A-A\,\text{Sec}[e+f x])}{\sqrt{a+b\,\text{Sec}[e+f x]}}\,dx$$

Optimal (type 4, 107 leaves, 1 step):

$$\frac{1}{b^2 f}2A\sqrt{a-b}\,(a+b)\,\text{Cot}[e+f x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]}}{\sqrt{a-b}}\right],\frac{a-b}{a+b}\right]\sqrt{\frac{b\,(1-\text{Sec}[e+f x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sec}[e+f x])}{a-b}}$$

Result (type 4, 2069 leaves):

$$\frac{(b+a\,\text{Cos}[e+f x])\,\text{Csc}\left[\frac{e}{2}+\frac{f x}{2}\right]^2\,(A-A\,\text{Sec}[e+f x])\,\text{Sin}[e+f x]}{b f\sqrt{a+b\,\text{Sec}[e+f x]}}-$$

$$\left((b+a\,\text{Cos}[e+f x])\,\text{Csc}\left[\frac{e}{2}+\frac{f x}{2}\right]^2\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^4\right.$$

$$\left(-\frac{1}{2\sqrt{b+a\,\text{Cos}[e+f x]}\,\sqrt{\text{Sec}[e+f x]}}-\frac{\sqrt{\text{Sec}[e+f x]}}{2\sqrt{b+a\,\text{Cos}[e+f x]}}-\right.$$

$$\left.\frac{a\sqrt{\text{Sec}[e+f x]}}{2b\sqrt{b+a\,\text{Cos}[e+f x]}}-\frac{a\,\text{Cos}[2(e+f x)]\,\sqrt{\text{Sec}[e+f x]}}{2b\sqrt{b+a\,\text{Cos}[e+f x]}}\right)\sqrt{1+\text{Sec}[e+f x]}$$

$$(A-A\,\text{Sec}[e+f x])\left(2\sqrt{\frac{\text{Cos}[e+f x]}{1+\text{Cos}[e+f x]}}\;\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right],\frac{a-b}{a+b}\right]+\right.$$

$$\left.\left.\sqrt{\frac{b+a\,\text{Cos}[e+f x]}{(a+b)\,(1+\text{Cos}[e+f x])}}\;\text{Sec}\left[\frac{1}{2}(e+f x)\right]\left(-\text{Sin}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)\right)\right)\Big/$$

$$\left(8 b f\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\sqrt{\frac{b+a\,\text{Cos}[e+f x]}{(a+b)\,(1+\text{Cos}[e+f x])}}\;\sqrt{\text{Sec}[e+f x]}\;\sqrt{a+b\,\text{Sec}[e+f x]}\right.$$

$$\left(\left(a\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^4\sqrt{1+\text{Sec}[e+f x]}\;\text{Sin}[e+f x]\left(2\sqrt{\frac{\text{Cos}[e+f x]}{1+\text{Cos}[e+f x]}}\right.\right.\right.$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right], \frac{a-b}{a+b}\right] + \sqrt{\frac{b+a\,\text{Cos}[e+fx]}{(a+b)(1+\text{Cos}[e+fx])}}$$

$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]\left(-\text{Sin}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{3}{2}(e+fx)\right]\right)\Bigg)\Bigg)\Bigg/$$

$$\left(16\,b\left(\frac{1}{1+\text{Cos}[e+fx]}\right)^{3/2}\sqrt{b+a\,\text{Cos}[e+fx]}\sqrt{\frac{b+a\,\text{Cos}[e+fx]}{(a+b)(1+\text{Cos}[e+fx])}}\right)+$$

$$\Bigg(3\sqrt{b+a\,\text{Cos}[e+fx]}\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^4\sqrt{1+\text{Sec}[e+fx]}\,\text{Sin}[e+fx]\Bigg(2\sqrt{\frac{\text{Cos}[e+fx]}{1+\text{Cos}[e+fx]}}$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right], \frac{a-b}{a+b}\right] + \sqrt{\frac{b+a\,\text{Cos}[e+fx]}{(a+b)(1+\text{Cos}[e+fx])}}$$

$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]\left(-\text{Sin}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{3}{2}(e+fx)\right]\right)\Bigg)\Bigg)\Bigg/$$

$$\left(16\,b\sqrt{\frac{1}{1+\text{Cos}[e+fx]}}\sqrt{\frac{b+a\,\text{Cos}[e+fx]}{(a+b)(1+\text{Cos}[e+fx])}}\right)+$$

$$\Bigg(\sqrt{b+a\,\text{Cos}[e+fx]}\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^4\sqrt{1+\text{Sec}[e+fx]}$$

$$\left(-\frac{a\,\text{Sin}[e+fx]}{(a+b)(1+\text{Cos}[e+fx])}+\frac{(b+a\,\text{Cos}[e+fx])\,\text{Sin}[e+fx]}{(a+b)(1+\text{Cos}[e+fx])^2}\right)\Bigg(2\sqrt{\frac{\text{Cos}[e+fx]}{1+\text{Cos}[e+fx]}}$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right], \frac{a-b}{a+b}\right] + \sqrt{\frac{b+a\,\text{Cos}[e+fx]}{(a+b)(1+\text{Cos}[e+fx])}}$$

$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]\left(-\text{Sin}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{3}{2}(e+fx)\right]\right)\Bigg)\Bigg)\Bigg/$$

$$\left(16\,b\left(\frac{1}{1+\text{Cos}[e+fx]}\right)^{3/2}\left(\frac{b+a\,\text{Cos}[e+fx]}{(a+b)(1+\text{Cos}[e+fx])}\right)^{3/2}\right)-$$

$$\Bigg(\sqrt{b+a\,\text{Cos}[e+fx]}\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^4\sqrt{1+\text{Sec}[e+fx]}$$

$$\Bigg(2\sqrt{\frac{\text{Cos}[e+fx]}{1+\text{Cos}[e+fx]}}\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right], \frac{a-b}{a+b}\right]+$$

$$\sqrt{\frac{b+a\,\text{Cos}[e+f\,x]}{(a+b)\,(1+\text{Cos}[e+f\,x])}}\ \text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]\left(-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]\right)$$

$$\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Bigg)\Bigg/\left(4\,b\left(\frac{1}{1+\text{Cos}[e+f\,x]}\right)^{3/2}\sqrt{\frac{b+a\,\text{Cos}[e+f\,x]}{(a+b)\,(1+\text{Cos}[e+f\,x])}}\right)-$$

$$\frac{1}{8\,b\left(\frac{1}{1+\text{Cos}[e+f\,x]}\right)^{3/2}\sqrt{\frac{b+a\,\text{Cos}[e+f\,x]}{(a+b)\,(1+\text{Cos}[e+f\,x])}}}\sqrt{b+a\,\text{Cos}[e+f\,x]}$$

$$\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^4\sqrt{1+\text{Sec}[e+f\,x]}$$

$$\left(\sqrt{\frac{b+a\,\text{Cos}[e+f\,x]}{(a+b)\,(1+\text{Cos}[e+f\,x])}}\left(-\frac{1}{2}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{3}{2}\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]\right)\right.$$

$$\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{\sqrt{\frac{\text{Cos}[e+f\,x]}{1+\text{Cos}[e+f\,x]}}}\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right],\ \frac{a-b}{a+b}\right]$$

$$\left(\frac{\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{(1+\text{Cos}[e+f\,x])^2}-\frac{\text{Sin}[e+f\,x]}{1+\text{Cos}[e+f\,x]}\right)+$$

$$\left(\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]\left(-\frac{a\,\text{Sin}[e+f\,x]}{(a+b)\,(1+\text{Cos}[e+f\,x])}+\frac{(b+a\,\text{Cos}[e+f\,x])\,\text{Sin}[e+f\,x]}{(a+b)\,(1+\text{Cos}[e+f\,x])^2}\right)\right.$$

$$\left.\left(-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]\right)\right)\Bigg/\left(2\sqrt{\frac{b+a\,\text{Cos}[e+f\,x]}{(a+b)\,(1+\text{Cos}[e+f\,x])}}\right)+$$

$$\frac{1}{2}\sqrt{\frac{b+a\,\text{Cos}[e+f\,x]}{(a+b)\,(1+\text{Cos}[e+f\,x])}}\ \text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]\left(-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{\sqrt{\frac{\text{Cos}[e+f\,x]}{1+\text{Cos}[e+f\,x]}}\ \text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\sqrt{1-\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{a+b}}}{\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}\right)-$$

$$\left(\sqrt{b+a\,\text{Cos}[e+f\,x]}\ \text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^4\text{Sec}[e+f\,x]\left(2\sqrt{\frac{\text{Cos}[e+f\,x]}{1+\text{Cos}[e+f\,x]}}\right.\right.$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right],\ \frac{a-b}{a+b}\right]+\sqrt{\frac{b+a\,\text{Cos}[e+f\,x]}{(a+b)\,(1+\text{Cos}[e+f\,x])}}$$

$$\left.\left.\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]\left(-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{3}{2}(e+f x)\right]\right)\right)\operatorname{Tan}[e+f x]\right) \Big/$$

$$\left.\left.\left(16\, b\left(\frac{1}{1+\operatorname{Cos}[e+f x]}\right)^{3/2}\sqrt{\frac{b+a\operatorname{Cos}[e+f x]}{(a+b)(1+\operatorname{Cos}[e+f x])}}\sqrt{1+\operatorname{Sec}[e+f x]}\right)\right)\right)$$

Problem 415: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}[c+d x]^{7/2}(A+B\operatorname{Sec}[c+d x])}{a+b\operatorname{Sec}[c+d x]}\,dx$$

Optimal (type 4, 277 leaves, 11 steps):

$$\frac{1}{5 b^3 d}2\left(5 a A b-5 a^2 B-3 b^2 B\right)\sqrt{\operatorname{Cos}[c+d x]}\operatorname{EllipticE}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\operatorname{Sec}[c+d x]}+$$
$$\frac{2(A b-a B)\sqrt{\operatorname{Cos}[c+d x]}\operatorname{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\operatorname{Sec}[c+d x]}}{3 b^2 d}+\frac{1}{b^3(a+b) d}$$
$$2 a^2(A b-a B)\sqrt{\operatorname{Cos}[c+d x]}\operatorname{EllipticPi}\left[\frac{2 a}{a+b},\frac{1}{2}(c+d x),2\right]\sqrt{\operatorname{Sec}[c+d x]}-$$
$$\frac{2\left(5 a A b-5 a^2 B-3 b^2 B\right)\sqrt{\operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]}{5 b^3 d}+$$
$$\frac{2(A b-a B)\operatorname{Sec}[c+d x]^{3/2}\operatorname{Sin}[c+d x]}{3 b^2 d}+\frac{2 B\operatorname{Sec}[c+d x]^{5/2}\operatorname{Sin}[c+d x]}{5 b d}$$

Result (type 4, 669 leaves):

$$-\frac{1}{30\,b^3\,d}\Bigg(-\Bigg(\Big(2\,(-40\,a\,A\,b^2+40\,a^2\,b\,B+18\,b^3\,B)\,\text{Cos}[c+d\,x]^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],$$

$$-1\Big]\,(a+b\,\text{Sec}[c+d\,x])\,\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\Big)\Big/$$

$$\Big(a\,(b+a\,\text{Cos}[c+d\,x])\,(1-\text{Cos}[c+d\,x]^2)\Big)\Bigg)+$$

$$\Big(2\,(-45\,a^2\,A\,b-10\,A\,b^3+45\,a^3\,B+19\,a\,b^2\,B)\,\text{Cos}[c+d\,x]^2\,\Big(\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],$$

$$-1\Big]+\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\Big)\,(a+b\,\text{Sec}[c+d\,x])$$

$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\Big)\Big/\Big(b\,(b+a\,\text{Cos}[c+d\,x])\,(1-\text{Cos}[c+d\,x]^2)\Big)-$$

$$\Big(2\,(-15\,a^2\,A\,b+15\,a^3\,B+9\,a\,b^2\,B)\,\text{Cos}[2\,(c+d\,x)]\,(a+b\,\text{Sec}[c+d\,x])$$

$$\Big(2\,a\,b-2\,a\,b\,\text{Sec}[c+d\,x]^2+2\,a\,b\,\text{EllipticE}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\sqrt{1-\text{Sec}[c+d\,x]^2}+a\,(a-2\,b)\,\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\sqrt{1-\text{Sec}[c+d\,x]^2}+a^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\sqrt{1-\text{Sec}[c+d\,x]^2}-2\,b^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]$$

$$\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}\Big)\,\text{Sin}[c+d\,x]\Big)\Big/$$

$$\Big(a^2\,b\,(b+a\,\text{Cos}[c+d\,x])\,(1-\text{Cos}[c+d\,x]^2)\,\sqrt{\text{Sec}[c+d\,x]}\,(2-\text{Sec}[c+d\,x]^2)\Big)\Bigg)+$$

$$\frac{1}{d}\sqrt{\text{Sec}[c+d\,x]}\,\Bigg(\frac{2\,(-5\,a\,A\,b+5\,a^2\,B+3\,b^2\,B)\,\text{Sin}[c+d\,x]}{5\,b^3}+$$

$$\frac{2\,\text{Sec}[c+d\,x]\,(A\,b\,\text{Sin}[c+d\,x]-a\,B\,\text{Sin}[c+d\,x])}{3\,b^2}+$$

$$\frac{2\,B\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{5\,b}\Bigg)$$

Problem 420: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Sec}[c+d\,x]^{3/2}\,(a+b\,\text{Sec}[c+d\,x])}\,dx$$

Optimal (type 4, 196 leaves, 9 steps):

$$-\frac{1}{a^2 d}2(A b-a B)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}+\frac{1}{3 a^3 d}$$
$$2\left(a^2 A+3 A b^2-3 a b B\right)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}-$$
$$\frac{1}{a^3(a+b) d}2 b^2(A b-a B)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticPi}\left[\frac{2 a}{a+b},\frac{1}{2}(c+d x),2\right]\sqrt{\text{Sec}[c+d x]}+$$
$$\frac{2 A\,\text{Sin}[c+d x]}{3 a d\sqrt{\text{Sec}[c+d x]}}$$

Result (type 4, 545 leaves):

$$-\frac{1}{6 a d}\left(\left(4 A\,\text{Cos}[c+d x]^2\ \text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right],-1\right](a+b\,\text{Sec}[c+d x])\right.\right.$$
$$\left.\sqrt{1-\text{Sec}[c+d x]^2}\ \text{Sin}[c+d x]\right)\Big/\left((b+a\,\text{Cos}[c+d x])\left(1-\text{Cos}[c+d x]^2\right)\right)+$$
$$\left(2(A b-3 a B)\,\text{Cos}[c+d x]^2\left(\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right],-1\right]+\right.\right.$$
$$\left.\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right],-1\right]\right)(a+b\,\text{Sec}[c+d x])$$
$$\left.\sqrt{1-\text{Sec}[c+d x]^2}\ \text{Sin}[c+d x]\right)\Big/\left(b(b+a\,\text{Cos}[c+d x])\left(1-\text{Cos}[c+d x]^2\right)\right)-$$
$$\left(2(3 A b-3 a B)\,\text{Cos}[2(c+d x)](a+b\,\text{Sec}[c+d x])\left(2 a b-2 a b\,\text{Sec}[c+d x]^2+\right.\right.$$
$$2 a b\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right],-1\right]\sqrt{\text{Sec}[c+d x]}\sqrt{1-\text{Sec}[c+d x]^2}+$$
$$a(a-2 b)\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right],-1\right]\sqrt{\text{Sec}[c+d x]}\sqrt{1-\text{Sec}[c+d x]^2}+$$
$$a^2\,\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right],-1\right]\sqrt{\text{Sec}[c+d x]}\sqrt{1-\text{Sec}[c+d x]^2}-$$
$$\left.2 b^2\,\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right],-1\right]\sqrt{\text{Sec}[c+d x]}\sqrt{1-\text{Sec}[c+d x]^2}\right)$$
$$\left.\text{Sin}[c+d x]\right)\Big/\left(a^2 b(b+a\,\text{Cos}[c+d x])\left(1-\text{Cos}[c+d x]^2\right)\sqrt{\text{Sec}[c+d x]}\right.$$
$$\left.\left.\left(2-\text{Sec}[c+d x]^2\right)\right)\right)+\frac{A\sqrt{\text{Sec}[c+d x]}\ \text{Sin}[2(c+d x)]}{3 a d}$$

Problem 421: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d x]}{\text{Sec}[c+d x]^{5/2}(a+b\,\text{Sec}[c+d x])}\,dx$$

Optimal (type 4, 242 leaves, 10 steps):

$$\frac{1}{5 a^3 d} 2 \left(3 a^2 A+5 A b^2-5 a b B\right) \sqrt{\text{Cos}[c+d x]} \text{ EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]} - \frac{1}{3 a^4 d} 2 \left(a^2+3 b^2\right) (A b-a B) \sqrt{\text{Cos}[c+d x]} \text{ EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]} + \frac{1}{a^4 (a+b) d} 2 b^3 (A b-a B) \sqrt{\text{Cos}[c+d x]} \text{ EllipticPi}\left[\frac{2 a}{a+b}, \frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]} + \frac{2 A \text{Sin}[c+d x]}{5 a d \text{Sec}[c+d x]^{3/2}} - \frac{2 (A b-a B) \text{Sin}[c+d x]}{3 a^2 d \sqrt{\text{Sec}[c+d x]}}$$

Result (type 4, 617 leaves):

$$\frac{1}{30 a^2 d}\Bigg(-\Bigg(\Bigg(2 \left(8 a A b+10 a^2 B\right) \text{Cos}[c+d x]^2 \text{ EllipticPi}\left[-\frac{b}{a}, -\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right], -1\right] (a+b \text{Sec}[c+d x]) \sqrt{1-\text{Sec}[c+d x]^2} \text{ Sin}[c+d x]\Bigg) \Big/ \left(a (b+a \text{Cos}[c+d x]) \left(1-\text{Cos}[c+d x]^2\right)\right)\Bigg) + \Bigg(2 \left(9 a^2 A+5 A b^2-5 a b B\right) \text{Cos}[c+d x]^2 \left(\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right], -1\right] + \text{EllipticPi}\left[-\frac{b}{a}, -\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right], -1\right]\right) (a+b \text{Sec}[c+d x]) \sqrt{1-\text{Sec}[c+d x]^2} \text{ Sin}[c+d x]\Bigg) \Big/ \left(b (b+a \text{Cos}[c+d x]) \left(1-\text{Cos}[c+d x]^2\right)\right) - \Bigg(2 \left(9 a^2 A+15 A b^2-15 a b B\right) \text{Cos}[2 (c+d x)] (a+b \text{Sec}[c+d x]) \Bigg(2 a b-2 a b \text{Sec}[c+d x]^2 + 2 a b \text{ EllipticE}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right], -1\right] \sqrt{\text{Sec}[c+d x]} \sqrt{1-\text{Sec}[c+d x]^2} + a (a-2 b) \text{ EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right], -1\right] \sqrt{\text{Sec}[c+d x]} \sqrt{1-\text{Sec}[c+d x]^2} + a^2 \text{ EllipticPi}\left[-\frac{b}{a}, -\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right], -1\right] \sqrt{\text{Sec}[c+d x]} \sqrt{1-\text{Sec}[c+d x]^2} - 2 b^2 \text{ EllipticPi}\left[-\frac{b}{a}, -\text{ArcSin}\left[\sqrt{\text{Sec}[c+d x]}\right], -1\right] \sqrt{\text{Sec}[c+d x]} \sqrt{1-\text{Sec}[c+d x]^2}\Bigg) \text{Sin}[c+d x]\Bigg) \Big/ \left(a^2 b (b+a \text{Cos}[c+d x]) \left(1-\text{Cos}[c+d x]^2\right) \sqrt{\text{Sec}[c+d x]} \left(2-\text{Sec}[c+d x]^2\right)\right)\Bigg) + \frac{\sqrt{\text{Sec}[c+d x]} \left(\frac{A \text{Sin}[c+d x]}{10 a} + \frac{(-A b+a B) \text{Sin}[2 (c+d x)]}{3 a^2} + \frac{A \text{Sin}[3 (c+d x)]}{10 a}\right)}{d}$$

Problem 423: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{5/2} (A+B \text{Sec}[c+d x])}{(a+b \text{Sec}[c+d x])^2} \, dx$$

Optimal (type 4, 315 leaves, 10 steps):

$$\frac{1}{b^2\left(a^2-b^2\right)d}\left(a\,A\,b-3\,a^2\,B+2\,b^2\,B\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}+\frac{\left(A\,b-a\,B\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}}{b\left(a^2-b^2\right)d}+\left(\left(a^2\,A\,b-3\,A\,b^3-3\,a^3\,B+5\,a\,b^2\,B\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2\,a}{a+b},\frac{1}{2}\left(c+d\,x\right),2\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(\left(a-b\right)b^2\left(a+b\right)^2d\right)-\frac{\left(a\,A\,b-3\,a^2\,B+2\,b^2\,B\right)\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{b^2\left(a^2-b^2\right)d}+\frac{a\left(A\,b-a\,B\right)\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{b\left(a^2-b^2\right)d\left(a+b\,\text{Sec}[c+d\,x]\right)}$$

Result (type 4, 685 leaves) :

$$-\frac{1}{4\left(a-b\right)b^2\left(a+b\right)d}\Bigg(-\Bigg(\Bigg(2\left(-4\,a\,A\,b^2+8\,a^2\,b\,B-4\,b^3\,B\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)+\left(2\left(-3\,a^2\,A\,b+4\,A\,b^3+9\,a^3\,B-10\,a\,b^2\,B\right)\text{Cos}[c+d\,x]^2\left(\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]\right)\left(a+b\,\text{Sec}[c+d\,x]\right)\sqrt{1-\text{Sec}[c+d\,x]^2}\;\text{Sin}[c+d\,x]\right)\Big/\left(b\left(b+a\,\text{Cos}[c+d\,x]\right)\left(1-\text{Cos}[c+d\,x]^2\right)\right)-\left(2\left(-a^2\,A\,b+3\,a^3\,B-2\,a\,b^2\,B\right)\text{Cos}\left[2\left(c+d\,x\right)\right]\left(a+b\,\text{Sec}[c+d\,x]\right)\left(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}\right)\text{Sin}[c+d\,x]\right)\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)+\frac{\sqrt{\text{Sec}[c+d\,x]}\left(\frac{\left(a\,A\,b-3\,a^2\,B+2\,b^2\,B\right)\text{Sin}[c+d\,x]}{b^2\left(-a^2+b^2\right)}+\frac{-a\,A\,b\,\text{Sin}[c+d\,x]+a^2\,B\,\text{Sin}[c+d\,x]}{b\left(-a^2+b^2\right)\left(b+a\,\text{Cos}[c+d\,x]\right)}\right)}{d}$$

Problem 424: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^{3/2}\,(A+B\,\text{Sec}[c+d\,x])}{(a+b\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 257 leaves, 9 steps):

$$-\frac{(A\,b-a\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{b\,(a^2-b^2)\,d}-\frac{(A\,b-a\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}}{a\,(a^2-b^2)\,d}+\left((a^2\,A\,b+A\,b^3+a^3\,B-3\,a\,b^2\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,a}{a+b},\,\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(a\,(a-b)\,b\,(a+b)^2\,d\right)+\frac{a\,(A\,b-a\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{b\,(a^2-b^2)\,d\,(a+b\,\text{Sec}[c+d\,x])}$$

Result (type 4, 643 leaves):

$$\frac{1}{4 b (-a+b) (a+b) d}\Bigg(-\Bigg(\Big(2 (4 A b^2 - 4 a b B) \mathrm{Cos}[c+d x]^2 \,\mathrm{EllipticPi}\Big[-\frac{b}{a}, -\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d x]}\Big], -1\Big] (a+b\,\mathrm{Sec}[c+d x]) \sqrt{1-\mathrm{Sec}[c+d x]^2}\, \mathrm{Sin}[c+d x]\Big) \Big/ \Big(a (b+a\,\mathrm{Cos}[c+d x]) (1-\mathrm{Cos}[c+d x]^2)\Big)\Bigg) + \Big(2 (-a A b - 3 a^2 B + 4 b^2 B) \mathrm{Cos}[c+d x]^2 \Big(\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d x]}\Big], -1\Big] + \mathrm{EllipticPi}\Big[-\frac{b}{a}, -\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d x]}\Big], -1\Big]\Big) (a+b\,\mathrm{Sec}[c+d x]) \sqrt{1-\mathrm{Sec}[c+d x]^2}\, \mathrm{Sin}[c+d x]\Big) \Big/ \Big(b (b+a\,\mathrm{Cos}[c+d x]) (1-\mathrm{Cos}[c+d x]^2)\Big) - \Big(2 (a A b - a^2 B) \mathrm{Cos}[2 (c+d x)] (a+b\,\mathrm{Sec}[c+d x]) \Big(2 a b - 2 a b\,\mathrm{Sec}[c+d x]^2 + 2 a b\,\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d x]}\Big], -1\Big] \sqrt{\mathrm{Sec}[c+d x]} \sqrt{1-\mathrm{Sec}[c+d x]^2} + a (a-2 b) \mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d x]}\Big], -1\Big] \sqrt{\mathrm{Sec}[c+d x]} \sqrt{1-\mathrm{Sec}[c+d x]^2} + a^2 \mathrm{EllipticPi}\Big[-\frac{b}{a}, -\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d x]}\Big], -1\Big] \sqrt{\mathrm{Sec}[c+d x]} \sqrt{1-\mathrm{Sec}[c+d x]^2} - 2 b^2 \mathrm{EllipticPi}\Big[-\frac{b}{a}, -\mathrm{ArcSin}\Big[\sqrt{\mathrm{Sec}[c+d x]}\Big], -1\Big] \sqrt{\mathrm{Sec}[c+d x]} \sqrt{1-\mathrm{Sec}[c+d x]^2}\Big) \mathrm{Sin}[c+d x]\Big) \Big/ \Big(a^2 b (b+a\,\mathrm{Cos}[c+d x]) (1-\mathrm{Cos}[c+d x]^2) \sqrt{\mathrm{Sec}[c+d x]} (2-\mathrm{Sec}[c+d x]^2)\Big)\Bigg) + \frac{\sqrt{\mathrm{Sec}[c+d x]} \left(-\frac{(A b - a B) \mathrm{Sin}[c+d x]}{b (-a^2+b^2)} + \frac{A b\,\mathrm{Sin}[c+d x] - a B\,\mathrm{Sin}[c+d x]}{(-a^2+b^2) (b+a\,\mathrm{Cos}[c+d x])}\right)}{d}$$

Problem 425: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{\mathrm{Sec}[c+d x]} (A+B\,\mathrm{Sec}[c+d x])}{(a+b\,\mathrm{Sec}[c+d x])^2} \, dx$$

Optimal (type 4, 263 leaves, 9 steps):

$$\frac{(A b - a B) \sqrt{\mathrm{Cos}[c+d x]}\, \mathrm{EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\mathrm{Sec}[c+d x]}}{a (a^2-b^2) d} + \frac{1}{a^2 (a^2-b^2) d} (2 a^2 A - A b^2 - a b B) \sqrt{\mathrm{Cos}[c+d x]}\, \mathrm{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\mathrm{Sec}[c+d x]} - \left((3 a^2 A b - A b^3 - a^3 B - a b^2 B) \sqrt{\mathrm{Cos}[c+d x]}\, \mathrm{EllipticPi}\left[\frac{2 a}{a+b}, \frac{1}{2} (c+d x), 2\right] \sqrt{\mathrm{Sec}[c+d x]}\right) \Big/ \left(a^2 (a-b) (a+b)^2 d\right) - \frac{(A b - a B) \sqrt{\mathrm{Sec}[c+d x]}\, \mathrm{Sin}[c+d x]}{(a^2-b^2) d (a+b\,\mathrm{Sec}[c+d x])}$$

Result (type 4, 727 leaves):

$$\frac{1}{4\,(a-b)\,(a+b)\,d\,(B+A\,\text{Cos}[c+d\,x])\,(a+b\,\text{Sec}[c+d\,x])^2}(b+a\,\text{Cos}[c+d\,x])^2\,\text{Sec}[c+d\,x]\,(A+B\,\text{Sec}[c+d\,x])$$
$$\Bigg(-\Bigg(\Bigg(2\,(4\,a\,A-4\,b\,B)\,\text{Cos}[c+d\,x]^2\,\text{EllipticPi}\Big[-\frac{b}{a},-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],-1\Big]\,(a+b\,\text{Sec}[c+d\,x])\,\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\Bigg)\Big/\left(a\,(b+a\,\text{Cos}[c+d\,x])\,(1-\text{Cos}[c+d\,x]^2)\right)\Bigg)+$$
$$\Bigg(2\,(-A\,b+a\,B)\,\text{Cos}[c+d\,x]^2\,\Big(\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],-1\Big]+\text{EllipticPi}\Big[-\frac{b}{a},-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],-1\Big]\Big)\,(a+b\,\text{Sec}[c+d\,x])\,\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\Bigg)\Big/\left(b\,(b+a\,\text{Cos}[c+d\,x])\,(1-\text{Cos}[c+d\,x]^2)\right)-$$
$$\Bigg(2\,(A\,b-a\,B)\,\text{Cos}[2\,(c+d\,x)]\,(a+b\,\text{Sec}[c+d\,x])\,\Big(2\,a\,b-2\,a\,b\,\text{Sec}[c+d\,x]^2+2\,a\,b\,\text{EllipticE}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}+a\,(a-2\,b)\,\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}+a^2\,\text{EllipticPi}\Big[-\frac{b}{a},-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}-2\,b^2\,\text{EllipticPi}\Big[-\frac{b}{a},-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}\Big)\,\text{Sin}[c+d\,x]\Bigg)\Big/\left(a^2\,b\,(b+a\,\text{Cos}[c+d\,x])\,(1-\text{Cos}[c+d\,x]^2)\,\sqrt{\text{Sec}[c+d\,x]}\,(2-\text{Sec}[c+d\,x]^2)\right)\Bigg)+$$
$$\left((b+a\,\text{Cos}[c+d\,x])^2\,\text{Sec}[c+d\,x]^{3/2}\,(A+B\,\text{Sec}[c+d\,x])\left(\frac{(-A\,b+a\,B)\,\text{Sin}[c+d\,x]}{a\,(a^2-b^2)}+\frac{A\,b^2\,\text{Sin}[c+d\,x]-a\,b\,B\,\text{Sin}[c+d\,x]}{a\,(a^2-b^2)\,(b+a\,\text{Cos}[c+d\,x])}\right)\right)\Big/\left(d\,(B+A\,\text{Cos}[c+d\,x])\,(a+b\,\text{Sec}[c+d\,x])^2\right)$$

Problem 426: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\sqrt{\text{Sec}[c+d\,x]}\,(a+b\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 283 leaves, 9 steps):

$$\frac{1}{a^2\left(a^2-b^2\right)d}\left(2a^2A-3Ab^2+abB\right)\sqrt{\text{Cos}[c+dx]}\;\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}-\frac{1}{a^3\left(a^2-b^2\right)d}\left(4a^2Ab-3Ab^3-2a^3B+ab^2B\right)\sqrt{\text{Cos}[c+dx]}\;\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}+\left(b\left(5a^2Ab-3Ab^3-3a^3B+ab^2B\right)\sqrt{\text{Cos}[c+dx]}\;\text{EllipticPi}\left[\frac{2a}{a+b},\frac{1}{2}(c+dx),2\right]\sqrt{\text{Sec}[c+dx]}\right)\Big/\left(a^3(a-b)(a+b)^2d\right)+\frac{b(Ab-aB)\sqrt{\text{Sec}[c+dx]}\;\text{Sin}[c+dx]}{a\left(a^2-b^2\right)d\left(a+b\,\text{Sec}[c+dx]\right)}$$

Result (type 4, 657 leaves):

$$\frac{1}{4a(-a+b)(a+b)d}\left(-\left(\left(2\left(4aAb-4a^2B\right)\text{Cos}[c+dx]^2\,\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+dx]}\right],-1\right]\left(a+b\,\text{Sec}[c+dx]\right)\sqrt{1-\text{Sec}[c+dx]^2}\;\text{Sin}[c+dx]\right)\Big/\left(a\left(b+a\,\text{Cos}[c+dx]\right)\left(1-\text{Cos}[c+dx]^2\right)\right)\right)+\left(2\left(-2a^2A+Ab^2+abB\right)\text{Cos}[c+dx]^2\left(\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+dx]}\right],-1\right]+\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+dx]}\right],-1\right]\right)\left(a+b\,\text{Sec}[c+dx]\right)\sqrt{1-\text{Sec}[c+dx]^2}\;\text{Sin}[c+dx]\right)\Big/\left(b\left(b+a\,\text{Cos}[c+dx]\right)\left(1-\text{Cos}[c+dx]^2\right)\right)-\left(2\left(-2a^2A+3Ab^2-abB\right)\text{Cos}[2(c+dx)]\left(a+b\,\text{Sec}[c+dx]\right)\left(2ab-2ab\,\text{Sec}[c+dx]^2+2ab\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+dx]}\right],-1\right]\sqrt{\text{Sec}[c+dx]}\sqrt{1-\text{Sec}[c+dx]^2}+a(a-2b)\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Sec}[c+dx]}\right],-1\right]\sqrt{\text{Sec}[c+dx]}\sqrt{1-\text{Sec}[c+dx]^2}+a^2\,\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+dx]}\right],-1\right]\sqrt{\text{Sec}[c+dx]}\sqrt{1-\text{Sec}[c+dx]^2}-2b^2\,\text{EllipticPi}\left[-\frac{b}{a},-\text{ArcSin}\left[\sqrt{\text{Sec}[c+dx]}\right],-1\right]\sqrt{\text{Sec}[c+dx]}\sqrt{1-\text{Sec}[c+dx]^2}\right)\text{Sin}[c+dx]\right)\Big/\left(a^2b\left(b+a\,\text{Cos}[c+dx]\right)\left(1-\text{Cos}[c+dx]^2\right)\sqrt{\text{Sec}[c+dx]}\left(2-\text{Sec}[c+dx]^2\right)\right)\right)+\frac{\sqrt{\text{Sec}[c+dx]}\left(-\frac{b(Ab-aB)\,\text{Sin}[c+dx]}{a^2\left(-a^2+b^2\right)}+\frac{-Ab^3\,\text{Sin}[c+dx]+ab^2B\,\text{Sin}[c+dx]}{a^2\left(a^2-b^2\right)\left(b+a\,\text{Cos}[c+dx]\right)}\right)}{d}$$

Problem 431: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^{3/2} (A+B \text{Sec}[c+d x])}{(a+b \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 4, 402 leaves, 10 steps):

$$-\frac{1}{4 a b \left(a^2-b^2\right)^2 d}\left(5 a^2 A b+A b^3-a^3 B-5 a b^2 B\right) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}-\frac{1}{4 a^2 \left(a^2-b^2\right)^2 d}\left(7 a^2 A b-A b^3-3 a^3 B-3 a b^2 B\right) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}+\left(\left(3 a^4 A b+10 a^2 A b^3-A b^5+a^5 B-10 a^3 b^2 B-3 a b^4 B\right) \sqrt{\text{Cos}[c+d x]} \, \text{EllipticPi}\left[\frac{2 a}{a+b}, \frac{1}{2} (c+d x), 2\right] \sqrt{\text{Sec}[c+d x]}\right) \Big/ \left(4 a^2 (a-b)^2 b (a+b)^3 d\right)+\frac{a (A b-a B) \sqrt{\text{Sec}[c+d x]} \, \text{Sin}[c+d x]}{2 b \left(a^2-b^2\right) d (a+b \text{Sec}[c+d x])^2}+\frac{\left(3 a^2 A b+3 A b^3+a^3 B-7 a b^2 B\right) \sqrt{\text{Sec}[c+d x]} \, \text{Sin}[c+d x]}{4 b \left(a^2-b^2\right)^2 d (a+b \text{Sec}[c+d x])}$$

Result (type 4, 887 leaves):

$$\frac{1}{16\,(a-b)^2\,b\,(a+b)^2\,d\,(B+A\,\text{Cos}[c+d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3}\,(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]^2\,(A+B\,\text{Sec}[c+d\,x])$$

$$\Bigg(-\Bigg(\bigg(2\,\left(-24\,a\,A\,b^2+8\,a^2\,b\,B+16\,b^3\,B\right)\,\text{Cos}[c+d\,x]^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,(a+b\,\text{Sec}[c+d\,x])\,\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\bigg)\Big/$$
$$\left(a\,(b+a\,\text{Cos}[c+d\,x])\,\left(1-\text{Cos}[c+d\,x]^2\right)\right)\Bigg)+$$
$$\bigg(2\,\left(a^2\,A\,b+5\,A\,b^3+3\,a^3\,B-9\,a\,b^2\,B\right)\,\text{Cos}[c+d\,x]^2\,\Big(\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]+$$
$$\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\Big)\,(a+b\,\text{Sec}[c+d\,x])$$
$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,\text{Sin}[c+d\,x]\bigg)\Big/\left(b\,(b+a\,\text{Cos}[c+d\,x])\,\left(1-\text{Cos}[c+d\,x]^2\right)\right)-$$
$$\bigg(2\,\left(-5\,a^2\,A\,b-A\,b^3+a^3\,B+5\,a\,b^2\,B\right)\,\text{Cos}[2\,(c+d\,x)]\,(a+b\,\text{Sec}[c+d\,x])$$
$$\Big(2\,a\,b-2\,a\,b\,\text{Sec}[c+d\,x]^2+2\,a\,b\,\text{EllipticE}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}$$
$$\sqrt{1-\text{Sec}[c+d\,x]^2}+a\,(a-2\,b)\,\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}$$
$$\sqrt{1-\text{Sec}[c+d\,x]^2}+a^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}$$
$$\sqrt{1-\text{Sec}[c+d\,x]^2}-2\,b^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]$$
$$\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}\Big)\,\text{Sin}[c+d\,x]\bigg)\Big/$$
$$\left(a^2\,b\,(b+a\,\text{Cos}[c+d\,x])\,\left(1-\text{Cos}[c+d\,x]^2\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(2-\text{Sec}[c+d\,x]^2\right)\right)\Bigg)+$$
$$\Bigg((b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]^{5/2}\,(A+B\,\text{Sec}[c+d\,x])$$
$$\bigg(\frac{\left(5\,a^2\,A\,b+A\,b^3-a^3\,B-5\,a\,b^2\,B\right)\,\text{Sin}[c+d\,x]}{4\,a\,b\,\left(-a^2+b^2\right)^2}-\frac{-A\,b^2\,\text{Sin}[c+d\,x]+a\,b\,B\,\text{Sin}[c+d\,x]}{2\,a\,\left(a^2-b^2\right)\,(b+a\,\text{Cos}[c+d\,x])^2}+$$
$$\left(-7\,a^2\,A\,b\,\text{Sin}[c+d\,x]+A\,b^3\,\text{Sin}[c+d\,x]+3\,a^3\,B\,\text{Sin}[c+d\,x]+3\,a\,b^2\,B\,\text{Sin}[c+d\,x]\right)\Big/$$
$$\left(4\,a\,\left(a^2-b^2\right)^2\,(b+a\,\text{Cos}[c+d\,x])\right)\bigg)\Bigg)\Big/$$
$$\left(d\,(B+A\,\text{Cos}[c+d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\right)$$

Problem 432: Result more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Sec}[c+d\,x]}\,(A+B\,\text{Sec}[c+d\,x])}{(a+b\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 402 leaves, 10 steps):

$$\frac{1}{4\,a^2\,\left(a^2-b^2\right)^2\,d}\left(9\,a^2\,A\,b-3\,A\,b^3-5\,a^3\,B-a\,b^2\,B\right)$$
$$\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}+\frac{1}{4\,a^3\,\left(a^2-b^2\right)^2\,d}$$
$$\left(8\,a^4\,A-5\,a^2\,A\,b^2+3\,A\,b^4-7\,a^3\,b\,B+a\,b^3\,B\right)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}-$$
$$\left(\left(15\,a^4\,A\,b-6\,a^2\,A\,b^3+3\,A\,b^5-3\,a^5\,B-10\,a^3\,b^2\,B+a\,b^4\,B\right)\,\sqrt{\text{Cos}[c+d\,x]}\right.$$
$$\left.\text{EllipticPi}\left[\frac{2\,a}{a+b},\,\frac{1}{2}\,(c+d\,x),\,2\right]\,\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(4\,a^3\,(a-b)^2\,(a+b)^3\,d\right)-$$
$$\frac{(A\,b-a\,B)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{2\,\left(a^2-b^2\right)\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)^2}-\frac{\left(7\,a^2\,A\,b-A\,b^3-3\,a^3\,B-3\,a\,b^2\,B\right)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{4\,a\,\left(a^2-b^2\right)^2\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)}$$

Result (type 4, 890 leaves) :

$$\frac{1}{16\,a\,(a-b)^2\,(a+b)^2\,d\,(B+A\,\text{Cos}[c+d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3}$$
$$(b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]^2\,(A+B\,\text{Sec}[c+d\,x])$$
$$\Bigg(-\Bigg(\Bigg(2\,(16\,a^3\,A+8\,a\,A\,b^2-24\,a^2\,b\,B)\,\text{Cos}[c+d\,x]^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]$$
$$(a+b\,\text{Sec}[c+d\,x])\,\sqrt{1-\text{Sec}[c+d\,x]^2}\,\,\text{Sin}[c+d\,x]\Bigg)\Bigg/$$
$$\left(a\,(b+a\,\text{Cos}[c+d\,x])\,\left(1-\text{Cos}[c+d\,x]^2\right)\right)\Bigg)+$$
$$\Bigg(2\,(-5\,a^2\,A\,b-A\,b^3+a^3\,B+5\,a\,b^2\,B)\,\text{Cos}[c+d\,x]^2\,\Big(\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]+$$
$$\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\Big)\,(a+b\,\text{Sec}[c+d\,x])$$
$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,\,\text{Sin}[c+d\,x]\Bigg)\Bigg/\left(b\,(b+a\,\text{Cos}[c+d\,x])\,\left(1-\text{Cos}[c+d\,x]^2\right)\right)-$$
$$\Bigg(2\,(9\,a^2\,A\,b-3\,A\,b^3-5\,a^3\,B-a\,b^2\,B)\,\text{Cos}[2\,(c+d\,x)]\,(a+b\,\text{Sec}[c+d\,x])$$
$$\Bigg(2\,a\,b-2\,a\,b\,\text{Sec}[c+d\,x]^2+2\,a\,b\,\text{EllipticE}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}$$
$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,+a\,(a-2\,b)\,\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}$$
$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,+a^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]\,\sqrt{\text{Sec}[c+d\,x]}$$
$$\sqrt{1-\text{Sec}[c+d\,x]^2}\,-2\,b^2\,\text{EllipticPi}\Big[-\frac{b}{a},\,-\text{ArcSin}\Big[\sqrt{\text{Sec}[c+d\,x]}\Big],\,-1\Big]$$
$$\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{1-\text{Sec}[c+d\,x]^2}\Bigg)\,\text{Sin}[c+d\,x]\Bigg)\Bigg/$$
$$\left(a^2\,b\,(b+a\,\text{Cos}[c+d\,x])\,\left(1-\text{Cos}[c+d\,x]^2\right)\,\sqrt{\text{Sec}[c+d\,x]}\,\left(2-\text{Sec}[c+d\,x]^2\right)\right)\Bigg)+$$
$$\Bigg(\left(b+a\,\text{Cos}[c+d\,x]\right)^3\,\text{Sec}[c+d\,x]^{5/2}\,(A+B\,\text{Sec}[c+d\,x])$$
$$\Bigg(\frac{(-9\,a^2\,A\,b+3\,A\,b^3+5\,a^3\,B+a\,b^2\,B)\,\text{Sin}[c+d\,x]}{4\,a^2\,(-a^2+b^2)^2}-\frac{A\,b^3\,\text{Sin}[c+d\,x]-a\,b^2\,B\,\text{Sin}[c+d\,x]}{2\,a^2\,(a^2-b^2)\,(b+a\,\text{Cos}[c+d\,x])^2}+$$
$$\left(11\,a^2\,A\,b^2\,\text{Sin}[c+d\,x]-5\,A\,b^4\,\text{Sin}[c+d\,x]-7\,a^3\,b\,B\,\text{Sin}[c+d\,x]+a\,b^3\,B\,\text{Sin}[c+d\,x]\right)\Big/$$
$$\left(4\,a^2\,(a^2-b^2)^2\,(b+a\,\text{Cos}[c+d\,x])\right)\Bigg)\Bigg)\Bigg/$$
$$\left(d\,(B+A\,\text{Cos}[c+d\,x])\,(a+b\,\text{Sec}[c+d\,x])^3\right)$$

Problem 435: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 336 leaves, 13 steps):

$$\left((4\,A\,b+3\,a\,B)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/$$
$$\left(4\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+$$
$$\left(\left(4\,a\,A\,b-a^2\,B+4\,b^2\,B\right)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/$$
$$\left(4\,b\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)-\frac{(4\,A\,b+a\,B)\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{4\,b\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\sqrt{\mathrm{Sec}[c+d\,x]}}+$$
$$\frac{(4\,A\,b+a\,B)\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{4\,b\,d}+$$
$$\frac{B\,\mathrm{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{2\,d}$$

Result (type 4, 578 leaves) :

$$-\frac{1}{16\,b\,d\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\,\sqrt{\mathrm{Sec}[c+d\,x]}}\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\left(-\frac{8\,a\,b\,B\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}}+\right.$$

$$\left(2\,\left(-4\,a\,A\,b+3\,a^2\,B-8\,b^2\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+\left(2\,\mathrm{i}\,\left(4\,a\,A\,b+a^2\,B\right)\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\,\mathrm{Cos}\left[\right.\right.$$

$$\left.2\,(c+d\,x)\right]\left(-2\,b\,(a+b)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2\,b\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\mathrm{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\mathrm{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left(-a^2+2\,b^2-4\,b\,(b+a\,\mathrm{Cos}[c+d\,x])+2\,(b+a\,\mathrm{Cos}[c+d\,x])^2\right)\right)\right)+$$

$$\frac{1}{d\,\sqrt{\mathrm{Sec}[c+d\,x]}}\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(\frac{\mathrm{Sec}[c+d\,x]\,(4\,A\,b\,\mathrm{Sin}[c+d\,x]+a\,B\,\mathrm{Sin}[c+d\,x])}{4\,b}+\right.$$

$$\left.\frac{1}{2}\,B\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]\right)$$

Problem 436: Result unnecessarily involves imaginary or complex numbers.

$$\int\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{d}x$$

Optimal (type 4, 253 leaves, 12 steps) :

$$\frac{(2\,a\,A+b\,B)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\left((2\,A\,b+a\,B)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/$$

$$\left(d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)-\frac{B\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\sqrt{\mathrm{Sec}[c+d\,x]}}+$$

$$\frac{B\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{d}$$

Result (type 4, 377 leaves):

$$\left(\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right.$$

$$\left(\frac{8\,a\,A\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{(a+b)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}}+\frac{2\,(4\,A\,b+a\,B)\,\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{(a+b)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}}-\right.$$

$$\left(2\,\mathrm{i}\,B\,\sqrt{-\frac{a\,(-1+\mathrm{Cos}[c+d\,x])}{a+b}}\,\sqrt{\frac{a\,(1+\mathrm{Cos}[c+d\,x])}{a-b}}\,\mathrm{Csc}[c+d\,x]\right.$$

$$\left(-2\,b\,(a+b)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2\,b\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.\left.a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]\right)\right)\right)\Big/$$

$$\left.\left.\left(a\,\sqrt{\frac{1}{a-b}}\,b\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+4\,B\,\mathrm{Tan}[c+d\,x]\right)\right)\Big/\left(4\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}\right)$$

Problem 441: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d\,x]^{3/2}\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 421 leaves, 14 steps):

$$\left((42\,a\,A\,b+17\,a^2\,B+16\,b^2\,B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(24\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+\left((6\,a^2\,A\,b+8\,A\,b^3-a^3\,B+12\,a\,b^2\,B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(8\,b\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-\left((30\,a\,A\,b+3\,a^2\,B+16\,b^2\,B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(24\,b\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\text{Sec}[c+d\,x]}\right)+\frac{1}{24\,b\,d}(30\,a\,A\,b+3\,a^2\,B+16\,b^2\,B)\,\sqrt{\text{Sec}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+\frac{(6\,A\,b+7\,a\,B)\,\text{Sec}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{12\,d}+\frac{b\,B\,\text{Sec}[c+d\,x]^{5/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 4, 673 leaves):

$$-\frac{1}{96\,b\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^{3/2}\,\mathrm{Sec}[c+d\,x]^{3/2}}(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\left(\left(2\left(-24\,a\,A\,b^2-28\,a^2\,b\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+\left(2\left(-6\,a^2\,A\,b-48\,A\,b^3+9\,a^3\,B-56\,a\,b^2\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticPi}\left[2,\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+\left(2\,i\left(30\,a^2\,A\,b+3\,a^3\,B+16\,a\,b^2\,B\right)\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\,\mathrm{Cos}[2\,(c+d\,x)]\left(-2\,b\,(a+b)\,\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+a\left(2\,b\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},i\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)\mathrm{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\sqrt{\frac{a^2-a^2\,\mathrm{Cos}[c+d\,x]^2}{a^2}}\left(-a^2+2\,b^2-4\,b\,(b+a\,\mathrm{Cos}[c+d\,x])+2\,(b+a\,\mathrm{Cos}[c+d\,x])^2\right)\right)\right)+\left((a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\left(\frac{1}{12}\mathrm{Sec}[c+d\,x]^2\,(6\,A\,b\,\mathrm{Sin}[c+d\,x]+7\,a\,B\,\mathrm{Sin}[c+d\,x])+\frac{1}{24\,b}\mathrm{Sec}[c+d\,x]\left(30\,a\,A\,b\,\mathrm{Sin}[c+d\,x]+3\,a^2\,B\,\mathrm{Sin}[c+d\,x]+16\,b^2\,B\,\mathrm{Sin}[c+d\,x]\right)+\frac{1}{3}\,b\,B\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\right)\right)\Big/\left(d\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]^{3/2}\right)$$

Problem 442: Result unnecessarily involves imaginary or complex numbers.

$$\int\sqrt{\mathrm{Sec}[c+d\,x]}\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,(A+B\,\mathrm{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 339 leaves, 13 steps):

$$\left(\left(8 a^2 A + 4 A b^2 + 7 a b B\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticF}\left[\frac{1}{2}\left(c + d x\right), \frac{2 a}{a + b}\right] \sqrt{\operatorname{Sec}[c + d x]}\right) \Big/$$
$$\left(4 d \sqrt{a + b \operatorname{Sec}[c + d x]}\right) +$$
$$\left(\left(12 a A b + 3 a^2 B + 4 b^2 B\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(c + d x\right), \frac{2 a}{a + b}\right] \sqrt{\operatorname{Sec}[c + d x]}\right) \Big/$$
$$\left(4 d \sqrt{a + b \operatorname{Sec}[c + d x]}\right) - \frac{\left(4 A b + 5 a B\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c + d x\right), \frac{2 a}{a+b}\right] \sqrt{a + b \operatorname{Sec}[c + d x]}}{4 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \sqrt{\operatorname{Sec}[c + d x]}} +$$
$$\frac{\left(4 A b + 5 a B\right) \sqrt{\operatorname{Sec}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{4 d} +$$
$$\frac{b B \operatorname{Sec}[c + d x]^{3/2} \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{2 d}$$

Result (type 4, 595 leaves) :

$$\frac{1}{16\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{3/2}\,\text{Sec}[c+d\,x]^{3/2}}\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(\frac{2\,\left(16\,a^2\,A+4\,a\,b\,B\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\right.$$

$$\left(2\,\left(20\,a\,A\,b+a^2\,B+8\,b^2\,B\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}\,\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\right)\Big/$$

$$\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+\left(2\,\mathrm{i}\,\left(-4\,a\,A\,b-5\,a^2\,B\right)\,\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\,\text{Cos}\Big[\right.$$

$$2\,\left(c+d\,x\right)\Big]\left(-2\,b\,\left(a+b\right)\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2\,b\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\text{EllipticPi}\left[1-\frac{a}{b},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left(-a^2+2\,b^2-4\,b\,\left(b+a\,\text{Cos}[c+d\,x]\right)+2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)\right)\right)+$$

$$\left(\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\left(\frac{1}{4}\,\text{Sec}[c+d\,x]\,\left(4\,A\,b\,\text{Sin}[c+d\,x]+5\,a\,B\,\text{Sin}[c+d\,x]\right)+\right.\right.$$

$$\left.\left.\frac{1}{2}\,b\,B\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\right)\right)\Big/\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c+d\,x]^{3/2}\right)$$

Problem 443: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 272 leaves, 12 steps):

$$\left(\left(2\,a\,A\,b+2\,a^2\,B+b^2\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathtt{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/\left(d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\left(b\,\left(2\,A\,b+3\,a\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathtt{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/\left(d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\frac{\left(2\,a\,A-b\,B\right)\,\mathtt{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\sqrt{\mathrm{Sec}[c+d\,x]}}+\frac{b\,B\,\sqrt{\mathrm{Sec}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{d}$$

Result (type 4, 554 leaves) :

$$\frac{b\,B\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{d\,(b+a\,\mathrm{Cos}[c+d\,x])\,\sqrt{\mathrm{Sec}[c+d\,x]}}+\frac{1}{4\,d\,(b+a\,\mathrm{Cos}[c+d\,x])^{3/2}\,\mathrm{Sec}[c+d\,x]^{3/2}}(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}$$

$$\left(\frac{2\,(8\,a\,A\,b+4\,a^2\,B)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}}+\left(2\,(2\,a^2\,A+4\,A\,b^2+5\,a\,b\,B)\right.\right.$$

$$\left.\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$

$$\left(2\,\mathrm{i}\,(2\,a^2\,A-a\,b\,B)\,\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\,\mathrm{Cos}[2\,(c+d\,x)]\right.$$

$$\left(-2\,b\,(a+b)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2\,b\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\mathrm{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\mathrm{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left(-a^2+2\,b^2-4\,b\,(b+a\,\mathrm{Cos}[c+d\,x])+2\,(b+a\,\mathrm{Cos}[c+d\,x])^2\right)\right)\right)$$

Problem 444: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,(A+B\,\mathrm{Sec}[c+d\,x])}{\mathrm{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 276 leaves, 12 steps):

$$\left(2\left(a^2 A - A b^2 + 3 a b B\right)\sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c + d x), \frac{2 a}{a + b}\right]\sqrt{\operatorname{Sec}[c + d x]}\right) \Big/$$

$$\left(3 d \sqrt{a + b \operatorname{Sec}[c + d x]}\right) + \frac{2 b^2 B \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticPi}\left[2, \frac{1}{2}(c + d x), \frac{2 a}{a+b}\right]\sqrt{\operatorname{Sec}[c + d x]}}{d \sqrt{a + b \operatorname{Sec}[c + d x]}} +$$

$$\frac{2 (4 A b + 3 a B)\ \operatorname{EllipticE}\left[\frac{1}{2}(c + d x), \frac{2 a}{a+b}\right]\sqrt{a + b \operatorname{Sec}[c + d x]}}{3 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \sqrt{\operatorname{Sec}[c + d x]}} +$$

$$\frac{2 a A \sqrt{a + b \operatorname{Sec}[c + d x]}\ \operatorname{Sin}[c + d x]}{3 d \sqrt{\operatorname{Sec}[c + d x]}}$$

Result (type 4, 563 leaves) :

$$\frac{2\,a\,A\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\mathrm{Sin}[c+d\,x]}{3\,d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Sec}[c+d\,x]^{3/2}}+\frac{1}{6\,d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{3/2}\,\mathrm{Sec}[c+d\,x]^{3/2}}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}$$

$$\left(\left(2\,\left(2\,a^2\,A+6\,A\,b^2+12\,a\,b\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\right.$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+\left(2\,\left(4\,a\,A\,b+3\,a^2\,B+6\,b^2\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right.$$

$$\left.\mathrm{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$

$$\left(2\,\mathrm{i}\,\left(4\,a\,A\,b+3\,a^2\,B\right)\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\,\mathrm{Cos}[2\,(c+d\,x)]\right.$$

$$\left(-2\,b\,(a+b)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2\,b\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\mathrm{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\sqrt{\frac{a^2-a^2\,\mathrm{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left(-a^2+2\,b^2-4\,b\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)+2\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\right)\right)\right)$$

Problem 448: Result unnecessarily involves imaginary or complex numbers.

$$\int\mathrm{Sec}[c+d\,x]^{3/2}\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 513 leaves, 15 steps):

$$\left(\left(472\,a^2\,A\,b+128\,A\,b^3+133\,a^3\,B+356\,a\,b^2\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\ \mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/\left(192\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+$$

$$\left(\left(40\,a^3\,A\,b+160\,a\,A\,b^3-5\,a^4\,B+120\,a^2\,b^2\,B+48\,b^4\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\ \mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/\left(64\,b\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)-$$

$$\left(\left(264\,a^2\,A\,b+128\,A\,b^3+15\,a^3\,B+284\,a\,b^2\,B\right)\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/\left(192\,b\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\ \sqrt{\mathrm{Sec}[c+d\,x]}\right)+\frac{1}{192\,b\,d}$$

$$\left(264\,a^2\,A\,b+128\,A\,b^3+15\,a^3\,B+284\,a\,b^2\,B\right)\sqrt{\mathrm{Sec}[c+d\,x]}\ \sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\ \mathrm{Sin}[c+d\,x]+$$

$$\frac{1}{96\,d}\left(104\,a\,A\,b+59\,a^2\,B+36\,b^2\,B\right)\mathrm{Sec}[c+d\,x]^{3/2}\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\ \mathrm{Sin}[c+d\,x]+$$

$$\frac{b\,(8\,A\,b+11\,a\,B)\,\mathrm{Sec}[c+d\,x]^{5/2}\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\ \mathrm{Sin}[c+d\,x]}{24\,d}+$$

$$\frac{b\,B\,\mathrm{Sec}[c+d\,x]^{5/2}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\mathrm{Sin}[c+d\,x]}{4\,d}$$

Result (type 4, 768 leaves):

$$-\frac{1}{768\, b\, d\, \left(b+a \operatorname{Cos}[c+d x]\right)^{5/2} \operatorname{Sec}[c+d x]^{5/2}} \left(a+b \operatorname{Sec}[c+d x]\right)^{5/2}$$

$$\left(\left(\left(2 \left(-416 a^2 A b^2-236 a^3 b B-144 a b^3 B\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\, \operatorname{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right]\right) \Big/\right.\right.$$

$$\left(\sqrt{b+a \operatorname{Cos}[c+d x]}\right)+\left(2 \left(24 a^3 A b-832 a A b^3+45 a^4 B-436 a^2 b^2 B-288 b^4 B\right)\right.$$

$$\left.\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\, \operatorname{EllipticPi}\left[2, \frac{1}{2} (c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(\sqrt{b+a \operatorname{Cos}[c+d x]}\right)+$$

$$\left(2\, \mathbb{i} \left(264 a^3 A b+128 a A b^3+15 a^4 B+284 a^2 b^2 B\right) \sqrt{\frac{a-a \operatorname{Cos}[c+d x]}{a+b}} \sqrt{\frac{a+a \operatorname{Cos}[c+d x]}{a-b}}\right.$$

$$\operatorname{Cos}[2 (c+d x)] \left(-2 b (a+b) \operatorname{EllipticE}\left[\mathbb{i} \operatorname{ArcSinh}\left[\sqrt{\frac{1}{a-b}} \sqrt{b+a \operatorname{Cos}[c+d x]}\right],\right.\right.$$

$$\left.\frac{-a+b}{a+b}\right]+a \left(2 b \operatorname{EllipticF}\left[\mathbb{i} \operatorname{ArcSinh}\left[\sqrt{\frac{1}{a-b}} \sqrt{b+a \operatorname{Cos}[c+d x]}\right], \frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a \operatorname{EllipticPi}\left[1-\frac{a}{b}, \mathbb{i} \operatorname{ArcSinh}\left[\sqrt{\frac{1}{a-b}} \sqrt{b+a \operatorname{Cos}[c+d x]}\right], \frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\operatorname{Sin}[c+d x]\right) \Big/ \left(\sqrt{\frac{1}{a-b}}\, b \sqrt{1-\operatorname{Cos}[c+d x]^2} \sqrt{\frac{a^2-a^2 \operatorname{Cos}[c+d x]^2}{a^2}}\right.$$

$$\left.\left.\left(-a^2+2 b^2-4 b \left(b+a \operatorname{Cos}[c+d x]\right)+2 \left(b+a \operatorname{Cos}[c+d x]\right)^2\right)\right)\right)+$$

$$\left(\left(a+b \operatorname{Sec}[c+d x]\right)^{5/2} \left(\frac{1}{24} \operatorname{Sec}[c+d x]^3 \left(8 A b^2 \operatorname{Sin}[c+d x]+17 a b B \operatorname{Sin}[c+d x]\right)+\right.\right.$$

$$\frac{1}{96} \operatorname{Sec}[c+d x]^2 \left(104 a A b \operatorname{Sin}[c+d x]+59 a^2 B \operatorname{Sin}[c+d x]+36 b^2 B \operatorname{Sin}[c+d x]\right)+$$

$$\frac{1}{192 b} \operatorname{Sec}[c+d x]$$

$$\left(264 a^2 A b \operatorname{Sin}[c+d x]+128 A b^3 \operatorname{Sin}[c+d x]+15 a^3 B \operatorname{Sin}[c+d x]+284 a b^2 B \operatorname{Sin}[c+d x]\right)+$$

$$\left.\left.\frac{1}{4} b^2 B \operatorname{Sec}[c+d x]^3 \operatorname{Tan}[c+d x]\right)\right) \Big/ \left(d \left(b+a \operatorname{Cos}[c+d x]\right)^2 \operatorname{Sec}[c+d x]^{5/2}\right)$$

Problem 449: Result unnecessarily involves imaginary or complex numbers.

$$\int \sqrt{\text{Sec}[c+d x]}\, (a+b\,\text{Sec}[c+d x])^{5/2}\, (A+B\,\text{Sec}[c+d x])\, dx$$

Optimal (type 4, 422 leaves, 14 steps):

$$\left(\left(48 a^3 A+66 a A b^2+59 a^2 b B+16 b^3 B\right) \sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{\text{Sec}[c+d x]}\right) \Big/ \left(24 d \sqrt{a+b\,\text{Sec}[c+d x]}\right)+\left(\left(30 a^2 A b+8 A b^3+5 a^3 B+20 a b^2 B\right) \sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\ \text{EllipticPi}\left[2, \frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{\text{Sec}[c+d x]}\right) \Big/ \left(8 d \sqrt{a+b\,\text{Sec}[c+d x]}\right)-\left(\left(54 a A b+33 a^2 B+16 b^2 B\right) \text{EllipticE}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b\,\text{Sec}[c+d x]}\right) \Big/ \left(24 d \sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}} \sqrt{\text{Sec}[c+d x]}\right)+\frac{1}{24 d} \left(54 a A b+33 a^2 B+16 b^2 B\right) \sqrt{\text{Sec}[c+d x]} \sqrt{a+b\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]+\frac{b\, (2 A b+3 a B)\, \text{Sec}[c+d x]^{3/2} \sqrt{a+b\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{4 d}+\frac{b B\, \text{Sec}[c+d x]^{3/2}\, (a+b\,\text{Sec}[c+d x])^{3/2}\, \text{Sin}[c+d x]}{3 d}$$

Result (type 4, 678 leaves):

$$\frac{1}{96\,d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\,\mathrm{Sec}[c+d\,x]^{5/2}}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}$$

$$\left(\left(2\,\left(96\,a^3\,A+24\,a\,A\,b^2+52\,a^2\,b\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,\frac{2\,a}{a+b}\right]\right)\middle/\right.$$

$$\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+\left(2\,\left(126\,a^2\,A\,b+48\,A\,b^3-3\,a^3\,B+104\,a\,b^2\,B\right)\right.$$

$$\left.\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,\left(c+d\,x\right),\,\frac{2\,a}{a+b}\right]\right)\middle/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$

$$\left(2\,\mathbb{i}\,\left(-54\,a^2\,A\,b-33\,a^3\,B-16\,a\,b^2\,B\right)\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\;\mathrm{Cos}\left[2\,\left(c+d\,x\right)\right]\right.$$

$$\left(-2\,b\,\left(a+b\right)\,\mathrm{EllipticE}\left[\mathbb{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$a\,\left(2\,b\,\mathrm{EllipticF}\left[\mathbb{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},\,\mathbb{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\mathrm{Sin}[c+d\,x]\right)\middle/\left(\sqrt{\frac{1}{a-b}}\;b\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\;\sqrt{\frac{a^2-a^2\,\mathrm{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left(-a^2+2\,b^2-4\,b\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)+2\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\right)\right)\right)+$$

$$\left(\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(\frac{1}{12}\,\mathrm{Sec}[c+d\,x]^2\,\left(6\,A\,b^2\,\mathrm{Sin}[c+d\,x]+13\,a\,b\,B\,\mathrm{Sin}[c+d\,x]\right)+\right.\right.$$

$$\frac{1}{24}\,\mathrm{Sec}[c+d\,x]\,\left(54\,a\,A\,b\,\mathrm{Sin}[c+d\,x]+33\,a^2\,B\,\mathrm{Sin}[c+d\,x]+16\,b^2\,B\,\mathrm{Sin}[c+d\,x]\right)+$$

$$\left.\left.\frac{1}{3}\,b^2\,B\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\right)\right)\middle/$$

$$\left(d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\,\mathrm{Sec}[c+d\,x]^{5/2}\right)$$

Problem 450: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a + b \operatorname{Sec}[c + d x])^{5/2} (A + B \operatorname{Sec}[c + d x])}{\sqrt{\operatorname{Sec}[c + d x]}} \, dx$$

Optimal (type 4, 359 leaves, 13 steps):

$$\left((16 a^2 A b + 4 A b^3 + 8 a^3 B + 11 a b^2 B) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{\operatorname{Sec}[c + d x]}\right) \Big/ \left(4 d \sqrt{a + b \operatorname{Sec}[c + d x]}\right) + \left(b (20 a A b + 15 a^2 B + 4 b^2 B) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticPi}\left[2, \frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{\operatorname{Sec}[c + d x]}\right) \Big/ \left(4 d \sqrt{a + b \operatorname{Sec}[c + d x]}\right) + \left((8 a^2 A - 4 A b^2 - 9 a b B) \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{a + b \operatorname{Sec}[c + d x]}\right) \Big/ \left(4 d \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \sqrt{\operatorname{Sec}[c + d x]}\right) + \frac{b (4 A b + 7 a B) \sqrt{\operatorname{Sec}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{4 d} + \frac{b B \sqrt{\operatorname{Sec}[c + d x]} (a + b \operatorname{Sec}[c + d x])^{3/2} \operatorname{Sin}[c + d x]}{2 d}$$

Result (type 4, 628 leaves):

$$\frac{1}{16\,d\,(b+a\,\text{Cos}[c+d\,x])^{5/2}\,\text{Sec}[c+d\,x]^{5/2}}(a+b\,\text{Sec}[c+d\,x])^{5/2}\left(\left(2\left(48\,a^2\,A\,b+16\,a^3\,B+4\,a\,b^2\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\right)\bigg/\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+\left(2\left(8\,a^3\,A+36\,a\,A\,b^2+21\,a^2\,b\,B+8\,b^3\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\right)\bigg/\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+\left(2\,i\left(8\,a^3\,A-4\,a\,A\,b^2-9\,a^2\,b\,B\right)\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\,\text{Cos}[2(c+d\,x)]\left(-2\,b\,(a+b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+a\left(2\,b\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+a\,\text{EllipticPi}\left[1-\frac{a}{b},i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)\text{Sin}[c+d\,x]\right)\bigg/\left(\sqrt{\frac{1}{a-b}}\,b\sqrt{1-\text{Cos}[c+d\,x]^2}\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\left(-a^2+2\,b^2-4\,b\,(b+a\,\text{Cos}[c+d\,x])+2\,(b+a\,\text{Cos}[c+d\,x])^2\right)\right)\right)+$$

$$\left((a+b\,\text{Sec}[c+d\,x])^{5/2}\left(\frac{1}{4}\text{Sec}[c+d\,x]\left(4\,A\,b^2\,\text{Sin}[c+d\,x]+9\,a\,b\,B\,\text{Sin}[c+d\,x]\right)+\frac{1}{2}b^2\,B\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\right)\right)\bigg/\left(d\,(b+a\,\text{Cos}[c+d\,x])^2\,\text{Sec}[c+d\,x]^{5/2}\right)$$

Problem 451: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(a+b\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])}{\text{Sec}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 349 leaves, 13 steps):

$$\left(\left(2\,a^3\,A+4\,a\,A\,b^2+12\,a^2\,b\,B+3\,b^3\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right.$$

$$\left.\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/\left(3\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+$$

$$\left(b^2\,(2\,A\,b+5\,a\,B)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{\mathrm{Sec}[c+d\,x]}\right)\Big/$$

$$\left(d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+$$

$$\left(\left(14\,a\,A\,b+6\,a^2\,B-3\,b^2\,B\right)\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/$$

$$\left(3\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\sqrt{\mathrm{Sec}[c+d\,x]}\right)-$$

$$\frac{b\,(2\,a\,A-3\,b\,B)\sqrt{\mathrm{Sec}[c+d\,x]}\;\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{3\,d}+$$

$$\frac{2\,a\,A\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}$$

Result (type 4, 599 leaves) :

$$\frac{1}{12\,d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^{5/2}\,\mathrm{Sec}[c+d\,x]^{5/2}}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}$$
$$\left(\left(2\,\left(4\,a^3\,A+36\,a\,A\,b^2+36\,a^2\,b\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\right.$$
$$\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+\left(2\,\left(14\,a^2\,A\,b+12\,A\,b^3+6\,a^3\,B+27\,a\,b^2\,B\right)\right.$$
$$\left.\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right)+$$
$$\left(2\,\mathrm{i}\,\left(14\,a^2\,A\,b+6\,a^3\,B-3\,a\,b^2\,B\right)\sqrt{\frac{a-a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\sqrt{\frac{a+a\,\mathrm{Cos}[c+d\,x]}{a-b}}\;\mathrm{Cos}[2\,(c+d\,x)]\right.$$
$$\left(-2\,b\,(a+b)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$
$$a\left(2\,b\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$
$$\left.\left.a\,\mathrm{EllipticPi}\left[1-\frac{a}{b},\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)$$
$$\left.\mathrm{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\;b\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\;\sqrt{\frac{a^2-a^2\,\mathrm{Cos}[c+d\,x]^2}{a^2}}\right.$$
$$\left.\left.\left(-a^2+2\,b^2-4\,b\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)+2\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\right)\right)\right)+$$
$$\frac{\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\left(\frac{2}{3}\,a^2\,A\,\mathrm{Sin}[c+d\,x]+b^2\,B\,\mathrm{Tan}[c+d\,x]\right)}{d\,\left(b+a\,\mathrm{Cos}[c+d\,x]\right)^2\,\mathrm{Sec}[c+d\,x]^{5/2}}$$

Problem 452: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\left(A+B\,\mathrm{Sec}[c+d\,x]\right)}{\mathrm{Sec}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 4, 342 leaves, 13 steps):

$$\left(2\left(8a^2Ab-8Ab^3+5a^3B+10ab^2B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/\left(15\,d\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$

$$\frac{2b^3B\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}}{d\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\left(2\left(9a^2A+23Ab^2+35abB\right)\text{EllipticE}\left[\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/$$

$$\left(15\,d\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\sqrt{\text{Sec}[c+d\,x]}\right)+$$

$$\frac{2a\left(8Ab+5aB\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{15\,d\sqrt{\text{Sec}[c+d\,x]}}+\frac{2aA\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\text{Sin}[c+d\,x]}{5\,d\,\text{Sec}[c+d\,x]^{3/2}}$$

Result (type 4, 616 leaves):

$$\frac{1}{30\,d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^{5/2}\,\text{Sec}[c+d\,x]^{5/2}}\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}$$

$$\left(\left(\left(2\,\left(34\,a^2\,A\,b+30\,A\,b^3+10\,a^3\,B+90\,a\,b^2\,B\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\right/$$

$$\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+\left(2\,\left(9\,a^3\,A+23\,a\,A\,b^2+35\,a^2\,b\,B+30\,b^3\,B\right)\right.$$

$$\left.\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+$$

$$\left(2\,i\,\left(9\,a^3\,A+23\,a\,A\,b^2+35\,a^2\,b\,B\right)\,\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\;\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\;\text{Cos}[2\,(c+d\,x)]\right.$$

$$\left(-2\,b\,(a+b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$a\,\left(2\,b\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\text{EllipticPi}\left[1-\frac{a}{b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\;\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\;b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\;\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\right.$$

$$\left.\left.\left(-a^2+2\,b^2-4\,b\,\left(b+a\,\text{Cos}[c+d\,x]\right)+2\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\right)\right)\right)+$$

$$\left(\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(\frac{2}{15}\,a\,\left(11\,A\,b+5\,a\,B\right)\,\text{Sin}[c+d\,x]+\frac{1}{5}\,a^2\,A\,\text{Sin}[2\,(c+d\,x)]\right)\right)\Big/$$

$$\left(d\,\left(b+a\,\text{Cos}[c+d\,x]\right)^2\,\text{Sec}[c+d\,x]^{5/2}\right)$$

Problem 456: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sec}[c+d\,x]^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 344 leaves, 13 steps):

$$\frac{(4 A b - a B) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{\operatorname{Sec}[c+d x]}}{4 b d \sqrt{a+b \operatorname{Sec}[c+d x]}} -$$

$$\left((4 a A b - 3 a^2 B - 4 b^2 B) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticPi}\left[2, \frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{\operatorname{Sec}[c+d x]}\right) \Big/$$

$$\left(4 b^2 d \sqrt{a+b \operatorname{Sec}[c+d x]}\right) - \frac{(4 A b - 3 a B) \operatorname{EllipticE}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}}{4 b^2 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \sqrt{\operatorname{Sec}[c+d x]}} +$$

$$\frac{(4 A b - 3 a B) \sqrt{\operatorname{Sec}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{4 b^2 d} +$$

$$\frac{B \operatorname{Sec}[c+d x]^{3/2} \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{2 b d}$$

Result (type 4, 593 leaves) :

$$\frac{1}{16 b^2 d \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

$$\sqrt{b+a \operatorname{Cos}[c+d x]}\ \sqrt{\operatorname{Sec}[c+d x]}\ \left(\frac{8 a b B \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]}{\sqrt{b+a \operatorname{Cos}[c+d x]}}+\right.$$

$$\left(2\left(-12 a A b+9 a^2 B+8 b^2 B\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/$$

$$\left(\sqrt{b+a \operatorname{Cos}[c+d x]}\right)+\left(2 \mathrm{i}\left(-4 a A b+3 a^2 B\right) \sqrt{\frac{a-a \operatorname{Cos}[c+d x]}{a+b}} \sqrt{\frac{a+a \operatorname{Cos}[c+d x]}{a-b}} \operatorname{Cos}\right[$$

$$2(c+d x)]\left(-2 b(a+b) \operatorname{EllipticE}\left[\mathrm{i} \operatorname{ArcSinh}\left[\sqrt{\frac{1}{a-b}} \sqrt{b+a \operatorname{Cos}[c+d x]}\right], \frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2 b \operatorname{EllipticF}\left[\mathrm{i} \operatorname{ArcSinh}\left[\sqrt{\frac{1}{a-b}} \sqrt{b+a \operatorname{Cos}[c+d x]}\right], \frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a \operatorname{EllipticPi}\left[1-\frac{a}{b}, \mathrm{i} \operatorname{ArcSinh}\left[\sqrt{\frac{1}{a-b}} \sqrt{b+a \operatorname{Cos}[c+d x]}\right], \frac{-a+b}{a+b}\right]\right)\right)$$

$$\left.\operatorname{Sin}[c+d x]\right) \Big/ \left(\sqrt{\frac{1}{a-b}}\ b \sqrt{1-\operatorname{Cos}[c+d x]^2} \sqrt{\frac{a^2-a^2 \operatorname{Cos}[c+d x]^2}{a^2}}\right.$$

$$\left.\left.\left(-a^2+2 b^2-4 b(b+a \operatorname{Cos}[c+d x])+2(b+a \operatorname{Cos}[c+d x])^2\right)\right)\right)+$$

$$\left((b+a \operatorname{Cos}[c+d x]) \sqrt{\operatorname{Sec}[c+d x]}\left(\frac{\operatorname{Sec}[c+d x](4 A b \operatorname{Sin}[c+d x]-3 a B \operatorname{Sin}[c+d x])}{4 b^2}+\right.\right.$$

$$\left.\left.\frac{B \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{2 b}\right)\right) \Big/ \left(d \sqrt{a+b \operatorname{Sec}[c+d x]}\right)$$

Problem 457: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\operatorname{Sec}[c+d x]^{3/2}(A+B \operatorname{Sec}[c+d x])}{\sqrt{a+b \operatorname{Sec}[c+d x]}}\, dx$$

Optimal (type 4, 256 leaves, 12 steps):

$$\frac{B\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}}{d\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\left((2\,A\,b-a\,B)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{\text{Sec}[c+d\,x]}\right)\Big/$$

$$\left(b\,d\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-\frac{B\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}}{b\,d\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\sqrt{\text{Sec}[c+d\,x]}}+$$

$$\frac{B\sqrt{\text{Sec}[c+d\,x]}\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{b\,d}$$

Result (type 4, 339 leaves):

$$\frac{1}{4\,b\,d\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

$$\sqrt{\text{Sec}[c+d\,x]}\left(2\,(4\,A\,b-3\,a\,B)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]-\right.$$

$$\frac{1}{a\sqrt{\frac{1}{a-b}}\,b}2\,i\,B\sqrt{-\frac{a\,(-1+\text{Cos}[c+d\,x])}{a+b}}\sqrt{\frac{a\,(1+\text{Cos}[c+d\,x])}{a-b}}\sqrt{b+a\,\text{Cos}[c+d\,x]}$$

$$\text{Csc}[c+d\,x]\left(-2\,b\,(a+b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$a\left(2\,b\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+\right.$$

$$\left.\left.a\,\text{EllipticPi}\left[1-\frac{a}{b},i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)+$$

$$\left.4\,B\,(b+a\,\text{Cos}[c+d\,x])\,\text{Tan}[c+d\,x]\right)$$

Problem 462: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x]^{5/2} \left(A+B \text{Sec}[c+d x]\right)}{\left(a+b \text{Sec}[c+d x]\right)^{3/2}} \, dx$$

Optimal (type 4, 371 leaves, 13 steps):

$$\frac{B \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \, \text{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{\text{Sec}[c+d x]}}{b d \sqrt{a+b \text{Sec}[c+d x]}} + \left((2 A b-3 a B) \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \, \text{EllipticPi}\left[2, \frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{\text{Sec}[c+d x]}\right) \Big/ \left(b^2 d \sqrt{a+b \text{Sec}[c+d x]}\right) + \left(\left(2 a A b-3 a^2 B+b^2 B\right) \text{EllipticE}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \text{Sec}[c+d x]}\right) \Big/ \left(b^2 \left(a^2-b^2\right) d \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \sqrt{\text{Sec}[c+d x]}\right) + \frac{2 a (A b-a B) \text{Sec}[c+d x]^{3/2} \text{Sin}[c+d x]}{b \left(a^2-b^2\right) d \sqrt{a+b \text{Sec}[c+d x]}} - \frac{\left(2 a A b-3 a^2 B+b^2 B\right) \sqrt{\text{Sec}[c+d x]} \sqrt{a+b \text{Sec}[c+d x]} \, \text{Sin}[c+d x]}{b^2 \left(a^2-b^2\right) d}$$

Result (type 4, 647 leaves):

$$
\begin{aligned}
&-\frac{1}{4\,(a-b)\,b^2\,(a+b)\,d\,(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,(b+a\,\text{Cos}[c+d\,x])^{3/2} \\
&\quad \text{Sec}[c+d\,x]^{3/2}\,\Bigg(\frac{2\,(-4\,a\,A\,b^2+4\,a^2\,b\,B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\text{Cos}[c+d\,x]}}+ \\
&\quad \bigg(2\,(-6\,a^2\,A\,b+4\,A\,b^3+9\,a^3\,B-7\,a\,b^2\,B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}} \\
&\qquad \text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\bigg)\Big/\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+ \\
&\quad \bigg(2\,i\,(-2\,a^2\,A\,b+3\,a^3\,B-a\,b^2\,B)\,\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\;\text{Cos}[2\,(c+d\,x)] \\
&\qquad \bigg(-2\,b\,(a+b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+ \\
&\qquad\quad a\,\bigg(2\,b\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]+ \\
&\qquad\qquad a\,\text{EllipticPi}\left[1-\frac{a}{b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\,\frac{-a+b}{a+b}\right]\bigg)\bigg) \\
&\qquad \text{Sin}[c+d\,x]\bigg)\Big/\bigg(\sqrt{\frac{1}{a-b}}\;b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}} \\
&\qquad \left(-a^2+2\,b^2-4\,b\,(b+a\,\text{Cos}[c+d\,x])+2\,(b+a\,\text{Cos}[c+d\,x])^2\right)\bigg)\Bigg)+ \\
&\Bigg((b+a\,\text{Cos}[c+d\,x])^2\,\text{Sec}[c+d\,x]^{3/2}\left(\frac{2\,(a^2\,A\,b\,\text{Sin}[c+d\,x]-a^3\,B\,\text{Sin}[c+d\,x])}{b^2\,(-a^2+b^2)\,(b+a\,\text{Cos}[c+d\,x])}+\frac{B\,\text{Tan}[c+d\,x]}{b^2}\right)\Bigg)\Big/ \\
&\quad \left(d\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\right)
\end{aligned}
$$

Problem 463: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d\,x]^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}}\,dx$$

Optimal (type 4, 220 leaves, 9 steps):

$$\frac{2\,B\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\text{Sec}[c+d\,x]}}{b\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}-\frac{2\,(A\,b-a\,B)\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}{b\,\left(a^2-b^2\right)\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\sqrt{\text{Sec}[c+d\,x]}}+\frac{2\,a\,(A\,b-a\,B)\,\sqrt{\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{b\,\left(a^2-b^2\right)\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 595 leaves):

$$-\left(\left(2\,(b+a\,\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]^{3/2}\left(a\,A\,b\,\text{Sin}[c+d\,x]-a^2\,B\,\text{Sin}[c+d\,x]\right)\right)\Big/\left(b\left(-a^2+b^2\right)d\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\right)\right)+\frac{1}{2\,b\,(-a+b)\,(a+b)\,d\,(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,(b+a\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]^{3/2}\left(\frac{2\left(2\,A\,b^2-2\,a\,b\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]}{\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\left(2\left(a\,A\,b-3\,a^2\,B+2\,b^2\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(\sqrt{b+a\,\text{Cos}[c+d\,x]}\right)+\left(2\,\text{i}\,\left(a\,A\,b-a^2\,B\right)\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\,\text{Cos}[2\,(c+d\,x)]\left(-2\,b\,(a+b)\,\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+a\left(2\,b\,\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]+a\,\text{EllipticPi}\left[1-\frac{a}{b},\text{i}\,\text{ArcSinh}\left[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\right],\frac{-a+b}{a+b}\right]\right)\right)\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}\left(-a^2+2\,b^2-4\,b\,(b+a\,\text{Cos}[c+d\,x])+2\,(b+a\,\text{Cos}[c+d\,x])^2\right)\right)\right)$$

Problem 468: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sec}[c+d\,x]^{5/2}\,(A+B\,\text{Sec}[c+d\,x])}{(a+b\,\text{Sec}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 399 leaves, 13 steps):

$$\frac{2\,(A\,b-a\,B)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{3\,b\,(a^2-b^2)\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\frac{2\,B\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{\mathrm{Sec}[c+d\,x]}}{b^2\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\left(2\,(4\,A\,b^3+3\,a^3\,B-7\,a\,b^2\,B)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/$$

$$\left(3\,b^2\,(a^2-b^2)^2\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\sqrt{\mathrm{Sec}[c+d\,x]}\right)+$$

$$\frac{2\,a\,(A\,b-a\,B)\,\mathrm{Sec}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{3\,b\,(a^2-b^2)\,d\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}-\frac{2\,a\,(4\,A\,b^3+3\,a^3\,B-7\,a\,b^2\,B)\,\sqrt{\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{3\,b^2\,(a^2-b^2)^2\,d\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 4, 726 leaves) :

$$\frac{1}{6\,(a-b)^2\,b^2\,(a+b)^2\,d\,(a+b\,\text{Sec}[c+d\,x])^{5/2}}\,(b+a\,\text{Cos}[c+d\,x])^{5/2}\,\text{Sec}[c+d\,x]^{5/2}$$

$$\Bigg(\Bigg(2\,(2\,a^2\,A\,b^2+6\,A\,b^4+4\,a^3\,b\,B-12\,a\,b^3\,B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\Big[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\Big]\Bigg)\Big/$$

$$\Big(\sqrt{b+a\,\text{Cos}[c+d\,x]}\Big)+\Bigg(2\,(4\,a\,A\,b^3+9\,a^4\,B-19\,a^2\,b^2\,B+6\,b^4\,B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}$$

$$\text{EllipticPi}\Big[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\Big]\Bigg)\Big/\Big(\sqrt{b+a\,\text{Cos}[c+d\,x]}\Big)+$$

$$\Bigg(2\,i\,(4\,a\,A\,b^3+3\,a^4\,B-7\,a^2\,b^2\,B)\,\sqrt{\frac{a-a\,\text{Cos}[c+d\,x]}{a+b}}\,\sqrt{\frac{a+a\,\text{Cos}[c+d\,x]}{a-b}}\,\text{Cos}[2\,(c+d\,x)]$$

$$\Bigg(-2\,b\,(a+b)\,\text{EllipticE}\Big[i\,\text{ArcSinh}\Big[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\Big],\,\frac{-a+b}{a+b}\Big]+$$

$$a\,\Bigg(2\,b\,\text{EllipticF}\Big[i\,\text{ArcSinh}\Big[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\Big],\,\frac{-a+b}{a+b}\Big]+$$

$$a\,\text{EllipticPi}\Big[1-\frac{a}{b},\,i\,\text{ArcSinh}\Big[\sqrt{\frac{1}{a-b}}\,\sqrt{b+a\,\text{Cos}[c+d\,x]}\Big],\,\frac{-a+b}{a+b}\Big]\Bigg)\Bigg)$$

$$\text{Sin}[c+d\,x]\Bigg)\Big/\Bigg(\sqrt{\frac{1}{a-b}}\,b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\sqrt{\frac{a^2-a^2\,\text{Cos}[c+d\,x]^2}{a^2}}$$

$$\big(-a^2+2\,b^2-4\,b\,(b+a\,\text{Cos}[c+d\,x])+2\,(b+a\,\text{Cos}[c+d\,x])^2\big)\Bigg)\Bigg)+$$

$$\Bigg((b+a\,\text{Cos}[c+d\,x])^3\,\text{Sec}[c+d\,x]^{5/2}\,\Bigg(-\frac{2\,(a\,A\,b\,\text{Sin}[c+d\,x]-a^2\,B\,\text{Sin}[c+d\,x])}{3\,b\,(-a^2+b^2)\,(b+a\,\text{Cos}[c+d\,x])^2}-$$

$$\big(2\,(4\,a\,A\,b^3\,\text{Sin}[c+d\,x]+3\,a^4\,B\,\text{Sin}[c+d\,x]-7\,a^2\,b^2\,B\,\text{Sin}[c+d\,x])\big)\Big/$$

$$\big(3\,b^2\,(-a^2+b^2)^2\,(b+a\,\text{Cos}[c+d\,x])\big)\Bigg)\Bigg)\Big/\Big(d\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\Big)$$

Problem 479: Unable to integrate problem.

$$\int \text{Sec}[c+d\,x]^m\,(a+b\,\text{Sec}[c+d\,x])^4\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 5, 544 leaves, 9 steps):

$$\left(b\left(A b^3\left(8+6 m+m^2\right)+4 a b^2 B\left(8+6 m+m^2\right)+2 a^3 B\left(19+8 m+m^2\right)+a^2 A b\left(68+37 m+5 m^2\right)\right) \mathrm{Sec}[c+d x]^{1+m} \mathrm{Sin}[c+d x]\right) \Big/ \left(d(1+m)(3+m)(4+m)\right)+$$
$$\left(b^2\left(b^2 B(3+m)^2+2 a A b(4+m)^2+a^2 B\left(26+9 m+m^2\right)\right) \mathrm{Sec}[c+d x]^{2+m} \mathrm{Sin}[c+d x]\right) \Big/ \left(d(2+m)(3+m)(4+m)\right)+\frac{1}{d(3+m)(4+m)}$$
$$b\left(A b(4+m)+a B(7+m)\right) \mathrm{Sec}[c+d x]^{1+m}(a+b \mathrm{Sec}[c+d x])^2 \mathrm{Sin}[c+d x]+\frac{b B \mathrm{Sec}[c+d x]^{1+m}(a+b \mathrm{Sec}[c+d x])^3 \mathrm{Sin}[c+d x]}{d(4+m)}-$$
$$\left(\left(A b^4 m(2+m)+4 a b^3 B m(2+m)+6 a^2 A b^2 m(3+m)+4 a^3 b B m(3+m)+a^4 A\left(3+4 m+m^2\right)\right)\right.$$
$$\left.\mathrm{Hypergeometric2F1}\left[\frac{1}{2}, \frac{1-m}{2}, \frac{3-m}{2}, \mathrm{Cos}[c+d x]^2\right] \mathrm{Sec}[c+d x]^{-1+m} \mathrm{Sin}[c+d x]\right) \Big/$$
$$\left(d(1-m)(1+m)(3+m)\sqrt{\mathrm{Sin}[c+d x]^2}\right)+$$
$$\left(\left(b^4 B\left(3+4 m+m^2\right)+4 a A b^3\left(4+5 m+m^2\right)+6 a^2 b^2 B\left(4+5 m+m^2\right)+4 a^3 A b\left(8+6 m+m^2\right)+\right.\right.$$
$$\left.a^4 B\left(8+6 m+m^2\right)\right) \mathrm{Hypergeometric2F1}\left[\frac{1}{2},-\frac{m}{2}, \frac{2-m}{2}, \mathrm{Cos}[c+d x]^2\right]$$
$$\left.\mathrm{Sec}[c+d x]^m \mathrm{Sin}[c+d x]\right) \Big/ \left(d m(2+m)(4+m)\sqrt{\mathrm{Sin}[c+d x]^2}\right)$$

Result (type 8, 33 leaves):

$$\int \mathrm{Sec}[c+d x]^m(a+b \mathrm{Sec}[c+d x])^4(A+B \mathrm{Sec}[c+d x])\, dx$$

Problem 480: Unable to integrate problem.

$$\int \mathrm{Sec}[c+d x]^m(a+b \mathrm{Sec}[c+d x])^3(A+B \mathrm{Sec}[c+d x])\, dx$$

Optimal (type 5, 366 leaves, 8 steps):

$$\frac{1}{d(1+m)(3+m)} b\left(b^2 B(2+m)+3 a A b(3+m)+2 a^2 B(4+m)\right) \operatorname{Sec}[c+d x]^{1+m} \operatorname{Sin}[c+d x]+$$
$$\frac{b^2 (A b(3+m)+a B(5+m)) \operatorname{Sec}[c+d x]^{2+m} \operatorname{Sin}[c+d x]}{d(2+m)(3+m)}+$$
$$\frac{b B \operatorname{Sec}[c+d x]^{1+m} (a+b \operatorname{Sec}[c+d x])^2 \operatorname{Sin}[c+d x]}{d(3+m)}-$$
$$\left(\left(b^3 B m(2+m)+3 a A b^2 m(3+m)+3 a^2 b B m(3+m)+a^3 A\left(3+4 m+m^2\right)\right)\right.$$
$$\left.\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{1-m}{2}, \frac{3-m}{2}, \operatorname{Cos}[c+d x]^2\right] \operatorname{Sec}[c+d x]^{-1+m} \operatorname{Sin}[c+d x]\right) \Big/$$
$$\left(d(3+m)\left(1-m^2\right) \sqrt{\operatorname{Sin}[c+d x]^2}\right)+$$
$$\left(\left(A b^3(1+m)+3 a b^2 B(1+m)+3 a^2 A b(2+m)+a^3 B(2+m)\right) \text{Hypergeometric2F1}\left[\frac{1}{2},\right.\right.$$
$$\left.\left.-\frac{m}{2}, \frac{2-m}{2}, \operatorname{Cos}[c+d x]^2\right] \operatorname{Sec}[c+d x]^m \operatorname{Sin}[c+d x]\right) \Big/ \left(d m(2+m) \sqrt{\operatorname{Sin}[c+d x]^2}\right)$$

Result (type 8, 33 leaves):

$$\int \operatorname{Sec}[c+d x]^m (a+b \operatorname{Sec}[c+d x])^3 (A+B \operatorname{Sec}[c+d x]) \, dx$$

Problem 483: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c+d x]^{7/2} (a+a \operatorname{Sec}[c+d x]) (A+B \operatorname{Sec}[c+d x]) \, dx$$

Optimal (type 4, 132 leaves, 8 steps):

$$\frac{6 a (A+B) \operatorname{EllipticE}\left[\frac{1}{2}(c+d x), 2\right]}{5 d}+$$
$$\frac{2 a (5 A+7 B) \operatorname{EllipticF}\left[\frac{1}{2}(c+d x), 2\right]}{21 d}+\frac{2 a (5 A+7 B) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{Sin}[c+d x]}{21 d}+$$
$$\frac{2 a (A+B) \operatorname{Cos}[c+d x]^{3/2} \operatorname{Sin}[c+d x]}{5 d}+\frac{2 a A \operatorname{Cos}[c+d x]^{5/2} \operatorname{Sin}[c+d x]}{7 d}$$

Result (type 5, 872 leaves):

$$a \left(\sqrt{\operatorname{Cos}[c+d x]} (1+\operatorname{Cos}[c+d x]) \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \left(-\frac{3 (A+B) \operatorname{Cot}[c]}{5 d}+\right.\right.$$
$$\frac{(23 A+28 B) \operatorname{Cos}[d x] \operatorname{Sin}[c]}{84 d}+\frac{(A+B) \operatorname{Cos}[2 d x] \operatorname{Sin}[2 c]}{10 d}+\frac{A \operatorname{Cos}[3 d x] \operatorname{Sin}[3 c]}{28 d}+$$
$$\left.\frac{(23 A+28 B) \operatorname{Cos}[c] \operatorname{Sin}[d x]}{84 d}+\frac{(A+B) \operatorname{Cos}[2 c] \operatorname{Sin}[2 d x]}{10 d}+\frac{A \operatorname{Cos}[3 c] \operatorname{Sin}[3 d x]}{28 d}\right)-$$

$$\left(5\,A\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(21\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(B\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{10\,d}3\,A\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-\frac{1}{10\,d}$$

$$3\,B\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left\{\frac{3}{4}\right\}, \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]^2\Big]\ \text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]\Bigg) \Bigg/$$

$$\Bigg(\sqrt{1 - \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]}\ \sqrt{1 + \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]}$$

$$\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1 + \text{Tan}[c]^2}}\ \sqrt{1 + \text{Tan}[c]^2}\Bigg) -$$

$$\frac{\frac{\text{Sin}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \text{Tan}[c]}{\sqrt{1 + \text{Tan}[c]^2}} + \frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1 + \text{Tan}[c]^2}}{\text{Cos}[c]^2 + \text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\ \text{Cos}[d\,x + \text{ArcTan}[\text{Tan}[c]]]\ \sqrt{1 + \text{Tan}[c]^2}}}\Bigg)\Bigg)$$

Problem 484: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c + d\,x]^{5/2}\,(a + a\,\text{Sec}[c + d\,x])\,(A + B\,\text{Sec}[c + d\,x])\,dx$$

Optimal (type 4, 101 leaves, 7 steps):

$$\frac{2\,a\,(3\,A + 5\,B)\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{5\,d} + \frac{2\,a\,(A + B)\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{3\,d} +$$

$$\frac{2\,a\,(A + B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{Sin}[c + d\,x]}{3\,d} + \frac{2\,a\,A\,\text{Cos}[c + d\,x]^{3/2}\,\text{Sin}[c + d\,x]}{5\,d}$$

Result (type 5, 830 leaves):

$$a\,\Bigg(\sqrt{\text{Cos}[c + d\,x]}\,(1 + \text{Cos}[c + d\,x])\,\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2\left(-\frac{(3\,A + 5\,B)\,\text{Cot}[c]}{5\,d} + \frac{(A + B)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d} +\right.$$

$$\left.\frac{A\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{10\,d} + \frac{(A + B)\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d} + \frac{A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{10\,d}\right) -$$

$$\Bigg(A\,(1 + \text{Cos}[c + d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x - \text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1 - \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1 + \text{Sin}[d\,x - \text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Bigg/ \left(3\,d\,\sqrt{1 + \text{Cot}[c]^2}\right) -$$

$$\left(B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{10\,d}3\,A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$
$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$
$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$
$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)-\frac{1}{2\,d}$$
$$B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\right.\right.\right.$$
$$\left.\left.\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$
$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 485: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 70 leaves, 6 steps):

$$\frac{2\,a\,(A+B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{d}+\frac{2\,a\,(A+3\,B)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+\frac{2\,a\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 784 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,(1+\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\right.$$

$$\left(-\frac{(A+B)\,\text{Cot}[c]}{d}+\frac{A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}+\frac{A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}\right)-$$

$$\left(A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-\frac{1}{d\,\sqrt{1+\text{Cot}[c]^2}}B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{2\,d}A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\Bigg)-$$

$$\frac{1}{2\,d}B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\Bigg)$$

Problem 486: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{\text{Cos}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 66 leaves, 6 steps):

$$\frac{2\,a\,(A-B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{d}+\frac{2\,a\,(A+B)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{d}+\frac{2\,a\,B\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 783 leaves) :

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\;(1+\text{Cos}[c+d\,x])\;\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\right.$$

$$\left(-\frac{(A-2\,B+A\,\text{Cos}[2\,c])\;\text{Csc}[c]\;\text{Sec}[c]}{2\,d}+\frac{B\,\text{Sec}[c]\;\text{Sec}[c+d\,x]\;\text{Sin}[d\,x]}{d}\right)-\frac{1}{d\sqrt{1+\text{Cot}[c]^2}}$$

$$A\;(1+\text{Cos}[c+d\,x])\;\text{Csc}[c]\;\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\;\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[c]\;\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\;-\frac{1}{d\sqrt{1+\text{Cot}[c]^2}}$$

$$B\;(1+\text{Cos}[c+d\,x])\;\text{Csc}[c]\;\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\;\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\;\text{Sin}[c]\;\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\;\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\;-$$

$$\frac{1}{2\,d}A\;(1+\text{Cos}[c+d\,x])\;\text{Csc}[c]\;\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\;\sqrt{\text{Cos}[c]\;\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\;\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\;\sqrt{1+\text{Tan}[c]^2}}}\right)+$$

$$\frac{1}{2\,d}B\left(1+\text{Cos}[c+d\,x]\right)\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)$$

Problem 487: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(a+a\,\text{Sec}[c+d\,x]\right)\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 95 leaves, 7 steps):

$$-\frac{2\,a\,(A+B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{d}+\frac{2\,a\,(3\,A+B)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+\frac{2\,a\,B\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,a\,(A+B)\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 813 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,\left(1+\text{Cos}[c+d\,x]\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\frac{(A+B)\,\text{Csc}[c]\,\text{Sec}[c]}{d}+\frac{B\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{3\,d}+\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\left(B\,\text{Sin}[c]+3\,A\,\text{Sin}[d\,x]+3\,B\,\text{Sin}[d\,x]\right)}{3\,d}\right)-\frac{1}{d\,\sqrt{1+\text{Cot}[c]^2}}\right.$$

$$A\left(1+\text{Cos}[c+d\,x]\right)\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,-$$

$$\left(B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)+\frac{1}{2\,d}A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)+$$

$$\frac{1}{2\,d}B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 488: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])\,(A+B\,\text{Sec}[c+d\,x])}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 132 leaves, 8 steps):

$$-\frac{2\,a\,(5\,A+3\,B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{2\,a\,(A+B)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+\frac{2\,a\,B\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{2\,a\,(A+B)\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{2\,a\,(5\,A+3\,B)\,\text{Sin}[c+d\,x]}{5\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 865 leaves):

$$a\left(\sqrt{\text{Cos}[c+d\,x]}\,(1+\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\right.$$

$$\left(\frac{(5\,A+3\,B)\,\text{Csc}[c]\,\text{Sec}[c]}{5\,d}+\frac{B\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^3\,\text{Sin}[d\,x]}{5\,d}+\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,(3\,B\,\text{Sin}[c]+5\,A\,\text{Sin}[d\,x]+5\,B\,\text{Sin}[d\,x])}{15\,d}+\frac{1}{15\,d}\right.$$

$$\left.\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(5\,A\,\text{Sin}[c]+5\,B\,\text{Sin}[c]+15\,A\,\text{Sin}[d\,x]+9\,B\,\text{Sin}[d\,x])\right)-$$

$$\left(A\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)-$$

$$\left(B\,(1+\text{Cos}[c+d\,x])\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,\sqrt{1+\text{Cot}[c]^2}\right)+\frac{1}{2\,d}A\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)+\frac{1}{10\,d}$$

$$3\,B\,\left(1+\text{Cos}[c+d\,x]\right)\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\right.\right.\right.$$

$$\left.\left.\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)$$

Problem 489: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^{9/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 194 leaves, 9 steps):

$$\frac{4\,a^2\,(8\,A+9\,B)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{15\,d}+\frac{4\,a^2\,(5\,A+6\,B)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{21\,d}+\frac{4\,a^2\,(5\,A+6\,B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{21\,d}+\frac{4\,a^2\,(8\,A+9\,B)\,\mathrm{Cos}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{45\,d}+\frac{2\,a^2\,(11\,A+9\,B)\,\mathrm{Cos}[c+d\,x]^{5/2}\,\mathrm{Sin}[c+d\,x]}{63\,d}+\frac{2\,A\,\mathrm{Cos}[c+d\,x]^{5/2}\,\left(a^2+a^2\,\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Sin}[c+d\,x]}{9\,d}$$

Result (type 5, 1086 leaves):

$$\frac{1}{B+A\,\mathrm{Cos}[c+d\,x]}\mathrm{Cos}[c+d\,x]^{7/2}\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])$$
$$\left(-\frac{(8\,A+9\,B)\,\mathrm{Cot}[c]}{15\,d}+\frac{(46\,A+51\,B)\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{168\,d}+\frac{(37\,A+36\,B)\,\mathrm{Cos}[2\,d\,x]\,\mathrm{Sin}[2\,c]}{360\,d}+\right.$$
$$\frac{(2\,A+B)\,\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]}{56\,d}+\frac{A\,\mathrm{Cos}[4\,d\,x]\,\mathrm{Sin}[4\,c]}{144\,d}+\frac{(46\,A+51\,B)\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{168\,d}+$$
$$\left.\frac{(37\,A+36\,B)\,\mathrm{Cos}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{360\,d}+\frac{(2\,A+B)\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{56\,d}+\frac{A\,\mathrm{Cos}[4\,c]\,\mathrm{Sin}[4\,d\,x]}{144\,d}\right)-$$
$$\frac{1}{21\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}}5\,A\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]$$
$$\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$
$$(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$
$$\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}-\frac{1}{7\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}}$$
$$2\,B\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}-$$

$$\left(4\,A\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])\right.$$

$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$

$$\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\Bigg)\Bigg)\Big/$$

$$\left(15\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\right)-\left(3\,B\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right.$$

$$(A+B\,\mathrm{Sec}[c+d\,x])\,\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\left.\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\,\sqrt{1+\mathrm{Tan}[c]^2}\right)-$$

$$\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\Bigg)\Bigg)\Big/\Big(10\,d\,\Big(B+$$

$$A\,\mathrm{Cos}[c+d\,x]\Big)\Big)$$

Problem 490: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^{7/2} \left(a+a \,\text{Sec}[c+d x]\right)^2 \left(A+B \,\text{Sec}[c+d x]\right) \, dx$$

Optimal (type 4, 161 leaves, 8 steps):

$$\frac{4 a^2 (3 A+4 B) \,\text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{5 d}+\frac{4 a^2 (6 A+7 B) \,\text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{21 d}+\frac{4 a^2 (6 A+7 B) \sqrt{\text{Cos}[c+d x]} \,\text{Sin}[c+d x]}{21 d}+\frac{2 a^2 (9 A+7 B) \,\text{Cos}[c+d x]^{3/2} \,\text{Sin}[c+d x]}{35 d}+\frac{2 A \,\text{Cos}[c+d x]^{3/2} \left(a^2+a^2 \,\text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{7 d}$$

Result (type 5, 1040 leaves):

$$\frac{1}{B+A \,\text{Cos}[c+d x]} \text{Cos}[c+d x]^{7/2} \,\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \,\text{Sec}[c+d x]\right)^2 \left(A+B \,\text{Sec}[c+d x]\right) \left(-\frac{(3 A+4 B) \,\text{Cot}[c]}{5 d}+\frac{(51 A+56 B) \,\text{Cos}[d x] \,\text{Sin}[c]}{168 d}+\frac{(2 A+B) \,\text{Cos}[2 d x] \,\text{Sin}[2 c]}{20 d}+\frac{A \,\text{Cos}[3 d x] \,\text{Sin}[3 c]}{56 d}+\frac{(51 A+56 B) \,\text{Cos}[c] \,\text{Sin}[d x]}{168 d}+\frac{(2 A+B) \,\text{Cos}[2 c] \,\text{Sin}[2 d x]}{20 d}+\frac{A \,\text{Cos}[3 c] \,\text{Sin}[3 d x]}{56 d}\right)-$$

$$\frac{1}{7 d \left(B+A \,\text{Cos}[c+d x]\right) \sqrt{1+\text{Cot}[c]^2}} 2 A \,\text{Cos}[c+d x]^3 \,\text{Csc}[c] \,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \,\text{Sec}[c+d x]\right)^2 \left(A+B \,\text{Sec}[c+d x]\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \,\text{Sin}[c] \,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-\frac{1}{3 d \left(B+A \,\text{Cos}[c+d x]\right) \sqrt{1+\text{Cot}[c]^2}}$$

$$B \,\text{Cos}[c+d x]^3 \,\text{Csc}[c] \,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \left(a+a \,\text{Sec}[c+d x]\right)^2 \left(A+B \,\text{Sec}[c+d x]\right) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \,\text{Sin}[c] \,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\left(3\,A\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])\right.$$

$$\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}$$

$$\left.\left.\left.\sqrt{1+\mathrm{Tan}[c]^2}\right)-\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/$$

$$(10\,d\,(B+A\,\mathrm{Cos}[c+d\,x]))-\left(2\,B\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right.$$

$$(A+B\,\mathrm{Sec}[c+d\,x])\left(\left(\mathrm{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\,\sqrt{1+\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]}\right.$$

$$\left.\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}\,\sqrt{1+\mathrm{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\mathrm{Sin}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\mathrm{Tan}[c]}{\sqrt{1+\mathrm{Tan}[c]^2}}+\frac{2\,\mathrm{Cos}[c]^2\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}{\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2}}{\sqrt{\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]]]\,\sqrt{1+\mathrm{Tan}[c]^2}}}\right)\right)\Big/\,(5\,d\,(B+A\,\mathrm{Cos}[c+d\,x]))$$

Problem 491: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^{5/2} (a+a \text{Sec}[c+d x])^2 (A+B \text{Sec}[c+d x]) \, dx$$

Optimal (type 4, 126 leaves, 7 steps):

$$\frac{4 a^2 (4 A+5 B) \text{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{5 d}+\frac{4 a^2 (A+2 B) \text{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{3 d}+\frac{2 a^2 (7 A+5 B) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{15 d}+\frac{2 A \sqrt{\text{Cos}[c+d x]} \left(a^2+a^2 \text{Cos}[c+d x]\right) \text{Sin}[c+d x]}{5 d}$$

Result (type 5, 994 leaves):

$$\frac{1}{B+A \text{Cos}[c+d x]}\text{Cos}[c+d x]^{7/2} \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 (A+B \text{Sec}[c+d x])$$
$$\left(-\frac{(4 A+5 B) \text{Cot}[c]}{5 d}+\frac{(2 A+B) \text{Cos}[d x] \text{Sin}[c]}{6 d}+\frac{A \text{Cos}[2 d x] \text{Sin}[2 c]}{20 d}+\frac{(2 A+B) \text{Cos}[c] \text{Sin}[d x]}{6 d}+\frac{A \text{Cos}[2 c] \text{Sin}[2 d x]}{20 d}\right)-\frac{1}{3 d (B+A \text{Cos}[c+d x]) \sqrt{1+\text{Cot}[c]^2}}$$
$$A \text{Cos}[c+d x]^3 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 (A+B \text{Sec}[c+d x]) \text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-\frac{1}{3 d (B+A \text{Cos}[c+d x]) \sqrt{1+\text{Cot}[c]^2}}$$
$$2 B \text{Cos}[c+d x]^3 \text{Csc}[c] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\}, \left\{\frac{5}{4}\right\}, \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 (A+B \text{Sec}[c+d x])$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\Bigg(2 A \text{Cos}[c+d x]^3 \text{Csc}[c] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 (A+B \text{Sec}[c+d x])$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\,-\frac{1}{4}\right\},\,\left\{\frac{3}{4}\right\},\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$(5\,d\,(B+A\,\text{Cos}[c+d\,x]))-\left(B\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\right.$$

$$(A+B\,\text{Sec}[c+d\,x])\,\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\,-\frac{1}{4}\right\},\,\left\{\frac{3}{4}\right\},\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\,(2\,d\,(B+A\,\text{Cos}[c+d\,x]))$$

Problem 492: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^2\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 116 leaves, 7 steps):

$$\frac{4\,a^2\,A\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{d}+\frac{4\,a^2\,(2\,A+3\,B)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+\frac{2\,a^2\,(A-3\,B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{3\,d}+\frac{2\,B\,\left(a^2+a^2\,\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Sin}[c+d\,x]}{d\,\sqrt{\mathrm{Cos}[c+d\,x]}}$$

Result (type 5, 735 leaves):

$$\frac{1}{B+A\,\text{Cos}[c+d\,x]}\text{Cos}[c+d\,x]^{7/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,(A+B\,\text{Sec}[c+d\,x])$$
$$\left(-\frac{(2\,A-B+2\,A\,\text{Cos}[2\,c]+B\,\text{Cos}[2\,c])\,\text{Csc}[c]\,\text{Sec}[c]}{4\,d}+\frac{A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{6\,d}+\right.$$
$$\left.\frac{A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{6\,d}+\frac{B\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{2\,d}\right)-\frac{1}{3\,d\,(B+A\,\text{Cos}[c+d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$2\,A\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-\frac{1}{d\,(B+A\,\text{Cos}[c+d\,x])\,\sqrt{1+\text{Cot}[c]^2}}$$
$$B\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,(A+B\,\text{Sec}[c+d\,x])$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$
$$\left(A\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,(A+B\,\text{Sec}[c+d\,x])\right.$$
$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[\right.\right.$$
$$\left.c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$
$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$
$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\,(2\,d\,(B+A\,\text{Cos}[c+d\,x]))$$

Problem 493: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 120 leaves, 7 steps):

$$-\frac{4\,a^2\,B\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{d}+\frac{4\,a^2\,(3\,A+2\,B)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,d}+$$
$$\frac{2\,a^2\,(3\,A+5\,B)\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,B\,\left(a^2+a^2\,\text{Cos}[c+d\,x]\right)\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}$$

Result (type 5, 736 leaves):

$$\frac{1}{B+A\,\text{Cos}[c+d\,x]}\text{Cos}[c+d\,x]^{7/2}\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,(A+B\,\text{Sec}[c+d\,x])$$

$$\left(-\frac{(-A-4\,B+A\,\text{Cos}[2\,c])\,\text{Csc}[c]\,\text{Sec}[c]}{4\,d}+\frac{B\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{6\,d}+\right.$$

$$\left.\frac{\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(B\,\text{Sin}[c]+3\,A\,\text{Sin}[d\,x]+6\,B\,\text{Sin}[d\,x])}{6\,d}\right)-$$

$$\frac{1}{d\,(B+A\,\text{Cos}[c+d\,x])\,\sqrt{1+\text{Cot}[c]^2}}\,A\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[$$

$$\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2$$

$$(A+B\,\text{Sec}[c+d\,x])\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}-$$

$$\frac{1}{3\,d\,(B+A\,\text{Cos}[c+d\,x])\,\sqrt{1+\text{Cot}[c]^2}}\,2\,B\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{HypergeometricPFQ}\Big[$$

$$\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2$$

$$(A+B\,\text{Sec}[c+d\,x])\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}+$$

$$\left(B\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\text{Sec}[c+d\,x])^2\,(A+B\,\text{Sec}[c+d\,x])\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\,\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[\right.\right.$$

$$c]]]\,\text{Tan}[c]\Big)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\,(2\,d\,(B+A\,\text{Cos}[c+d\,x]))$$

Problem 494: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])}{\sqrt{\mathrm{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 159 leaves, 8 steps):

$$-\frac{4\,a^2\,(5\,A+4\,B)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{4\,a^2\,(2\,A+B)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,d}+\frac{2\,a^2\,(5\,A+7\,B)\,\mathrm{Sin}[c+d\,x]}{15\,d\,\mathrm{Cos}[c+d\,x]^{3/2}}+\frac{4\,a^2\,(5\,A+4\,B)\,\mathrm{Sin}[c+d\,x]}{5\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{2\,B\,\left(a^2+a^2\,\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Sin}[c+d\,x]}{5\,d\,\mathrm{Cos}[c+d\,x]^{5/2}}$$

Result (type 5, 1025 leaves):

$$\frac{1}{B+A\,\mathrm{Cos}[c+d\,x]}\mathrm{Cos}[c+d\,x]^{7/2}\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])\left(\frac{(5\,A+4\,B)\,\mathrm{Csc}[c]\,\mathrm{Sec}[c]}{5\,d}+\frac{B\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,\mathrm{Sin}[d\,x]}{10\,d}+\frac{\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,(3\,B\,\mathrm{Sin}[c]+5\,A\,\mathrm{Sin}[d\,x]+10\,B\,\mathrm{Sin}[d\,x])}{30\,d}+\frac{1}{30\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,(5\,A\,\mathrm{Sin}[c]+10\,B\,\mathrm{Sin}[c]+30\,A\,\mathrm{Sin}[d\,x]+24\,B\,\mathrm{Sin}[d\,x])\right)-$$

$$\frac{1}{3\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}}2\,A\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}-\frac{1}{3\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}}$$

$$B\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}+$$

$$\left(A \operatorname{Cos}[c+d x]^3 \operatorname{Csc}[c] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \operatorname{Sec}[c+d x])^2 (A+B \operatorname{Sec}[c+d x])\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]\right) \Big/ \left(\sqrt{1-\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\right.$$

$$\sqrt{1+\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]} \sqrt{\operatorname{Cos}[c] \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\operatorname{Tan}[c]^2}\right)-\frac{\frac{\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]}{\sqrt{1+\operatorname{Tan}[c]^2}}+\frac{2 \operatorname{Cos}[c]^2 \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}{\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2}}{\sqrt{\operatorname{Cos}[c] \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}}\right)\right) \Big/$$

$$(2 d (B+A \operatorname{Cos}[c+d x]))+\left(2 B \operatorname{Cos}[c+d x]^3 \operatorname{Csc}[c] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \operatorname{Sec}[c+d x])^2\right.$$

$$(A+B \operatorname{Sec}[c+d x]) \left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]\right) \Big/$$

$$\left(\sqrt{1-\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]} \sqrt{1+\operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]]}\right.$$

$$\left.\sqrt{\operatorname{Cos}[c] \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}} \sqrt{1+\operatorname{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\operatorname{Sin}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \operatorname{Tan}[c]}{\sqrt{1+\operatorname{Tan}[c]^2}}+\frac{2 \operatorname{Cos}[c]^2 \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}{\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2}}{\sqrt{\operatorname{Cos}[c] \operatorname{Cos}[d x+\operatorname{ArcTan}[\operatorname{Tan}[c]]] \sqrt{1+\operatorname{Tan}[c]^2}}}\right)\right) \Big/ (5 d (B+A \operatorname{Cos}[c+d x]))$$

Problem 495: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])}{\mathrm{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 194 leaves, 9 steps):

$$-\frac{4\,a^2\,(4\,A+3\,B)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,d}+\frac{4\,a^2\,(7\,A+6\,B)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{21\,d}+\frac{2\,a^2\,(7\,A+9\,B)\,\mathrm{Sin}[c+d\,x]}{35\,d\,\mathrm{Cos}[c+d\,x]^{5/2}}+\frac{4\,a^2\,(7\,A+6\,B)\,\mathrm{Sin}[c+d\,x]}{21\,d\,\mathrm{Cos}[c+d\,x]^{3/2}}+\frac{4\,a^2\,(4\,A+3\,B)\,\mathrm{Sin}[c+d\,x]}{5\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+\frac{2\,B\,\left(a^2+a^2\,\mathrm{Cos}[c+d\,x]\right)\,\mathrm{Sin}[c+d\,x]}{7\,d\,\mathrm{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 1067 leaves):

$$\frac{1}{B+A\,\mathrm{Cos}[c+d\,x]}\mathrm{Cos}[c+d\,x]^{7/2}\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])\left(\frac{(4\,A+3\,B)\,\mathrm{Csc}[c]\,\mathrm{Sec}[c]}{5\,d}+\frac{B\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^4\,\mathrm{Sin}[d\,x]}{14\,d}+\frac{\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^3\,(5\,B\,\mathrm{Sin}[c]+7\,A\,\mathrm{Sin}[d\,x]+14\,B\,\mathrm{Sin}[d\,x])}{70\,d}+\frac{1}{210\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]^2\,(21\,A\,\mathrm{Sin}[c]+42\,B\,\mathrm{Sin}[c]+70\,A\,\mathrm{Sin}[d\,x]+60\,B\,\mathrm{Sin}[d\,x])+\frac{1}{105\,d}\mathrm{Sec}[c]\,\mathrm{Sec}[c+d\,x]\,(35\,A\,\mathrm{Sin}[c]+30\,B\,\mathrm{Sin}[c]+84\,A\,\mathrm{Sin}[d\,x]+63\,B\,\mathrm{Sin}[d\,x])\right)-$$

$$\frac{1}{3\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}}A\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}-$$

$$\frac{1}{7\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}}2\,B\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Csc}[c]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(a+a\,\mathrm{Sec}[c+d\,x])^2\,(A+B\,\mathrm{Sec}[c+d\,x])\,\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}+$$

$$\left(2\,A\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(A+B\,\text{Sec}[c+d\,x]\right)\right.$$

$$\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}$$

$$\left.\left.\sqrt{1+\text{Tan}[c]^2}\right)-\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/$$

$$\left(5\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\right)+\left(3\,B\,\text{Cos}[c+d\,x]^3\,\text{Csc}[c]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right.$$

$$\left(A+B\,\text{Sec}[c+d\,x]\right)\left(\left(\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{4}\right\},\left\{\frac{3}{4}\right\},\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]^2\right]\right.\right.$$

$$\left.\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\,\sqrt{1+\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]}\right.$$

$$\left.\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}\,\sqrt{1+\text{Tan}[c]^2}\right)-$$

$$\left.\left.\frac{\frac{\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\text{Tan}[c]}{\sqrt{1+\text{Tan}[c]^2}}+\frac{2\,\text{Cos}[c]^2\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}{\text{Cos}[c]^2+\text{Sin}[c]^2}}{\sqrt{\text{Cos}[c]\,\text{Cos}[d\,x+\text{ArcTan}[\text{Tan}[c]]]\,\sqrt{1+\text{Tan}[c]^2}}}\right)\right)\Big/\left(10\,d\,\left(B+\right.\right.$$

$$\left.\left.A\,\text{Cos}[c+d\,x]\right)\right)$$

Problem 496: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^{5/2} \left(A+B \text{Sec}[c+d x]\right)}{a+a \text{Sec}[c+d x]} \, dx$$

Optimal (type 4, 157 leaves, 7 steps):

$$\frac{3 (7 A-5 B) \text{EllipticE}\left[\frac{1}{2} (c+d x),2\right]}{5 a d}-\frac{5 (A-B) \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{3 a d}-\frac{5 (A-B) \sqrt{\text{Cos}[c+d x]} \text{Sin}[c+d x]}{3 a d}+\frac{(7 A-5 B) \text{Cos}[c+d x]^{3/2} \text{Sin}[c+d x]}{5 a d}-\frac{(A-B) \text{Cos}[c+d x]^{5/2} \text{Sin}[c+d x]}{d (a+a \text{Cos}[c+d x])}$$

Result (type 5, 1292 leaves):

$$\frac{1}{20 \left(B+A \text{Cos}[c+d x]\right) \left(a+a \text{Sec}[c+d x]\right)} 21 i A \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \left(A+B \text{Sec}[c+d x]\right) \left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-\left(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \text{Sin}[c]\right)^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)} \sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right)-$$

$$\frac{1}{4 \left(B+A \text{Cos}[c+d x]\right) \left(a+a \text{Sec}[c+d x]\right)} 3 \, i \, B \, \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \text{Csc}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}\right] \left(A+B \text{Sec}[c+d x]\right) \left(\left(2 e^{2 i d x} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} \left(\text{Cos}[c]+i \text{Sin}[c]\right)^2\right]\right.\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\text{Cos}[2 c]+i\, e^{2 i d x}\text{Sin}[2 c]}\right)\Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\text{Cos}[2 c]+i\, e^{2 i d x}\text{Sin}[2 c]}\right)\Big/$$
$$\left.\left(-i d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{\text{Cos}[c+d x]}\,\left(A+B\,\text{Sec}[c+d x]\right)\right.$$
$$\left(\frac{2\left(-5 A+5 B-16 A\,\text{Cos}[c]+10 B\,\text{Cos}[c]\right)\text{Csc}[c]}{5 d}+\frac{4\,(-A+B)\,\text{Cos}[d x]\,\text{Sin}[c]}{3 d}+\right.$$
$$\frac{2 A\,\text{Cos}[2 d x]\,\text{Sin}[2 c]}{5 d}+\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(-A\,\text{Sin}\left[\frac{d x}{2}\right]+B\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{d}+$$
$$\left.\left.\frac{4\,(-A+B)\,\text{Cos}[c]\,\text{Sin}[d x]}{3 d}+\frac{2 A\,\text{Cos}[2 c]\,\text{Sin}[2 d x]}{5 d}\right)\right)\Big/$$
$$\left(\left(B+A\,\text{Cos}[c+d x]\right)\left(a+a\,\text{Sec}[c+d x]\right)\right)+$$
$$\left(5 A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]\right)\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3 d\left(B+A\,\text{Cos}[c+d x]\right)\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d x]\right)\right)-$$
$$\left(5 B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\left(A+B\,\text{Sec}[c+d x]\right)\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\, d\, (B + A \operatorname{Cos}[c + d\, x]) \sqrt{1 + \operatorname{Cot}[c]^2}\, (a + a \operatorname{Sec}[c + d\, x])\right)$$

Problem 497: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c + d\, x]^{3/2}\, (A + B \operatorname{Sec}[c + d\, x])}{a + a \operatorname{Sec}[c + d\, x]}\, dx$$

Optimal (type 4, 124 leaves, 6 steps):

$$-\frac{3\,(A - B)\, \text{EllipticE}\left[\frac{1}{2}\,(c + d\, x),\, 2\right]}{a\, d} + \frac{(5\, A - 3\, B)\, \text{EllipticF}\left[\frac{1}{2}\,(c + d\, x),\, 2\right]}{3\, a\, d} + \frac{(5\, A - 3\, B)\, \sqrt{\operatorname{Cos}[c + d\, x]}\, \operatorname{Sin}[c + d\, x]}{3\, a\, d} - \frac{(A - B)\, \operatorname{Cos}[c + d\, x]^{3/2}\, \operatorname{Sin}[c + d\, x]}{d\, (a + a \operatorname{Cos}[c + d\, x])}$$

Result (type 5, 1239 leaves):

$$-\frac{1}{4\, (B + A \operatorname{Cos}[c + d\, x])\, (a + a \operatorname{Sec}[c + d\, x])}\, 3\, i\, A \operatorname{Cos}\left[\frac{c}{2} + \frac{d\, x}{2}\right]^2 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right]$$
$$(A + B \operatorname{Sec}[c + d\, x]) \left(\left(2\, e^{2\, i\, d\, x}\, \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2\, i\, d\, x}\, (\operatorname{Cos}[c] + i \operatorname{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\, d\, x}\, \left(2\, (1 + e^{2\, i\, d\, x}) \operatorname{Cos}[c] + 2\, i\, (-1 + e^{2\, i\, d\, x}) \operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\, i\, d\, x} \operatorname{Cos}[2\, c] + i\, e^{2\, i\, d\, x} \operatorname{Sin}[2\, c]}\right) \Big/$$
$$\left(3\, i\, d\, (1 + e^{2\, i\, d\, x}) \operatorname{Cos}[c] - 3\, d\, (-1 + e^{2\, i\, d\, x}) \operatorname{Sin}[c]\right) -$$
$$\left(2\, \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2\, i\, d\, x}\, (\operatorname{Cos}[c] + i \operatorname{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\, d\, x}\, \left(2\, (1 + e^{2\, i\, d\, x}) \operatorname{Cos}[c] + 2\, i\, (-1 + e^{2\, i\, d\, x}) \operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\, i\, d\, x} \operatorname{Cos}[2\, c] + i\, e^{2\, i\, d\, x} \operatorname{Sin}[2\, c]}\right) \Big/$$
$$\left.\left(-i\, d\, (1 + e^{2\, i\, d\, x}) \operatorname{Cos}[c] + d\, (-1 + e^{2\, i\, d\, x}) \operatorname{Sin}[c]\right)\right) +$$
$$\frac{1}{4\, (B + A \operatorname{Cos}[c + d\, x])\, (a + a \operatorname{Sec}[c + d\, x])}$$
$$3$$
$$i$$
$$B$$
$$\operatorname{Cos}\left[\frac{c}{2} + \frac{d\, x}{2}\right]^2$$
$$\operatorname{Csc}\left[\frac{c}{2}\right]$$
$$\operatorname{Sec}\left[\frac{c}{2}\right]$$
$$(A + B \operatorname{Sec}[c + d\, x])$$
$$\left(\left(2\, e^{2\, i\, d\, x}\, \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2\, i\, d\, x}\, (\operatorname{Cos}[c] + i \operatorname{Sin}[c])^2\right]\right.\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\operatorname{Cos}[2 c]+i e^{2 i d x}\operatorname{Sin}[2 c]}\right)\Big/$$
$$\left(3 i d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]-3 d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\left(\operatorname{Cos}[c]+i\operatorname{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\operatorname{Cos}[2 c]+i e^{2 i d x}\operatorname{Sin}[2 c]}\right)\Big/$$
$$\left.\left(-i d\left(1+e^{2 i d x}\right)\operatorname{Cos}[c]+d\left(-1+e^{2 i d x}\right)\operatorname{Sin}[c]\right)\right)+$$
$$\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{\operatorname{Cos}[c+d x]}\left(A+B\operatorname{Sec}[c+d x]\right)\right.$$
$$\left(-\frac{2(-A+B)\left(1+2\operatorname{Cos}[c]\right)\operatorname{Csc}[c]}{d}+\frac{4 A\operatorname{Cos}[d x]\operatorname{Sin}[c]}{3 d}-\right.$$
$$\left.\left.\frac{2\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(-A\operatorname{Sin}\left[\frac{d x}{2}\right]+B\operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{d}+\frac{4 A\operatorname{Cos}[c]\operatorname{Sin}[d x]}{3 d}\right)\right)\Big/$$
$$\left(\left(B+A\operatorname{Cos}[c+d x]\right)\left(a+a\operatorname{Sec}[c+d x]\right)\right)-$$
$$\left(5 A\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\operatorname{Csc}\left[\frac{c}{2}\right]\right.$$
$$\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]$$
$$\operatorname{Sec}\left[\frac{c}{2}\right]\left(A+B\operatorname{Sec}[c+d x]\right)\operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]$$
$$\sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{1+\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right)\Big/$$
$$\left(3 d\left(B+A\operatorname{Cos}[c+d x]\right)\sqrt{1+\operatorname{Cot}[c]^2}\left(a+a\operatorname{Sec}[c+d x]\right)\right)+$$
$$\left(B\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\operatorname{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$
$$\operatorname{Sec}\left[\frac{c}{2}\right]\left(A+B\operatorname{Sec}[c+d x]\right)\operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]$$
$$\sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2}\operatorname{Sin}[c]\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/\left(d\,(B+A\,\text{Cos}[c+d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])\right)$$

Problem 498: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{\text{Cos}[c+d\,x]}\,(A+B\,\text{Sec}[c+d\,x])}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 88 leaves, 5 steps):

$$\frac{(3A-B)\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),\,2\right]}{a\,d}-\frac{(A-B)\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),\,2\right]}{a\,d}-\frac{(A-B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d\,(a+a\,\text{Cos}[c+d\,x])}$$

Result (type 5, 1208 leaves):

$$\frac{1}{4\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])}\,3\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right](A+B\,\text{Sec}[c+d\,x])\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\left(2\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\text{Sin}[c]\right)\right)-$$

$$\frac{1}{4\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])}\,i\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,(A+B\,\text{Sec}[c+d\,x])$$

$$\Bigg(\Bigg(2\,e^{2 i d x}\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]\,\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\,\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\,e^{2 i d x}\,\text{Sin}[2c]}\Bigg)\Big/\left(3\,i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)-\Bigg(2\,\text{Hypergeometric2F1}\Big[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\Big]\,\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}\,\sqrt{1+e^{2 i d x}\,\text{Cos}[2c]+i\,e^{2 i d x}\,\text{Sin}[2c]}\Bigg)\Big/\left(-i\,d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Bigg)+$$

$$\Bigg(\text{Cos}\Big[\frac{c}{2}+\frac{d x}{2}\Big]^2\sqrt{\text{Cos}[c+d x]}\,(A+B\,\text{Sec}[c+d x])\left(-\frac{2\,(A-B+2\,A\,\text{Cos}[c])\,\text{Csc}[c]}{d}+\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(-A\,\text{Sin}\left[\frac{d x}{2}\right]+B\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{d}\right)\Bigg)\Big/$$

$$((B+A\,\text{Cos}[c+d x])\,(a+a\,\text{Sec}[c+d x]))+$$

$$\Bigg(A\,\text{Cos}\Big[\frac{c}{2}+\frac{d x}{2}\Big]^2\text{Csc}\Big[\frac{c}{2}\Big]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]\,\text{Sec}\Big[\frac{c}{2}\Big]\,(A+B\,\text{Sec}[c+d x])\,\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\left(d\,(B+A\,\text{Cos}[c+d x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d x])\right)-$$

$$\Bigg(B\,\text{Cos}\Big[\frac{c}{2}+\frac{d x}{2}\Big]^2\text{Csc}\Big[\frac{c}{2}\Big]\,\text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4},\frac{1}{2}\Big\},\Big\{\frac{5}{4}\Big\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\Big]\,\text{Sec}\Big[\frac{c}{2}\Big]\,(A+B\,\text{Sec}[c+d x])\,\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\left(d\,(B+A\,\text{Cos}[c+d x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d x])\right)$$

Problem 499: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{A + B\,\text{Sec}[c + d\,x]}{\sqrt{\text{Cos}[c + d\,x]}\,\left(a + a\,\text{Sec}[c + d\,x]\right)}\,dx$$

Optimal (type 4, 83 leaves, 5 steps):

$$-\frac{(A - B)\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{a\,d} + \frac{(A + B)\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{a\,d} + \frac{(A - B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{Sin}[c + d\,x]}{d\,\left(a + a\,\text{Cos}[c + d\,x]\right)}$$

Result (type 5, 1204 leaves):

$$-\frac{1}{4\,\left(B + A\,\text{Cos}[c + d\,x]\right)\,\left(a + a\,\text{Sec}[c + d\,x]\right)}\,i\,A\,\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(A + B\,\text{Sec}[c + d\,x]\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] - 3\,d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right) -$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\right) +$$
$$\frac{1}{4\,\left(B + A\,\text{Cos}[c + d\,x]\right)\,\left(a + a\,\text{Sec}[c + d\,x]\right)}$$
$$i$$
$$B$$
$$\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A + B\,\text{Sec}[c + d\,x]\right)$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] - 3\,d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right) -$$

$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^{2}\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\Bigg)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^{2}\sqrt{\text{Cos}[c+d\,x]}\,\,(A+B\,\text{Sec}[c+d\,x])\right.$$
$$\left.\left(-\frac{2\,(-A+B)\,\text{Csc}[c]}{d}-\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}\right)\right)\Big/$$
$$\left((B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])\right)-$$
$$\left(A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^{2}\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^{2}\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^{2}}\,\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(B+A\,\text{Cos}[c+d\,x])\sqrt{1+\text{Cot}[c]^{2}}\,\,(a+a\,\text{Sec}[c+d\,x])\right)-$$
$$\left(B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^{2}\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^{2}\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,(A+B\,\text{Sec}[c+d\,x])\,\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]$$
$$\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{-\sqrt{1+\text{Cot}[c]^{2}}\,\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,(B+A\,\text{Cos}[c+d\,x])\sqrt{1+\text{Cot}[c]^{2}}\,\,(a+a\,\text{Sec}[c+d\,x])\right)$$

Problem 500: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B\,\text{Sec}[c + d\,x]}{\text{Cos}[c + d\,x]^{3/2}\,\left(a + a\,\text{Sec}[c + d\,x]\right)}\,dx$$

Optimal (type 4, 113 leaves, 6 steps):

$$\frac{(A - 3\,B)\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{a\,d} + \frac{(A - B)\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{a\,d} - \frac{(A - 3\,B)\,\text{Sin}[c + d\,x]}{a\,d\,\sqrt{\text{Cos}[c + d\,x]}} + \frac{(A - B)\,\text{Sin}[c + d\,x]}{d\,\sqrt{\text{Cos}[c + d\,x]}\,\left(a + a\,\text{Cos}[c + d\,x]\right)}$$

Result (type 5, 1240 leaves):

$$\frac{1}{4\,\left(B + A\,\text{Cos}[c + d\,x]\right)\,\left(a + a\,\text{Sec}[c + d\,x]\right)}\,i\,A\,\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]$$
$$\left(A + B\,\text{Sec}[c + d\,x]\right)\,\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] - 3\,d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right) -$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\right) -$$

$$\frac{1}{4\,\left(B + A\,\text{Cos}[c + d\,x]\right)\,\left(a + a\,\text{Sec}[c + d\,x]\right)}$$

3

i

B

$$\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^2$$

$$\text{Csc}\left[\frac{c}{2}\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]$$

$$\left(A + B\,\text{Sec}[c + d\,x]\right)$$

$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] - 3\,d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right) -$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,\left(\text{Cos}[c] + i\,\text{Sin}[c]\right)^2\right]\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\mathrm{Cos}[2 c]+i e^{2 i d x}\mathrm{Sin}[2 c]}\right)\Big/$$
$$\left.\left(-i d\left(1+e^{2 i d x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2 i d x}\right)\mathrm{Sin}[c]\right)\right)+$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\sqrt{\mathrm{Cos}[c+d x]}\left(A+B\,\mathrm{Sec}[c+d x]\right)\right.$$
$$\left(\frac{\left(2 B-A\,\mathrm{Cos}[c]+B\,\mathrm{Cos}[c]\right)\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c]}{d}+\right.$$
$$\left.\left.\frac{2\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(-A\,\mathrm{Sin}\left[\frac{d x}{2}\right]+B\,\mathrm{Sin}\left[\frac{d x}{2}\right]\right)}{d}+\frac{4 B\,\mathrm{Sec}[c]\,\mathrm{Sec}[c+d x]\,\mathrm{Sin}[d x]}{d}\right)\right)\Big/$$
$$\left(\left(B+A\,\mathrm{Cos}[c+d x]\right)\left(a+a\,\mathrm{Sec}[c+d x]\right)\right)-$$
$$\left(A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d x]\right)\mathrm{Sec}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]$$
$$\sqrt{1-\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{1+\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(B+A\,\mathrm{Cos}[c+d x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d x]\right)\right)+$$
$$\left(B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\left(A+B\,\mathrm{Sec}[c+d x]\right)\mathrm{Sec}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\sqrt{1+\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(B+A\,\mathrm{Cos}[c+d x]\right)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d x]\right)\right)$$

Problem 501: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Sec}[c+d x]}{\mathrm{Cos}[c+d x]^{5/2}\left(a+a\,\mathrm{Sec}[c+d x]\right)}\,dx$$

Optimal (type 4, 152 leaves, 7 steps):

$$-\frac{3\,(A-B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{a\,d}-\frac{(3\,A-5\,B)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,a\,d}-\frac{(3\,A-5\,B)\,\text{Sin}[c+d\,x]}{3\,a\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{3\,(A-B)\,\text{Sin}[c+d\,x]}{a\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{(A-B)\,\text{Sin}[c+d\,x]}{d\,\text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Cos}[c+d\,x])}$$

Result (type 5, 1277 leaves):

$$-\frac{1}{4\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])}3\,\mathrm{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right](A+B\,\text{Sec}[c+d\,x])\left(\left(2\,e^{2\,\mathrm{i}\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+2\,\mathrm{i}\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,\mathrm{i}\,d\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+2\,\mathrm{i}\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(-\mathrm{i}\,d\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)\right)+$$

$$\frac{1}{4\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])}3\,\mathrm{i}\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right](A+B\,\text{Sec}[c+d\,x])\left(\left(2\,e^{2\,\mathrm{i}\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+2\,\mathrm{i}\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,\mathrm{i}\,d\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathrm{i}\,d\,x}\,(\text{Cos}[c]+\mathrm{i}\,\text{Sin}[c])^2\right]\sqrt{e^{-\mathrm{i}\,d\,x}\,\left(2\,(1+e^{2\,\mathrm{i}\,d\,x})\,\text{Cos}[c]+2\,\mathrm{i}\,(-1+e^{2\,\mathrm{i}\,d\,x})\,\text{Sin}[c]\right)}\sqrt{1+e^{2\,\mathrm{i}\,d\,x}\,\text{Cos}[2\,c]+\mathrm{i}\,e^{2\,\mathrm{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$

$$\left(-i\, d\, \left(1+e^{2\, i\, d\, x}\right) \operatorname{Cos}[c] + d\, \left(-1+e^{2\, i\, d\, x}\right) \operatorname{Sin}[c]\right)\Bigg) +$$

$$\Bigg(\operatorname{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \sqrt{\operatorname{Cos}[c+d\,x]}\, \left(A+B\operatorname{Sec}[c+d\,x]\right)$$

$$\Bigg(-\frac{(-A+B)\, \left(2+\operatorname{Cos}[c]\right) \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c]}{d} -$$

$$\frac{2\operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right] \left(-A\operatorname{Sin}\left[\frac{d\,x}{2}\right] + B\operatorname{Sin}\left[\frac{d\,x}{2}\right]\right)}{d} + \frac{4\,B\operatorname{Sec}[c]\operatorname{Sec}[c+d\,x]^2\operatorname{Sin}[d\,x]}{3\,d} +$$

$$\frac{4\operatorname{Sec}[c]\operatorname{Sec}[c+d\,x]\, \left(B\operatorname{Sin}[c]+3\,A\operatorname{Sin}[d\,x]-3\,B\operatorname{Sin}[d\,x]\right)}{3\,d}\Bigg)\Bigg) \Bigg/$$

$$\left(\left(B+A\operatorname{Cos}[c+d\,x]\right)\, \left(a+a\operatorname{Sec}[c+d\,x]\right)\right) +$$

$$\Bigg(A\operatorname{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]$$

$$\operatorname{Sec}\left[\frac{c}{2}\right]\, \left(A+B\operatorname{Sec}[c+d\,x]\right) \operatorname{Sec}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]$$

$$\sqrt{1-\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2}\, \operatorname{Sin}[c]\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\sqrt{1+\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\Bigg) \Bigg/$$

$$\left(d\, \left(B+A\operatorname{Cos}[c+d\,x]\right) \sqrt{1+\operatorname{Cot}[c]^2}\, \left(a+a\operatorname{Sec}[c+d\,x]\right)\right) -$$

$$\Bigg(5\,B\operatorname{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]$$

$$\operatorname{Sec}\left[\frac{c}{2}\right]\, \left(A+B\operatorname{Sec}[c+d\,x]\right) \operatorname{Sec}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]$$

$$\sqrt{1-\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2}\, \operatorname{Sin}[c]\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$

$$\sqrt{1+\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\Bigg) \Bigg/$$

$$\left(3\,d\, \left(B+A\operatorname{Cos}[c+d\,x]\right) \sqrt{1+\operatorname{Cot}[c]^2}\, \left(a+a\operatorname{Sec}[c+d\,x]\right)\right)$$

Problem 502: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Cos}[c+d x]^{5/2} (A+B\,\mathrm{Sec}[c+d x])}{(a+a\,\mathrm{Sec}[c+d x])^2}\, dx$$

Optimal (type 4, 204 leaves, 8 steps):

$$\frac{7 (8 A-5 B)\,\mathrm{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{5 a^2 d}-\frac{5 (3 A-2 B)\,\mathrm{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{3 a^2 d}-\frac{5 (3 A-2 B) \sqrt{\mathrm{Cos}[c+d x]}\,\mathrm{Sin}[c+d x]}{3 a^2 d}+\frac{7 (8 A-5 B)\,\mathrm{Cos}[c+d x]^{3/2}\,\mathrm{Sin}[c+d x]}{15 a^2 d}-\frac{(3 A-2 B)\,\mathrm{Cos}[c+d x]^{5/2}\,\mathrm{Sin}[c+d x]}{a^2 d (1+\mathrm{Cos}[c+d x])}-\frac{(A-B)\,\mathrm{Cos}[c+d x]^{7/2}\,\mathrm{Sin}[c+d x]}{3 d (a+a\,\mathrm{Cos}[c+d x])^2}$$

Result (type 5, 1396 leaves):

$$\frac{1}{5 (B+A\,\mathrm{Cos}[c+d x]) (a+a\,\mathrm{Sec}[c+d x])^2} 28 \,i\, A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \mathrm{Csc}\left[\frac{c}{2}\right] \mathrm{Sec}\left[\frac{c}{2}\right] \mathrm{Sec}[c+d x] (A+B\,\mathrm{Sec}[c+d x]) \left(\left(2 e^{2 i d x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)} \sqrt{1+e^{2 i d x}\,\mathrm{Cos}[2 c]+i\, e^{2 i d x}\,\mathrm{Sin}[2 c]}\right) \Big/ \left(3 i d \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)-\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)} \sqrt{1+e^{2 i d x}\,\mathrm{Cos}[2 c]+i\, e^{2 i d x}\,\mathrm{Sin}[2 c]}\right) \Big/ \left(-i d \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+d \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)\right)-$$

$$\frac{1}{2 (B+A\,\mathrm{Cos}[c+d x]) (a+a\,\mathrm{Sec}[c+d x])^2}\, 7\, i\, B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \mathrm{Csc}\left[\frac{c}{2}\right] \mathrm{Sec}\left[\frac{c}{2}\right] \mathrm{Sec}[c+d x] (A+B\,\mathrm{Sec}[c+d x]) \left(\left(2 e^{2 i d x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right] \sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)}\right.\right.$$

$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Big) \Big/$$
$$\left(3 i d \left(1+e^{2 i d x}\right) \text{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)-$$
$$\Big(2 \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\text{Cos}[c]+i \text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i d x} \left(2 \left(1+e^{2 i d x}\right) \text{Cos}[c]+2 i \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)}$$
$$\sqrt{1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]}\Big) \Big/$$
$$\left(-i d \left(1+e^{2 i d x}\right) \text{Cos}[c]+d \left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\Big)+$$
$$\Big(10 A \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Csc}\left[\frac{c}{2}\right] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] (A+B \text{Sec}[c+d x])$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\Big) \Big/$$
$$\left(d (B+A \text{Cos}[c+d x]) \sqrt{1+\text{Cot}[c]^2} (a+a \text{Sec}[c+d x])^2\right)-$$
$$\Big(20 B \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Csc}\left[\frac{c}{2}\right] \text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]$$
$$\text{Sec}\left[\frac{c}{2}\right] \text{Sec}[c+d x] (A+B \text{Sec}[c+d x])$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]] \sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2} \text{Sin}[c] \text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]} \sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\Big) \Big/$$
$$\left(3 d (B+A \text{Cos}[c+d x]) \sqrt{1+\text{Cot}[c]^2} (a+a \text{Sec}[c+d x])^2\right)+$$
$$\Big(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (A+B \text{Sec}[c+d x])$$
$$\Big(\frac{4 (-20 A+15 B-36 A \text{Cos}[c]+20 B \text{Cos}[c]) \text{Csc}[c]}{5 d}+\frac{8 (-2 A+B) \text{Cos}[d x] \text{Sin}[c]}{3 d}+$$
$$\frac{4 A \text{Cos}[2 d x] \text{Sin}[2 c]}{5 d}-\frac{2 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3 \left(-A \text{Sin}\left[\frac{d x}{2}\right]+B \text{Sin}\left[\frac{d x}{2}\right]\right)}{3 d}+$$
$$\frac{4 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(-4 A \text{Sin}\left[\frac{d x}{2}\right]+3 B \text{Sin}\left[\frac{d x}{2}\right]\right)}{d}+\frac{8 (-2 A+B) \text{Cos}[c] \text{Sin}[d x]}{3 d}+$$

$$\left.\left.\frac{4\,A\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{5\,d}-\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left(\sqrt{\text{Cos}[c+d\,x]}\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)$$

Problem 503: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 171 leaves, 7 steps):

$$-\frac{(7\,A-4\,B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{a^2\,d}+\frac{5\,(2\,A-B)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,a^2\,d}+\frac{5\,(2\,A-B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,a^2\,d}-\frac{(7\,A-4\,B)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,(1+\text{Cos}[c+d\,x])}-\frac{(A-B)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{3\,d\,(a+a\,\text{Cos}[c+d\,x])^2}$$

Result (type 5, 1352 leaves):

$$-\frac{1}{2\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,7\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]$$
$$\left(A+B\,\text{Sec}[c+d\,x]\right)\,\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\right)+$$
$$\frac{1}{\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}$$
$$2$$
$$i$$
$$B$$
$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$

$$\operatorname{Csc}\left[\frac{c}{2}\right]$$
$$\operatorname{Sec}\left[\frac{c}{2}\right]$$
$$\operatorname{Sec}[c+d\,x]$$
$$(A+B\operatorname{Sec}[c+d\,x])$$
$$\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\operatorname{Cos}[c]+i\operatorname{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\operatorname{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\operatorname{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\operatorname{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\operatorname{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\operatorname{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\operatorname{Cos}[c]+i\operatorname{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\operatorname{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\operatorname{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\operatorname{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\operatorname{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\operatorname{Sin}[c]\right)\right)-$$
$$\left(20\,A\operatorname{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\operatorname{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$
$$\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}[c+d\,x]\,(A+B\operatorname{Sec}[c+d\,x])$$
$$\operatorname{Sec}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\sqrt{1-\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2}\,\operatorname{Sin}[c]\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{1+\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(B+A\operatorname{Cos}[c+d\,x])\sqrt{1+\operatorname{Cot}[c]^2}\,(a+a\operatorname{Sec}[c+d\,x])^2\right)+$$
$$\left(10\,B\operatorname{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\operatorname{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]^2\right]\right.$$
$$\operatorname{Sec}\left[\frac{c}{2}\right]\operatorname{Sec}[c+d\,x]\,(A+B\operatorname{Sec}[c+d\,x])$$
$$\operatorname{Sec}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]\sqrt{1-\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\operatorname{Cot}[c]^2}\,\operatorname{Sin}[c]\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}$$
$$\left.\sqrt{1+\operatorname{Sin}[d\,x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(B+A\operatorname{Cos}[c+d\,x])\sqrt{1+\operatorname{Cot}[c]^2}\,(a+a\operatorname{Sec}[c+d\,x])^2\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,(A+B\,\mathrm{Sec}[c+d\,x])\,\left(-\frac{4\,(-3\,A+2\,B-4\,A\,\mathrm{Cos}[c]+2\,B\,\mathrm{Cos}[c])\,\mathrm{Csc}[c]}{d}+\frac{8\,A\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{3\,d}+\frac{2\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(-A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(-3\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+2\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\frac{8\,A\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{3\,d}+\frac{2\,(-A+B)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/\left(\sqrt{\mathrm{Cos}[c+d\,x]}\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)$$

Problem 504: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\mathrm{Cos}[c+d\,x]}\,(A+B\,\mathrm{Sec}[c+d\,x])}{(a+a\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 137 leaves, 6 steps):

$$\frac{(4\,A-B)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{a^2\,d}-\frac{(5\,A-2\,B)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,a^2\,d}-\frac{(5\,A-2\,B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{3\,a^2\,d\,(1+\mathrm{Cos}[c+d\,x])}-\frac{(A-B)\,\mathrm{Cos}[c+d\,x]^{3/2}\,\mathrm{Sin}[c+d\,x]}{3\,d\,(a+a\,\mathrm{Cos}[c+d\,x])^2}$$

Result (type 5, 1318 leaves):

$$\frac{1}{(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,2\,i\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c+d\,x]\,(A+B\,\mathrm{Sec}[c+d\,x])\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)-\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\,\left(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)\right)-$$

$$\frac{1}{2\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2}$$

$$\begin{aligned}
&\mathrm{i}\ B \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]\,(A+B \operatorname{Sec}[c+d x]) \\
&\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] \\
&\quad \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)} \\
&\quad \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i\, e^{2 i d x} \operatorname{Sin}[2 c]}\bigg) \Big/ \\
&\quad \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)- \\
&\quad \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] \\
&\quad \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)} \\
&\quad \sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+i\, e^{2 i d x} \operatorname{Sin}[2 c]}\bigg) \Big/ \\
&\quad \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(10 A \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \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] \\
&\quad \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]\,(A+B \operatorname{Sec}[c+d x]) \\
&\quad \operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]} \\
&\quad \sqrt{-\sqrt{1+\operatorname{Cot}[c]^2} \operatorname{Sin}[c] \operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]} \\
&\quad \sqrt{1+\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]}\Bigg) \Big/ \\
&\left(3 d\,(B+A \operatorname{Cos}[c+d x]) \sqrt{1+\operatorname{Cot}[c]^2}\,(a+a \operatorname{Sec}[c+d x])^2\right)- \\
&\Bigg(4 B \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \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] \\
&\quad \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]\,(A+B \operatorname{Sec}[c+d x]) \\
&\quad \operatorname{Sec}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]] \sqrt{1-\operatorname{Sin}[d x-\operatorname{ArcTan}[\operatorname{Cot}[c]]]} \\
&\quad \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) \Big/
\end{aligned}$$

$$\left(3\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)+\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4(A+B\,\mathrm{Sec}[c+d\,x])\left(-\frac{4\,(2\,A-B+2\,A\,\mathrm{Cos}[c])\,\mathrm{Csc}[c]}{d}+\frac{4\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(-2\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}-\frac{2\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(-A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-\frac{2\,(-A+B)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/\left(\sqrt{\mathrm{Cos}[c+d\,x]}\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)$$

Problem 505: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\mathrm{Sec}[c+d\,x]}{\sqrt{\mathrm{Cos}[c+d\,x]}\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 121 leaves, 6 steps):

$$-\frac{A\,\mathrm{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{a^2\,d}+\frac{(2\,A+B)\,\mathrm{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{3\,a^2\,d}+\frac{A\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{a^2\,d\,(1+\mathrm{Cos}[c+d\,x])}-\frac{(A-B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{Sin}[c+d\,x]}{3\,d\,(a+a\,\mathrm{Cos}[c+d\,x])^2}$$

Result (type 5, 921 leaves):

$$-\frac{1}{2\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,i\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d\,x]\,(A+B\,\mathrm{Sec}[c+d\,x])\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)}\,\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\mathrm{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\mathrm{Sin}[c]\right)-$$

$$\left(4\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}\left[d\,x-\text{ArcTan}\left[\text{Cot}\left[c\right]\right]\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[c+d\,x\right]$$
$$\left(A+B\,\text{Sec}\left[c+d\,x\right]\right)$$
$$\text{Sec}\left[d\,x-\text{ArcTan}\left[\text{Cot}\left[c\right]\right]\right]$$
$$\sqrt{1-\text{Sin}\left[d\,x-\text{ArcTan}\left[\text{Cot}\left[c\right]\right]\right]}$$
$$\sqrt{-\sqrt{1+\text{Cot}\left[c\right]^2}\,\,\text{Sin}\left[c\right]\,\text{Sin}\left[d\,x-\text{ArcTan}\left[\text{Cot}\left[c\right]\right]\right]}$$
$$\left.\sqrt{1+\text{Sin}\left[d\,x-\text{ArcTan}\left[\text{Cot}\left[c\right]\right]\right]}\right)\Big/$$
$$\left(3\,d\,\left(B+A\,\text{Cos}\left[c+d\,x\right]\right)\,\sqrt{1+\text{Cot}\left[c\right]^2}\,\,\left(a+a\,\text{Sec}\left[c+d\,x\right]\right)^2\right)-$$
$$\left(2\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}\left[d\,x-\text{ArcTan}\left[\text{Cot}\left[c\right]\right]\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[c+d\,x\right]\,\left(A+B\,\text{Sec}\left[c+d\,x\right]\right)$$
$$\text{Sec}\left[d\,x-\text{ArcTan}\left[\text{Cot}\left[c\right]\right]\right]\,\sqrt{1-\text{Sin}\left[d\,x-\text{ArcTan}\left[\text{Cot}\left[c\right]\right]\right]}$$
$$\sqrt{-\sqrt{1+\text{Cot}\left[c\right]^2}\,\,\text{Sin}\left[c\right]\,\text{Sin}\left[d\,x-\text{ArcTan}\left[\text{Cot}\left[c\right]\right]\right]}$$
$$\left.\sqrt{1+\text{Sin}\left[d\,x-\text{ArcTan}\left[\text{Cot}\left[c\right]\right]\right]}\right)\Big/$$
$$\left(3\,d\,\left(B+A\,\text{Cos}\left[c+d\,x\right]\right)\,\sqrt{1+\text{Cot}\left[c\right]^2}\,\,\left(a+a\,\text{Sec}\left[c+d\,x\right]\right)^2\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\left(A+B\,\text{Sec}\left[c+d\,x\right]\right)\,\left(\frac{4\,A\,\text{Csc}\left[c\right]}{d}+\frac{4\,A\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\text{Sin}\left[\frac{d\,x}{2}\right]}{d}+\right.\right.$$
$$\left.\left.\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+\frac{2\,\left(-A+B\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left(\sqrt{\text{Cos}\left[c+d\,x\right]}\,\,\left(B+A\,\text{Cos}\left[c+d\,x\right]\right)\,\left(a+a\,\text{Sec}\left[c+d\,x\right]\right)^2\right)$$

Problem 506: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}\left[c+d\,x\right]}{\text{Cos}\left[c+d\,x\right]^{3/2}\,\left(a+a\,\text{Sec}\left[c+d\,x\right]\right)^2}\,dx$$

Optimal (type 4, 121 leaves, 6 steps):

$$\frac{B\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{a^2 d}+\frac{(A+2B)\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{3a^2 d}-\frac{B\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]}{a^2 d\,(1+\text{Cos}[c+d x])}+\frac{(A-B)\sqrt{\text{Cos}[c+d x]}\,\text{Sin}[c+d x]}{3d\,(a+a\,\text{Cos}[c+d x])^2}$$

Result (type 5, 921 leaves):

$$\frac{1}{2\,(B+A\,\text{Cos}[c+d x])\,(a+a\,\text{Sec}[c+d x])^2}\,\mathbb{i}\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]$$
$$(A+B\,\text{Sec}[c+d x])\left(\left(2\,e^{2\,\mathbb{i}\,d x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\mathbb{i}\,d x}\,(\text{Cos}[c]+\mathbb{i}\,\text{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-\mathbb{i}\,d x}\left(2\left(1+e^{2\,\mathbb{i}\,d x}\right)\text{Cos}[c]+2\,\mathbb{i}\left(-1+e^{2\,\mathbb{i}\,d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\mathbb{i}\,d x}\,\text{Cos}[2c]+\mathbb{i}\,e^{2\,\mathbb{i}\,d x}\,\text{Sin}[2c]}\right)\Big/$$
$$\left(3\,\mathbb{i}\,d\left(1+e^{2\,\mathbb{i}\,d x}\right)\text{Cos}[c]-3d\left(-1+e^{2\,\mathbb{i}\,d x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathbb{i}\,d x}\,(\text{Cos}[c]+\mathbb{i}\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-\mathbb{i}\,d x}\left(2\left(1+e^{2\,\mathbb{i}\,d x}\right)\text{Cos}[c]+2\,\mathbb{i}\left(-1+e^{2\,\mathbb{i}\,d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\mathbb{i}\,d x}\,\text{Cos}[2c]+\mathbb{i}\,e^{2\,\mathbb{i}\,d x}\,\text{Sin}[2c]}\right)\Big/$$
$$\left.\left(-\mathbb{i}\,d\left(1+e^{2\,\mathbb{i}\,d x}\right)\text{Cos}[c]+d\left(-1+e^{2\,\mathbb{i}\,d x}\right)\text{Sin}[c]\right)\right)-$$
$$\left(2\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\,(A+B\,\text{Sec}[c+d x])$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3d\,(B+A\,\text{Cos}[c+d x])\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d x])^2\right)-$$
$$\left(4\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]\,(A+B\,\text{Sec}[c+d x])$$
$$\text{Sec}[d x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)+$$
$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4(A+B\,\mathrm{Sec}[c+d\,x])\left(-\frac{4\,B\,\mathrm{Csc}[c]}{d}-\frac{4\,B\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\mathrm{Sin}\left[\frac{d\,x}{2}\right]}{d}-\right.\right.$$
$$\left.\left.\frac{2\,\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(-A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-\frac{2\,(-A+B)\,\mathrm{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\mathrm{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left(\sqrt{\mathrm{Cos}[c+d\,x]}\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)$$

Problem 507: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]}{\mathrm{Cos}[c+d\,x]^{5/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 164 leaves, 7 steps):

$$\frac{(A-4\,B)\,\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{a^2\,d}+\frac{(2\,A-5\,B)\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,a^2\,d}-\frac{(A-4\,B)\,\mathrm{Sin}[c+d\,x]}{a^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}+$$
$$\frac{(2\,A-5\,B)\,\mathrm{Sin}[c+d\,x]}{3\,a^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,(1+\mathrm{Cos}[c+d\,x])}+\frac{(A-B)\,\mathrm{Sin}[c+d\,x]}{3\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,(a+a\,\mathrm{Cos}[c+d\,x])^2}$$

Result (type 5, 1351 leaves):

$$\frac{1}{2\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,i\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\mathrm{Csc}\left[\frac{c}{2}\right]\mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d\,x]$$
$$(A+B\,\mathrm{Sec}[c+d\,x])\left(\left(\left(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]-3\,d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)-$$
$$\left(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+2\,i\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,(1+e^{2\,i\,d\,x})\,\mathrm{Cos}[c]+d\,(-1+e^{2\,i\,d\,x})\,\mathrm{Sin}[c]\right)\right)-$$
$$\frac{1}{(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^2}$$

2

i

B

$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4$$
$$\mathrm{Csc}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}[c+d\,x]$$
$$(A+B\,\mathrm{Sec}[c+d\,x])$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)-$$
$$\Bigg(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Big/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)\Bigg)-$$
$$\Bigg(4\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c+d\,x]\,(A+B\,\mathrm{Sec}[c+d\,x])$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Big/$$
$$\left(3\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)+$$
$$\Bigg(10\,B\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c+d\,x]\,(A+B\,\mathrm{Sec}[c+d\,x])$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\,\sqrt{1+\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\Bigg)\Big/$$
$$\left(3\,d\,(B+A\,\mathrm{Cos}[c+d\,x])\,\sqrt{1+\mathrm{Cot}[c]^2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4 (A+B\,\text{Sec}[c+d\,x]) \left(\frac{2\,(2\,B-A\,\text{Cos}[c]+2\,B\,\text{Cos}[c])\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c]}{d}+\right.\right.$$
$$\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+2\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+$$
$$\left.\left.\frac{8\,B\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{d}+\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left(\sqrt{\text{Cos}[c+d\,x]}\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2\right)$$

Problem 508: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{7/2}\,(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 197 leaves, 8 steps):

$$-\frac{(4\,A-7\,B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{a^2\,d}-$$
$$\frac{5\,(A-2\,B)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{3\,a^2\,d}-\frac{5\,(A-2\,B)\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{(4\,A-7\,B)\,\text{Sin}[c+d\,x]}{a^2\,d\,\sqrt{\text{Cos}[c+d\,x]}}+$$
$$\frac{(4\,A-7\,B)\,\text{Sin}[c+d\,x]}{3\,a^2\,d\,\text{Cos}[c+d\,x]^{3/2}\,(1+\text{Cos}[c+d\,x])}+\frac{(A-B)\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Cos}[c+d\,x])^2}$$

Result (type 5, 1392 leaves):

$$-\frac{1}{(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2}\,2\,\text{i}\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]$$
$$(A+B\,\text{Sec}[c+d\,x])\left(\left(\left(2\,e^{2\,\text{i}\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\text{i}\,d\,x}\,(\text{Cos}[c]+\text{i}\,\text{Sin}[c])^2\right]\right.\right.\right.$$
$$\sqrt{e^{-\text{i}\,d\,x}\left(2\,(1+e^{2\,\text{i}\,d\,x})\,\text{Cos}[c]+2\,\text{i}\,(-1+e^{2\,\text{i}\,d\,x})\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\text{i}\,d\,x}\,\text{Cos}[2\,c]+\text{i}\,e^{2\,\text{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,\text{i}\,d\,(1+e^{2\,\text{i}\,d\,x})\,\text{Cos}[c]-3\,d\,(-1+e^{2\,\text{i}\,d\,x})\,\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\text{i}\,d\,x}\,(\text{Cos}[c]+\text{i}\,\text{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-\text{i}\,d\,x}\left(2\,(1+e^{2\,\text{i}\,d\,x})\,\text{Cos}[c]+2\,\text{i}\,(-1+e^{2\,\text{i}\,d\,x})\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,\text{i}\,d\,x}\,\text{Cos}[2\,c]+\text{i}\,e^{2\,\text{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-\text{i}\,d\,(1+e^{2\,\text{i}\,d\,x})\,\text{Cos}[c]+d\,(-1+e^{2\,\text{i}\,d\,x})\,\text{Sin}[c]\right)\right)+$$

$$\frac{1}{2\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^2}$$

$$7\,\mathbb{i}\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]\right)$$

$$\left(\left(2\,e^{2\,\mathbb{i}\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,\mathbb{i}\,d\,x}\left(\text{Cos}[c]+\mathbb{i}\,\text{Sin}[c]\right)^2\right]\sqrt{e^{-\mathbb{i}\,d\,x}\left(2\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]+2\,\mathbb{i}\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2\,\mathbb{i}\,d\,x}\,\text{Cos}[2\,c]+\mathbb{i}\,e^{2\,\mathbb{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(3\,\mathbb{i}\,d\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,\mathbb{i}\,d\,x}\left(\text{Cos}[c]+\mathbb{i}\,\text{Sin}[c]\right)^2\right]\sqrt{e^{-\mathbb{i}\,d\,x}\left(2\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]+2\,\mathbb{i}\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2\,\mathbb{i}\,d\,x}\,\text{Cos}[2\,c]+\mathbb{i}\,e^{2\,\mathbb{i}\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/\left(-\mathbb{i}\,d\left(1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,\mathbb{i}\,d\,x}\right)\text{Sin}[c]\right)\right)+$$

$$\left(10\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\left(B+A\,\text{Cos}[c+d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^2\right)-$$

$$\left(20\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]\left(A+B\,\text{Sec}[c+d\,x]\right)\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right.$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,(B+A\,\text{Cos}[c+d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^2\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4(A+B\,\text{Sec}[c+d\,x])\right.$$
$$\left(-\frac{2\,(-2\,A+4\,B-2\,A\,\text{Cos}[c]+3\,B\,\text{Cos}[c])\,\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c]}{d}-\right.$$
$$\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{3\,d}-$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(-2\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{d}+\frac{8\,B\,\text{Sec}[c]\,\text{Sec}[c+d\,x]^2\,\text{Sin}[d\,x]}{3\,d}+$$
$$\frac{8\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,(B\,\text{Sin}[c]+3\,A\,\text{Sin}[d\,x]-6\,B\,\text{Sin}[d\,x])}{3\,d}-$$
$$\left.\left.\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{3\,d}\right)\right)\Big/$$
$$\left(\sqrt{\text{Cos}[c+d\,x]}\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^2\right)$$

Problem 509: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^{3/2}\,(A+B\,\text{Sec}[c+d\,x])}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 221 leaves, 8 steps):

$$-\frac{7\,(17\,A-7\,B)\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{10\,a^3\,d}+\frac{(33\,A-13\,B)\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{6\,a^3\,d}+$$
$$\frac{(33\,A-13\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{6\,a^3\,d}-\frac{(A-B)\,\text{Cos}[c+d\,x]^{7/2}\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Cos}[c+d\,x])^3}-$$
$$\frac{(2\,A-B)\,\text{Cos}[c+d\,x]^{5/2}\,\text{Sin}[c+d\,x]}{3\,a\,d\,(a+a\,\text{Cos}[c+d\,x])^2}-\frac{7\,(17\,A-7\,B)\,\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]}{30\,d\,(a^3+a^3\,\text{Cos}[c+d\,x])}$$

Result (type 5, 1448 leaves):

$$-\frac{1}{10\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3}\,119\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2$$

$$\left(A+B\,\text{Sec}[c+d\,x]\right)\left(\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)+$$

$$\frac{1}{10\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3}$$

49

i

B

$$\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$

$$\text{Csc}\left[\frac{c}{2}\right]$$

$$\text{Sec}\left[\frac{c}{2}\right]$$

$$\text{Sec}[c+d\,x]^2$$

$$\left(A+B\,\text{Sec}[c+d\,x]\right)$$

$$\left(\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]-3\,d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\left(2\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+2\,i\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\left(1+e^{2\,i\,d\,x}\right)\text{Cos}[c]+d\left(-1+e^{2\,i\,d\,x}\right)\text{Sin}[c]\right)\right)-$$

$$\left(22\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(26\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\left(A+B\,\text{Sec}[c+d\,x]\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\ \text{Sin}[c]\ \text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\sqrt{1+\text{Cot}[c]^2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,\left(-\frac{4\,\left(-59\,A+29\,B-60\,A\,\text{Cos}[c]+20\,B\,\text{Cos}[c]\right)\,\text{Csc}[c]}{5\,d}+\right.\right.$$
$$\frac{16\,A\,\text{Cos}[d\,x]\,\text{Sin}[c]}{3\,d}-\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(-19\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+14\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}-$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(-59\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+29\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+\frac{16\,A\,\text{Cos}[c]\,\text{Sin}[d\,x]}{3\,d}+$$
$$\left.\left.\frac{4\,\left(-19\,A+14\,B\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d}-\frac{2\,\left(-A+B\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$
$$\left(\text{Cos}[c+d\,x]^{3/2}\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 510: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{\text{Cos}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 188 leaves, 7 steps):

$$\frac{(49 A-9 B)\, \text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{10 a^3 d}-\frac{(13 A-3 B)\, \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{6 a^3 d}-\frac{(A-B) \operatorname{Cos}[c+d x]^{5/2} \operatorname{Sin}[c+d x]}{5 d\, (a+a \operatorname{Cos}[c+d x])^3}-\frac{(8 A-3 B) \operatorname{Cos}[c+d x]^{3/2} \operatorname{Sin}[c+d x]}{15 a d\, (a+a \operatorname{Cos}[c+d x])^2}-\frac{(13 A-3 B) \sqrt{\operatorname{Cos}[c+d x]}\, \operatorname{Sin}[c+d x]}{6 d\, \left(a^3+a^3 \operatorname{Cos}[c+d x]\right)}$$

Result (type 5, 1415 leaves):

$$\frac{1}{10\, (B+A \operatorname{Cos}[c+d x])\, (a+a \operatorname{Sec}[c+d x])^3}\, 49\, \mathrm{i}\, A \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}[c+d x]^2$$
$$(A+B \operatorname{Sec}[c+d x]) \left(\left(2\, e^{2 i d x}\, \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\operatorname{Cos}[c]+\mathrm{i} \operatorname{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i d x}\left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2\, \mathrm{i} \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+\mathrm{i}\, e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/$$
$$\left(3\, \mathrm{i}\, d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$
$$\left(2\, \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\operatorname{Cos}[c]+\mathrm{i} \operatorname{Sin}[c])^2\right]\right.$$
$$\sqrt{e^{-i d x}\left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2\, \mathrm{i} \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+\mathrm{i}\, e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/$$
$$\left.\left(-\mathrm{i}\, d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)\right)-$$
$$\frac{1}{10\, (B+A \operatorname{Cos}[c+d x])\, (a+a \operatorname{Sec}[c+d x])^3}$$
$$9$$
$$\mathrm{i}$$
$$B$$
$$\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6$$
$$\operatorname{Csc}\left[\frac{c}{2}\right]$$
$$\operatorname{Sec}\left[\frac{c}{2}\right]$$
$$\operatorname{Sec}[c+d x]^2$$
$$(A+B \operatorname{Sec}[c+d x])$$
$$\left(\left(2\, e^{2 i d x}\, \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2 i d x} (\operatorname{Cos}[c]+\mathrm{i} \operatorname{Sin}[c])^2\right]\right.\right.$$
$$\sqrt{e^{-i d x}\left(2 \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+2\, \mathrm{i} \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \operatorname{Cos}[2 c]+\mathrm{i}\, e^{2 i d x} \operatorname{Sin}[2 c]}\right) \Big/$$
$$\left(3\, \mathrm{i}\, d \left(1+e^{2 i d x}\right) \operatorname{Cos}[c]-3 d \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)-$$
$$\left(2\, \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i d x} (\operatorname{Cos}[c]+\mathrm{i} \operatorname{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+2 i\left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x} \mathrm{Cos}[2 c]+i e^{2 i d x} \mathrm{Sin}[2 c]}\right) \Big/$$
$$\left.\left(-i d\left(1+e^{2 i d x}\right) \mathrm{Cos}[c]+d\left(-1+e^{2 i d x}\right) \mathrm{Sin}[c]\right)\right)+$$

$$\left(26 A \mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \mathrm{Csc}\left[\frac{c}{2}\right] \mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\},\left\{\frac{5}{4}\right\}, \mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right] \mathrm{Sec}[c+d x]^2 (A+B \mathrm{Sec}[c+d x])$$
$$\mathrm{Sec}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]] \sqrt{1-\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2} \mathrm{Sin}[c] \mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{1+\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right) \Big/$$
$$\left(3 d (B+A \mathrm{Cos}[c+d x]) \sqrt{1+\mathrm{Cot}[c]^2}(a+a \mathrm{Sec}[c+d x])^3\right)-$$

$$\left(2 B \mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \mathrm{Csc}\left[\frac{c}{2}\right] \mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4}, \frac{1}{2}\right\},\left\{\frac{5}{4}\right\}, \mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]\right.$$
$$\mathrm{Sec}\left[\frac{c}{2}\right] \mathrm{Sec}[c+d x]^2 (A+B \mathrm{Sec}[c+d x])$$
$$\mathrm{Sec}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]] \sqrt{1-\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2} \mathrm{Sin}[c] \mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]} \sqrt{1+\mathrm{Sin}[d x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\right) \Big/$$
$$\left(d (B+A \mathrm{Cos}[c+d x]) \sqrt{1+\mathrm{Cot}[c]^2}(a+a \mathrm{Sec}[c+d x])^3\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (A+B \mathrm{Sec}[c+d x])\right.$$
$$\left(-\frac{4(29 A-9 B+20 A \mathrm{Cos}[c]) \mathrm{Csc}[c]}{5 d}+\frac{2 \mathrm{Sec}\left[\frac{c}{2}\right] \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^5\left(-A \mathrm{Sin}\left[\frac{d x}{2}\right]+B \mathrm{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}+\right.$$
$$\frac{4 \mathrm{Sec}\left[\frac{c}{2}\right] \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]\left(-29 A \mathrm{Sin}\left[\frac{d x}{2}\right]+9 B \mathrm{Sin}\left[\frac{d x}{2}\right]\right)}{5 d}-$$
$$\frac{4 \mathrm{Sec}\left[\frac{c}{2}\right] \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^3\left(-14 A \mathrm{Sin}\left[\frac{d x}{2}\right]+9 B \mathrm{Sin}\left[\frac{d x}{2}\right]\right)}{15 d}-$$
$$\left.\left.\frac{4(-14 A+9 B) \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \mathrm{Tan}\left[\frac{c}{2}\right]}{15 d}+\frac{2(-A+B) \mathrm{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \mathrm{Tan}\left[\frac{c}{2}\right]}{5 d}\right)\right) \Big/$$
$$\left(\mathrm{Cos}[c+d x]^{3/2}(B+A \mathrm{Cos}[c+d x])(a+a \mathrm{Sec}[c+d x])^3\right)$$

Problem 511: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B\,\text{Sec}[c + d\,x]}{\sqrt{\text{Cos}[c + d\,x]}\,\left(a + a\,\text{Sec}[c + d\,x]\right)^3}\,dx$$

Optimal (type 4, 182 leaves, 7 steps):

$$-\frac{(9\,A + B)\,\text{EllipticE}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{10\,a^3\,d} + \frac{(3\,A + B)\,\text{EllipticF}\left[\frac{1}{2}\,(c + d\,x),\,2\right]}{6\,a^3\,d} - \frac{(A - B)\,\text{Cos}[c + d\,x]^{3/2}\,\text{Sin}[c + d\,x]}{5\,d\,\left(a + a\,\text{Cos}[c + d\,x]\right)^3} - \frac{(6\,A - B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{Sin}[c + d\,x]}{15\,a\,d\,\left(a + a\,\text{Cos}[c + d\,x]\right)^2} + \frac{(9\,A + B)\,\sqrt{\text{Cos}[c + d\,x]}\,\text{Sin}[c + d\,x]}{10\,d\,\left(a^3 + a^3\,\text{Cos}[c + d\,x]\right)}$$

Result (type 5, 1407 leaves):

$$-\frac{1}{10\,(B + A\,\text{Cos}[c + d\,x])\,\left(a + a\,\text{Sec}[c + d\,x]\right)^3}\,9\,i\,A\,\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c + d\,x]^2$$
$$(A + B\,\text{Sec}[c + d\,x])\,\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,(\text{Cos}[c] + i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] - 3\,d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right) -$$
$$\Bigg(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,(\text{Cos}[c] + i\,\text{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + 2\,i\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\sqrt{1 + e^{2\,i\,d\,x}\,\text{Cos}[2\,c] + i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\,\left(1 + e^{2\,i\,d\,x}\right)\,\text{Cos}[c] + d\,\left(-1 + e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\Bigg) -$$
$$\frac{1}{10\,(B + A\,\text{Cos}[c + d\,x])\,\left(a + a\,\text{Sec}[c + d\,x]\right)^3}$$
$$i$$
$$B$$
$$\text{Cos}\left[\frac{c}{2} + \frac{d\,x}{2}\right]^6$$
$$\text{Csc}\left[\frac{c}{2}\right]$$
$$\text{Sec}\left[\frac{c}{2}\right]$$
$$\text{Sec}[c + d\,x]^2$$
$$(A + B\,\text{Sec}[c + d\,x])$$

$$\Bigg(\Bigg(2\, e^{2 i d x}\, \text{Hypergeometric2F1}\Big[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x}\, (\text{Cos}[c] + i\, \text{Sin}[c])^2\Big]$$

$$\sqrt{e^{-i d x}\, \big(2\, (1 + e^{2 i d x})\, \text{Cos}[c] + 2\, i\, (-1 + e^{2 i d x})\, \text{Sin}[c]\big)}$$

$$\sqrt{1 + e^{2 i d x}\, \text{Cos}[2\, c] + i\, e^{2 i d x}\, \text{Sin}[2\, c]}\Bigg) \Big/$$

$$\big(3\, i\, d\, (1 + e^{2 i d x})\, \text{Cos}[c] - 3\, d\, (-1 + e^{2 i d x})\, \text{Sin}[c]\big) -$$

$$\Bigg(2\, \text{Hypergeometric2F1}\Big[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x}\, (\text{Cos}[c] + i\, \text{Sin}[c])^2\Big]$$

$$\sqrt{e^{-i d x}\, \big(2\, (1 + e^{2 i d x})\, \text{Cos}[c] + 2\, i\, (-1 + e^{2 i d x})\, \text{Sin}[c]\big)}$$

$$\sqrt{1 + e^{2 i d x}\, \text{Cos}[2\, c] + i\, e^{2 i d x}\, \text{Sin}[2\, c]}\Bigg) \Big/$$

$$\big(-i\, d\, (1 + e^{2 i d x})\, \text{Cos}[c] + d\, (-1 + e^{2 i d x})\, \text{Sin}[c]\big)\Bigg) -$$

$$\Bigg(2\, A\, \text{Cos}\Big[\frac{c}{2} + \frac{d\, x}{2}\Big]^6\, \text{Csc}\Big[\frac{c}{2}\Big]\, \text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4}, \frac{1}{2}\Big\}, \Big\{\frac{5}{4}\Big\}, \text{Sin}[d\, x - \text{ArcTan}[\text{Cot}[c]]]^2\Big]$$

$$\text{Sec}\Big[\frac{c}{2}\Big]\, \text{Sec}[c + d\, x]^2\, (A + B\, \text{Sec}[c + d\, x])$$

$$\text{Sec}[d\, x - \text{ArcTan}[\text{Cot}[c]]]\, \sqrt{1 - \text{Sin}[d\, x - \text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[c]\, \text{Sin}[d\, x - \text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1 + \text{Sin}[d\, x - \text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Big/$$

$$\Big(d\, (B + A\, \text{Cos}[c + d\, x])\, \sqrt{1 + \text{Cot}[c]^2}\, (a + a\, \text{Sec}[c + d\, x])^3\Big) -$$

$$\Bigg(2\, B\, \text{Cos}\Big[\frac{c}{2} + \frac{d\, x}{2}\Big]^6\, \text{Csc}\Big[\frac{c}{2}\Big]\, \text{HypergeometricPFQ}\Big[\Big\{\frac{1}{4}, \frac{1}{2}\Big\}, \Big\{\frac{5}{4}\Big\}, \text{Sin}[d\, x - \text{ArcTan}[\text{Cot}[c]]]^2\Big]$$

$$\text{Sec}\Big[\frac{c}{2}\Big]\, \text{Sec}[c + d\, x]^2\, (A + B\, \text{Sec}[c + d\, x])$$

$$\text{Sec}[d\, x - \text{ArcTan}[\text{Cot}[c]]]\, \sqrt{1 - \text{Sin}[d\, x - \text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{-\sqrt{1 + \text{Cot}[c]^2}\, \text{Sin}[c]\, \text{Sin}[d\, x - \text{ArcTan}[\text{Cot}[c]]]}$$

$$\sqrt{1 + \text{Sin}[d\, x - \text{ArcTan}[\text{Cot}[c]]]}\Bigg) \Big/$$

$$\Big(3\, d\, (B + A\, \text{Cos}[c + d\, x])\, \sqrt{1 + \text{Cot}[c]^2}\, (a + a\, \text{Sec}[c + d\, x])^3\Big) +$$

$$\Bigg(\text{Cos}\Big[\frac{c}{2} + \frac{d\, x}{2}\Big]^6\, (A + B\, \text{Sec}[c + d\, x])$$

$$\Bigg(\frac{4\, (9\, A + B)\, \text{Csc}[c]}{5\, d} - \frac{2\, \text{Sec}\big[\frac{c}{2}\big]\, \text{Sec}\big[\frac{c}{2} + \frac{d x}{2}\big]^5\, \big(-A\, \text{Sin}\big[\frac{d x}{2}\big] + B\, \text{Sin}\big[\frac{d x}{2}\big]\big)}{5\, d} +$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(9\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(-9\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+4\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+$$
$$\left.\left.\frac{4\,\left(-9\,A+4\,B\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d}-\frac{2\,\left(-A+B\right)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$
$$\left(\text{Cos}[c+d\,x]^{3/2}\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 512: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 4, 178 leaves, 7 steps):

$$-\frac{(A-B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{10\,a^3\,d}+$$
$$\frac{(A+B)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{6\,a^3\,d}-\frac{(A-B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{5\,d\,\left(a+a\,\text{Cos}[c+d\,x]\right)^3}+$$
$$\frac{(4\,A+B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,a\,d\,\left(a+a\,\text{Cos}[c+d\,x]\right)^2}+\frac{(A-B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{10\,d\,\left(a^3+a^3\,\text{Cos}[c+d\,x]\right)}$$

Result (type 5, 1406 leaves):

$$-\frac{1}{10\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2$$
$$\left(A+B\,\text{Sec}[c+d\,x]\right)\,\left(\left(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)-$$
$$\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2\right]\right.$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2\,i\,d\,x}\,\text{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\text{Sin}[2\,c]}\right)\Big/$$
$$\left.\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)\right)+$$
$$\frac{1}{10\,\left(B+A\,\text{Cos}[c+d\,x]\right)\,\left(a+a\,\text{Sec}[c+d\,x]\right)^3}$$

$$
\begin{aligned}
&\mathrm{i}\\
&\quad B\\
&\quad \mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\\
&\quad \mathrm{Csc}\left[\frac{c}{2}\right]\\
&\quad \mathrm{Sec}\left[\frac{c}{2}\right]\\
&\quad \mathrm{Sec}[c+d\,x]^2\\
&\quad \left(A+B\,\mathrm{Sec}[c+d\,x]\right)\\
&\quad \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]\\
&\qquad\quad \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)}\\
&\qquad\quad \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)\Bigg/\\
&\qquad \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)-\\
&\qquad \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]\\
&\qquad\quad \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)}\\
&\qquad\quad \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)\Bigg/\\
&\qquad \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)-\\
&\Bigg(2\,A\,\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]\\
&\quad \mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d\,x]^2\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\\
&\quad \mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\\
&\quad \sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\\
&\quad \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)\sqrt{1+\mathrm{Cot}[c]^2}\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^3\right)-\\
&\Bigg(2\,B\,\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]\\
&\quad \mathrm{Sec}\left[\frac{c}{2}\right]\mathrm{Sec}[c+d\,x]^2\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\\
&\quad \mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}\\
&\quad \sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}
\end{aligned}
$$

$$\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\Bigg)\Big/$$

$$\left(3\,d\,(B+A\,\text{Cos}[c+d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^3\right)+$$

$$\Bigg(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,(A+B\,\text{Sec}[c+d\,x])$$

$$\Bigg(-\frac{4\,(-A+B)\,\text{Csc}[c]}{5\,d}-\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$

$$\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\left(4\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+$$

$$\frac{4\,(4\,A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\Bigg)\Bigg)\Big/$$

$$\left(\text{Cos}[c+d\,x]^{3/2}\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)$$

Problem 513: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 180 leaves, 7 steps):

$$\frac{(A+9\,B)\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{10\,a^3\,d}+$$

$$\frac{(A+3\,B)\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]}{6\,a^3\,d}+\frac{(A-B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{5\,d\,(a+a\,\text{Cos}[c+d\,x])^3}+$$

$$\frac{(A-6\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,a\,d\,(a+a\,\text{Cos}[c+d\,x])^2}-\frac{(A+9\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]}{10\,d\,(a^3+a^3\,\text{Cos}[c+d\,x])}$$

Result (type 5, 1407 leaves):

$$\frac{1}{10\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3}\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2$$

$$(A+B\,\text{Sec}[c+d\,x])\,\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]$$

$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\text{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\text{Sin}[c]\right)}$$

$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)-$$
$$\Bigg(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)\Bigg)+$$

$$\frac{1}{10\,(B+A\,\mathrm{Cos}[c+d\,x])\,(a+a\,\mathrm{Sec}[c+d\,x])^3}$$
$$9$$
$$i$$
$$B$$
$$\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6$$
$$\mathrm{Csc}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]$$
$$\mathrm{Sec}[c+d\,x]^2$$
$$(A+B\,\mathrm{Sec}[c+d\,x])$$
$$\Bigg(\Bigg(2\,e^{2\,i\,d\,x}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(3\,i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]-3\,d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)-$$
$$\Bigg(2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,d\,x}\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2\right]$$
$$\sqrt{e^{-i\,d\,x}\,\left(2\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+2\,i\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)}$$
$$\sqrt{1+e^{2\,i\,d\,x}\,\mathrm{Cos}[2\,c]+i\,e^{2\,i\,d\,x}\,\mathrm{Sin}[2\,c]}\Bigg)\Bigg/$$
$$\left(-i\,d\,\left(1+e^{2\,i\,d\,x}\right)\,\mathrm{Cos}[c]+d\,\left(-1+e^{2\,i\,d\,x}\right)\,\mathrm{Sin}[c]\right)\Bigg)-$$
$$\Bigg(2\,A\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\,\mathrm{Csc}\left[\frac{c}{2}\right]\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]^2\right]$$
$$\mathrm{Sec}\left[\frac{c}{2}\right]\,\mathrm{Sec}[c+d\,x]^2\,(A+B\,\mathrm{Sec}[c+d\,x])$$
$$\mathrm{Sec}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]\,\sqrt{1-\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\mathrm{Cot}[c]^2}\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x-\mathrm{ArcTan}[\mathrm{Cot}[c]]]}$$

$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(3\,d\,(B+A\,\text{Cos}[c+d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^3\right)-$$

$$\left(2\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$

$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\,(A+B\,\text{Sec}[c+d\,x])$$

$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\,\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$

$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\,\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$

$$\left(d\,(B+A\,\text{Cos}[c+d\,x])\,\sqrt{1+\text{Cot}[c]^2}\,(a+a\,\text{Sec}[c+d\,x])^3\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6(A+B\,\text{Sec}[c+d\,x])\right.$$

$$\left(-\frac{4\,(A+9\,B)\,\text{Csc}[c]}{5\,d}-\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}-\right.$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+6\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}-$$

$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(A\,\text{Sin}\left[\frac{d\,x}{2}\right]+9\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}-$$

$$\left.\left.\frac{4\,(-A+6\,B)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15\,d}-\frac{2\,(-A+B)\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$

$$\left(\text{Cos}[c+d\,x]^{3/2}\,(B+A\,\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])^3\right)$$

Problem 514: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{7/2}\,(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 4, 221 leaves, 8 steps):

$$\frac{(9A-49B)\,\text{EllipticE}\left[\frac{1}{2}(c+dx),2\right]}{10a^3d}+\frac{(3A-13B)\,\text{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{6a^3d}-\frac{(9A-49B)\,\text{Sin}[c+dx]}{10a^3d\sqrt{\text{Cos}[c+dx]}}+\frac{(A-B)\,\text{Sin}[c+dx]}{5d\sqrt{\text{Cos}[c+dx]}\,(a+a\,\text{Cos}[c+dx])^3}+\frac{(3A-8B)\,\text{Sin}[c+dx]}{15ad\sqrt{\text{Cos}[c+dx]}\,(a+a\,\text{Cos}[c+dx])^2}+\frac{(3A-13B)\,\text{Sin}[c+dx]}{6d\sqrt{\text{Cos}[c+dx]}\,(a^3+a^3\,\text{Cos}[c+dx])}$$

Result (type 5, 1447 leaves):

$$\frac{1}{10\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^3}\,9\,i\,A\,\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+dx]^2\,(A+B\,\text{Sec}[c+dx])\left(\left(2\,e^{2idx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2idx}(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/\left(3\,i\,d\left(1+e^{2idx}\right)\text{Cos}[c]-3\,d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2idx}(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/\left(-i\,d\left(1+e^{2idx}\right)\text{Cos}[c]+d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)\right)-$$

$$\frac{1}{10\,(B+A\,\text{Cos}[c+dx])\,(a+a\,\text{Sec}[c+dx])^3}$$

$$49\;i\;B\;\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]^6\;\text{Csc}\left[\frac{c}{2}\right]\;\text{Sec}\left[\frac{c}{2}\right]\;\text{Sec}[c+dx]^2\;(A+B\,\text{Sec}[c+dx])$$

$$\left(\left(2\,e^{2idx}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},-e^{2idx}(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\sqrt{e^{-idx}\left(2\left(1+e^{2idx}\right)\text{Cos}[c]+2\,i\left(-1+e^{2idx}\right)\text{Sin}[c]\right)}\sqrt{1+e^{2idx}\,\text{Cos}[2c]+i\,e^{2idx}\,\text{Sin}[2c]}\right)\Big/\left(3\,i\,d\left(1+e^{2idx}\right)\text{Cos}[c]-3\,d\left(-1+e^{2idx}\right)\text{Sin}[c]\right)-\left(2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2idx}(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\right.$$

$$\sqrt{e^{-i d x}\left(2\left(1+e^{2 i d x}\right)\text{Cos}[c]+2 i\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)}$$
$$\left.\sqrt{1+e^{2 i d x}\text{Cos}[2c]+i\, e^{2 i d x}\text{Sin}[2c]}\right)\Big/$$
$$\left(-i\, d\left(1+e^{2 i d x}\right)\text{Cos}[c]+d\left(-1+e^{2 i d x}\right)\text{Sin}[c]\right)\Big)-$$

$$\left(2\,A\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(d\left(B+A\,\text{Cos}[c+d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\left(26\,B\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\text{Csc}\left[\frac{c}{2}\right]\text{HypergeometricPFQ}\left[\left\{\frac{1}{4},\frac{1}{2}\right\},\left\{\frac{5}{4}\right\},\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]^2\right]\right.$$
$$\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d\,x]^2\left(A+B\,\text{Sec}[c+d\,x]\right)$$
$$\text{Sec}[d\,x-\text{ArcTan}[\text{Cot}[c]]]\sqrt{1-\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}$$
$$\left.\sqrt{-\sqrt{1+\text{Cot}[c]^2}\,\text{Sin}[c]\,\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\sqrt{1+\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]}\right)\Big/$$
$$\left(3\,d\left(B+A\,\text{Cos}[c+d\,x]\right)\sqrt{1+\text{Cot}[c]^2}\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^6\left(A+B\,\text{Sec}[c+d\,x]\right)\left(\frac{2\left(20\,B-9\,A\,\text{Cos}[c]+29\,B\,\text{Cos}[c]\right)\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c]}{5\,d}+\right.\right.$$
$$\frac{2\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\left(-A\,\text{Sin}\left[\frac{d\,x}{2}\right]+B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\left(-6\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+11\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{15\,d}+$$
$$\frac{4\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(-9\,A\,\text{Sin}\left[\frac{d\,x}{2}\right]+29\,B\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{5\,d}+\frac{16\,B\,\text{Sec}[c]\,\text{Sec}[c+d\,x]\,\text{Sin}[d\,x]}{d}+$$
$$\left.\left.\frac{4\left(-6\,A+11\,B\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Tan}\left[\frac{c}{2}\right]}{15\,d}+\frac{2\left(-A+B\right)\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\text{Tan}\left[\frac{c}{2}\right]}{5\,d}\right)\right)\Big/$$
$$\left(\text{Cos}[c+d\,x]^{3/2}\left(B+A\,\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)^3\right)$$

Problem 519: Result unnecessarily involves higher level functions.

$$\int \sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 3, 96 leaves, 4 steps):

$$\frac{2\sqrt{a}\,B\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{d}+\frac{2\,a\,A\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 5, 135 leaves):

$$-\frac{1}{3\,d\,\left(1+e^{i\,(c+d\,x)}\right)}2\,i\,\sqrt{\text{Cos}[c+d\,x]}\,\left(3\,A\,\left(-1+e^{i\,(c+d\,x)}\right)+6\,B\,e^{i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]+2\,B\,e^{2\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]\right)\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}$$

Problem 520: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 3, 98 leaves, 4 steps):

$$\frac{\sqrt{a}\,\left(2\,A+B\right)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{d}+\frac{a\,B\,\text{Sin}[c+d\,x]}{d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 5, 157 leaves):

$$\frac{1}{3\,d}\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\left(-3\,i\,\left(2\,A+B\right)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]-i\,\left(2\,A+B\right)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]+3\,B\,\text{Sec}[c+d\,x]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 521: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 3, 151 leaves, 5 steps):

$$\frac{\sqrt{a}\,(4A+3B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}}{4d}+\frac{a\,B\,\text{Sin}[c+dx]}{2d\,\text{Cos}[c+dx]^{5/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{a\,(4A+3B)\,\text{Sin}[c+dx]}{4d\,\text{Cos}[c+dx]^{3/2}\sqrt{a+a\,\text{Sec}[c+dx]}}$$

Result (type 5, 166 leaves):

$$\frac{1}{12d}\sqrt{\text{Cos}[c+dx]}\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}\left(-3\,i\,(4A+3B)\,e^{\frac{1}{2}i(c+dx)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+dx)}\right]-i\,(4A+3B)\,e^{\frac{3}{2}i(c+dx)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+dx)}\right]+3\,\text{Sec}[c+dx]\,(4A+3B+2B\,\text{Sec}[c+dx])\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)$$

Problem 522: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{a+a\,\text{Sec}[c+dx]}\,(A+B\,\text{Sec}[c+dx])}{\text{Cos}[c+dx]^{5/2}}\,dx$$

Optimal (type 3, 196 leaves, 6 steps):

$$\frac{\sqrt{a}\,(6A+5B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}}{8d}+\frac{a\,B\,\text{Sin}[c+dx]}{3d\,\text{Cos}[c+dx]^{7/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{a\,(6A+5B)\,\text{Sin}[c+dx]}{12d\,\text{Cos}[c+dx]^{5/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{a\,(6A+5B)\,\text{Sin}[c+dx]}{8d\,\text{Cos}[c+dx]^{3/2}\sqrt{a+a\,\text{Sec}[c+dx]}}$$

Result (type 5, 185 leaves):

$$\frac{1}{24d}\sqrt{\text{Cos}[c+dx]}\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{a\,(1+\text{Sec}[c+dx])}\left(-3\,i\,(6A+5B)\,e^{\frac{1}{2}i(c+dx)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+dx)}\right]-i\,(6A+5B)\,e^{\frac{3}{2}i(c+dx)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+dx)}\right]+\text{Sec}[c+dx]\,\left(3\,(6A+5B)+2\,(6A+5B)\,\text{Sec}[c+dx]+8B\,\text{Sec}[c+dx]^2\right)\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)$$

Problem 527: Result unnecessarily involves higher level functions.

$$\int\text{Cos}[c+dx]^{3/2}\,(a+a\,\text{Sec}[c+dx])^{3/2}\,(A+B\,\text{Sec}[c+dx])\,dx$$

Optimal (type 3, 145 leaves, 5 steps):

$$\frac{2\,a^{3/2}\,B\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{d}+$$
$$\frac{2\,a^2\,(4\,A+3\,B)\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{2\,a\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 157 leaves):

$$\frac{1}{3\,d}a\,\sqrt{\text{Cos}[c+d\,x]}\,(1+\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\sqrt{a\,(1+\text{Sec}[c+d\,x])}$$
$$\left(-3\,\text{i}\,B\,e^{\frac{1}{2}\,\text{i}\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,\text{i}\,(c+d\,x)}\right]-\text{i}\,B\,e^{\frac{3}{2}\,\text{i}\,(c+d\,x)}\right.$$
$$\left.\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,\text{i}\,(c+d\,x)}\right]+(5\,A+3\,B+A\,\text{Cos}[c+d\,x])\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 528: Result unnecessarily involves higher level functions.

$$\int\sqrt{\text{Cos}[c+d\,x]}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 144 leaves, 5 steps):

$$\frac{a^{3/2}\,(2\,A+3\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{d}+$$
$$\frac{a^2\,(2\,A-B)\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,B\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 178 leaves):

$$\left(a\,(1+\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\sqrt{a\,(1+\text{Sec}[c+d\,x])}\right.$$
$$\left(-3\,\text{i}\,(2\,A+3\,B)\,e^{\frac{1}{2}\,\text{i}\,(c+d\,x)}\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,\text{i}\,(c+d\,x)}\right]-\right.$$
$$\text{i}\,(2\,A+3\,B)\,e^{\frac{3}{2}\,\text{i}\,(c+d\,x)}\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,\text{i}\,(c+d\,x)}\right]+$$
$$\left.\left.3\,(B+2\,A\,\text{Cos}[c+d\,x])\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/\left(6\,d\,\sqrt{\text{Cos}[c+d\,x]}\right)$$

Problem 529: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^{3/2}\,(A+B\,\text{Sec}[c+d\,x])}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 3, 153 leaves, 5 steps):

$$\frac{a^{3/2}\,(12A+7B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}}{4d}+$$
$$\frac{a^2\,(4A+5B)\,\text{Sin}[c+dx]}{4d\,\text{Cos}[c+dx]^{3/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{aB\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{2d\,\text{Cos}[c+dx]^{3/2}}$$

Result (type 5, 189 leaves):

$$\left(a\,(1+\text{Cos}[c+dx])\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^3\sqrt{a\,(1+\text{Sec}[c+dx])}\right.$$
$$\left(-3\,i\,(12A+7B)\,e^{\frac{1}{2}i(c+dx)}\,\text{Cos}[c+dx]^2\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+dx)}\right]-\right.$$
$$i\,(12A+7B)\,e^{\frac{3}{2}i(c+dx)}\,\text{Cos}[c+dx]^2\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+dx)}\right]+$$
$$\left.\left.3\,(2B+(4A+7B)\,\text{Cos}[c+dx])\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\Big/\left(24d\,\text{Cos}[c+dx]^{3/2}\right)$$

Problem 530: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\text{Sec}[c+dx])^{3/2}\,(A+B\,\text{Sec}[c+dx])}{\text{Cos}[c+dx]^{3/2}}\,dx$$

Optimal (type 3, 200 leaves, 6 steps):

$$\frac{a^{3/2}\,(14A+11B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}}{8d}+$$
$$\frac{a^2\,(6A+7B)\,\text{Sin}[c+dx]}{12d\,\text{Cos}[c+dx]^{5/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+$$
$$\frac{a^2\,(14A+11B)\,\text{Sin}[c+dx]}{8d\,\text{Cos}[c+dx]^{3/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{aB\sqrt{a+a\,\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{3d\,\text{Cos}[c+dx]^{5/2}}$$

Result (type 5, 205 leaves):

$$\frac{1}{48d\,\text{Cos}[c+dx]^{5/2}}a\,(1+\text{Cos}[c+dx])\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^3\sqrt{a\,(1+\text{Sec}[c+dx])}$$
$$\left(-3\,i\,(14A+11B)\,e^{\frac{1}{2}i(c+dx)}\,\text{Cos}[c+dx]^3\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2i(c+dx)}\right]-\right.$$
$$i\,(14A+11B)\,e^{\frac{3}{2}i(c+dx)}\,\text{Cos}[c+dx]^3\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2i(c+dx)}\right]+$$
$$\left.\left(8B+2\,(6A+11B)\,\text{Cos}[c+dx]+(42A+33B)\,\text{Cos}[c+dx]^2\right)\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)$$

Problem 531: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\text{Sec}[c+dx])^{3/2}\,(A+B\,\text{Sec}[c+dx])}{\text{Cos}[c+dx]^{5/2}}\,dx$$

Optimal (type 3, 247 leaves, 7 steps):

$$\frac{a^{3/2}\,(88\,A+75\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{64\,d}+\frac{a^2\,(8\,A+9\,B)\,\text{Sin}[c+d\,x]}{24\,d\,\text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,(88\,A+75\,B)\,\text{Sin}[c+d\,x]}{96\,d\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,(88\,A+75\,B)\,\text{Sin}[c+d\,x]}{64\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a\,B\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 223 leaves):

$$\frac{1}{384\,d\,\text{Cos}[c+d\,x]^{7/2}}a\,(1+\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3\sqrt{a\,(1+\text{Sec}[c+d\,x])}\left(-3\,i\,(88\,A+75\,B)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^4\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,(88\,A+75\,B)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^4\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\left(48\,B+8\,(8\,A+15\,B)\,\text{Cos}[c+d\,x]+2\,(88\,A+75\,B)\,\text{Cos}[c+d\,x]^2+3\,(88\,A+75\,B)\,\text{Cos}[c+d\,x]^3\right)\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 535: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d\,x]^{5/2}\,(a+a\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 3, 192 leaves, 6 steps):

$$\frac{2\,a^{5/2}\,B\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{d}+\frac{2\,a^3\,(32\,A+35\,B)\,\text{Sin}[c+d\,x]}{15\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{2\,a^2\,(8\,A+5\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{15\,d}+\frac{2\,a\,A\,\text{Cos}[c+d\,x]^{3/2}\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 5, 179 leaves):

$$\frac{1}{60\,d}a^2\sqrt{\text{Cos}[c+d\,x]}\,\left(1+\text{Cos}[c+d\,x]\right)^2\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\left(-30\,i\,B\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-10\,i\,B\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\left(89\,A+80\,B+2\,(14\,A+5\,B)\,\text{Cos}[c+d\,x]+3\,A\,\text{Cos}[2\,(c+d\,x)]\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 536: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 3, 197 leaves, 6 steps):

$$\frac{a^{5/2}\,(2\,A+5\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{d}+\frac{a^3\,(14\,A+3\,B)\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{a^2\,(2\,A-3\,B)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,a\,A\,\sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 5, 200 leaves):

$$\frac{1}{12\,d\,\sqrt{\text{Cos}[c+d\,x]}}a^2\,\left(1+\text{Cos}[c+d\,x]\right)^2\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\sqrt{a\,\left(1+\text{Sec}[c+d\,x]\right)}\,\left(-3\,i\,(2\,A+5\,B)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-i\,(2\,A+5\,B)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+\left(A+3\,B+2\,(8\,A+3\,B)\,\text{Cos}[c+d\,x]+A\,\text{Cos}[2\,(c+d\,x)]\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 537: Result unnecessarily involves higher level functions.

$$\int \sqrt{\text{Cos}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 3, 200 leaves, 6 steps):

$$\frac{a^{5/2}\,(20\,A+19\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{4\,d}+$$
$$\frac{a^3\,(4\,A-9\,B)\,\text{Sin}[c+d\,x]}{4\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(4\,A+7\,B)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{a\,B\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{2\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 5, 204 leaves):

$$\frac{1}{48\,d\,\text{Cos}[c+d\,x]^{3/2}}\,a^2\,(1+\text{Cos}[c+d\,x])^2\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\sqrt{a\,(1+\text{Sec}[c+d\,x])}$$
$$\left(-3\,i\,(20\,A+19\,B)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^2\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-\right.$$
$$i\,(20\,A+19\,B)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^2\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+$$
$$\left.3\,\left(2\,B+(4\,A+11\,B)\,\text{Cos}[c+d\,x]+8\,A\,\text{Cos}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 538: Result unnecessarily involves higher level functions.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 3, 200 leaves, 6 steps):

$$\frac{a^{5/2}\,(38\,A+25\,B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{8\,d}+$$
$$\frac{a^3\,(54\,A+49\,B)\,\text{Sin}[c+d\,x]}{24\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{a^2\,(2\,A+3\,B)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{a\,B\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}$$

Result (type 5, 209 leaves):

$$\frac{1}{96\,d\,\text{Cos}[c+d\,x]^{5/2}}\,a^2\,(1+\text{Cos}[c+d\,x])^2\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\sqrt{a\,(1+\text{Sec}[c+d\,x])}$$
$$\left(-3\,i\,(38\,A+25\,B)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^3\,\text{Hypergeometric2F1}\left[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\right]-\right.$$
$$i\,(38\,A+25\,B)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^3\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\right]+$$
$$\left.\left(8\,B+2\,(6\,A+17\,B)\,\text{Cos}[c+d\,x]+(66\,A+75\,B)\,\text{Cos}[c+d\,x]^2\right)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 539: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 3, 247 leaves, 7 steps):

$$\frac{1}{64\,d}a^{5/2}\,(200\,A+163\,B)\,\text{ArcSinh}\Big[\frac{\sqrt{a}\;\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\Big]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}+\frac{a^3\,(104\,A+95\,B)\,\text{Sin}[c+d\,x]}{96\,d\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,(200\,A+163\,B)\,\text{Sin}[c+d\,x]}{64\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,(8\,A+11\,B)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,d\,\text{Cos}[c+d\,x]^{5/2}}+\frac{a\,B\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{5/2}}$$

Result (type 5, 225 leaves):

$$\frac{1}{768\,d\,\text{Cos}[c+d\,x]^{7/2}}a^2\,(1+\text{Cos}[c+d\,x])^2\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^5\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}\,\Big(-3\,i\,(200\,A+163\,B)\,e^{\frac{1}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^4\,\text{Hypergeometric2F1}\Big[\frac{1}{4},1,\frac{5}{4},-e^{2\,i\,(c+d\,x)}\Big]-i\,(200\,A+163\,B)\,e^{\frac{3}{2}\,i\,(c+d\,x)}\,\text{Cos}[c+d\,x]^4\,\text{Hypergeometric2F1}\Big[\frac{3}{4},1,\frac{7}{4},-e^{2\,i\,(c+d\,x)}\Big]+\big(48\,B+8\,(8\,A+23\,B)\,\text{Cos}[c+d\,x]+(272\,A+326\,B)\,\text{Cos}[c+d\,x]^2+(600\,A+489\,B)\,\text{Cos}[c+d\,x]^3\big)\,\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)$$

Problem 540: Result unnecessarily involves higher level functions.

$$\int \frac{(a+a\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])}{\text{Cos}[c+d\,x]^{5/2}}\,dx$$

Optimal (type 3, 294 leaves, 8 steps):

$$\frac{1}{128\,d}a^{5/2}\,(326\,A+283\,B)\,\text{ArcSinh}\Big[\frac{\sqrt{a}\;\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\Big]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}+\frac{a^3\,(170\,A+157\,B)\,\text{Sin}[c+d\,x]}{240\,d\,\text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,(326\,A+283\,B)\,\text{Sin}[c+d\,x]}{192\,d\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^3\,(326\,A+283\,B)\,\text{Sin}[c+d\,x]}{128\,d\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+\frac{a^2\,(10\,A+13\,B)\,\sqrt{a+a\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{40\,d\,\text{Cos}[c+d\,x]^{7/2}}+\frac{a\,B\,(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{5\,d\,\text{Cos}[c+d\,x]^{7/2}}$$

Result (type 5, 244 leaves):

$$\frac{1}{7680\, d\, \text{Cos}[c+d x]^{9/2}} a^2 \left(1+\text{Cos}[c+d x]\right)^2 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 \sqrt{a\left(1+\text{Sec}[c+d x]\right)}$$
$$\left(-15\, i\, (326 A+283 B)\, e^{\frac{1}{2} i (c+d x)} \text{Cos}[c+d x]^5\, \text{Hypergeometric2F1}\left[\frac{1}{4}, 1, \frac{5}{4}, -e^{2 i (c+d x)}\right] - \right.$$
$$5\, i\, (326 A+283 B)\, e^{\frac{3}{2} i (c+d x)} \text{Cos}[c+d x]^5\, \text{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{7}{4}, -e^{2 i (c+d x)}\right] +$$
$$\left(384 B+48 (10 A+29 B) \text{Cos}[c+d x]+8 (230 A+283 B) \text{Cos}[c+d x]^2+\right.$$
$$\left.\left.10 (326 A+283 B) \text{Cos}[c+d x]^3+15 (326 A+283 B) \text{Cos}[c+d x]^4\right) \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)$$

Problem 546: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\, \text{Sec}[c+d x]}{\text{Cos}[c+d x]^{3/2} \sqrt{a+a\, \text{Sec}[c+d x]}}\, dx$$

Optimal (type 3, 181 leaves, 7 steps):

$$\frac{(2 A-B)\, \text{ArcSinh}\left[\frac{\sqrt{a}\, \text{Tan}[c+d x]}{\sqrt{a+a\, \text{Sec}[c+d x]}}\right] \sqrt{\text{Cos}[c+d x]} \sqrt{\text{Sec}[c+d x]}}{\sqrt{a}\, d} - \frac{1}{\sqrt{a}\, d}$$
$$\sqrt{2}\, (A-B)\, \text{ArcTanh}\left[\frac{\sqrt{a} \sqrt{\text{Sec}[c+d x]}\, \text{Sin}[c+d x]}{\sqrt{2} \sqrt{a+a\, \text{Sec}[c+d x]}}\right] \sqrt{\text{Cos}[c+d x]} \sqrt{\text{Sec}[c+d x]} +$$
$$\frac{B\, \text{Sin}[c+d x]}{d\, \text{Cos}[c+d x]^{3/2} \sqrt{a+a\, \text{Sec}[c+d x]}}$$

Result (type 3, 402 leaves):

$$\frac{1}{4\, d\, \text{Cos}[c+d x]^{3/2} \sqrt{a\left(1+\text{Sec}[c+d x]\right)} \sqrt{\text{Sin}[c+d x]^2}}$$
$$\text{Sin}[c+d x] \left(-\text{Cos}[c+d x] \sqrt{1+\text{Cos}[c+d x]} \left(2 \sqrt{2}\, B\, \text{Log}[1+\text{Cos}[c+d x]] + \right.\right.$$
$$(8 A-4 B)\, \text{Log}\left[\sqrt{\text{Cos}[c+d x]} \left(1+\text{Cos}[c+d x]\right)\right] - 2 \sqrt{2}\, A\, \text{Log}\left[\left(1+\text{Cos}[c+d x]\right)^2\right] +$$
$$\sqrt{2}\, B\, \text{Log}\left[\left(1+\text{Cos}[c+d x]\right)^2\right] - 2 \sqrt{2}\, B\, \text{Log}\left[2 \sqrt{1+\text{Cos}[c+d x]} + \sqrt{2-2\, \text{Cos}[c+d x]^2}\right] -$$
$$8 A\, \text{Log}\left[1+\text{Cos}[c+d x]+\sqrt{1+\text{Cos}[c+d x]} \sqrt{\text{Sin}[c+d x]^2}\right] +$$
$$4 B\, \text{Log}\left[1+\text{Cos}[c+d x]+\sqrt{1+\text{Cos}[c+d x]} \sqrt{\text{Sin}[c+d x]^2}\right] +$$
$$2 \sqrt{2}\, A\, \text{Log}\left[3+2\, \text{Cos}[c+d x]-\text{Cos}[c+d x]^2+2 \sqrt{2} \sqrt{1+\text{Cos}[c+d x]} \sqrt{\text{Sin}[c+d x]^2}\right] -$$
$$\left.\sqrt{2}\, B\, \text{Log}\left[3+2\, \text{Cos}[c+d x]-\text{Cos}[c+d x]^2+2 \sqrt{2} \sqrt{1+\text{Cos}[c+d x]} \sqrt{\text{Sin}[c+d x]^2}\right]\right) + 4$$
$$\left.B \sqrt{\text{Sin}[c+d x]^2}\right)$$

Problem 547: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\, \text{Sec}[c+d x]}{\text{Cos}[c+d x]^{5/2} \sqrt{a+a\, \text{Sec}[c+d x]}}\, dx$$

Optimal (type 3, 230 leaves, 8 steps):

$$-\frac{(4A-7B)\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}}{4\sqrt{a}\,d}+\frac{1}{\sqrt{a}\,d}\sqrt{2}\,(A-B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+dx]}}\right]\sqrt{\text{Cos}[c+dx]}\,\sqrt{\text{Sec}[c+dx]}+\frac{B\,\text{Sin}[c+dx]}{2\,d\,\text{Cos}[c+dx]^{5/2}\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{(4A-B)\,\text{Sin}[c+dx]}{4\,d\,\text{Cos}[c+dx]^{3/2}\sqrt{a+a\,\text{Sec}[c+dx]}}$$

Result (type 3, 481 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]\left(B\,\text{Sec}[c+dx]^2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+\frac{1}{2}\text{Sec}[c+dx]\left(4A\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]-B\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\right)\Big/\left(d\sqrt{\text{Cos}[c+dx]}\,\sqrt{a\,(1+\text{Sec}[c+dx])}\right)+\frac{1}{8\,d\sqrt{a\,(1+\text{Sec}[c+dx])}}\text{Cos}\left[\frac{1}{2}(c+dx)\right]\sqrt{\text{Sec}[c+dx]}\left(-\left(\left(\sqrt{2}\,(4A-B)\sqrt{\text{Cos}[c+dx]}\,\sqrt{1+\text{Cos}[c+dx]}\left(\text{Log}[1+\text{Cos}[c+dx]]-\text{Log}\left[2\sqrt{1+\text{Cos}[c+dx]}+\sqrt{2-2\,\text{Cos}[c+dx]^2}\right]\right)\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]\right)\Big/\left(\sqrt{1-\text{Cos}[c+dx]^2}\right)\right)-\frac{1}{2\sqrt{1-\text{Cos}[c+dx]^2}}(-4A+7B)\sqrt{\text{Cos}[c+dx]}\,\sqrt{1+\text{Cos}[c+dx]}\left(-\sqrt{2}\,\text{Log}\left[(1+\text{Cos}[c+dx])^2\right]+4\,\text{Log}\left[\sqrt{\text{Cos}[c+dx]}+\text{Cos}[c+dx]^{3/2}\right]-4\,\text{Log}\left[1+\text{Cos}[c+dx]+\sqrt{1+\text{Cos}[c+dx]}\,\sqrt{1-\text{Cos}[c+dx]^2}\right]+\sqrt{2}\,\text{Log}\left[3+2\,\text{Cos}[c+dx]-\text{Cos}[c+dx]^2+2\sqrt{2}\,\sqrt{1+\text{Cos}[c+dx]}\,\sqrt{1-\text{Cos}[c+dx]^2}\right]\right)\text{Sec}\left[\frac{1}{2}(c+dx)\right]\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]\right)$$

Problem 560: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+dx]}{\text{Cos}[c+dx]^{5/2}\,(a+a\,\text{Sec}[c+dx])^{5/2}}\,dx$$

Optimal (type 3, 234 leaves, 8 steps):

$$\frac{2\,B\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}}{a^{5/2}\,d}+\frac{1}{16\,\sqrt{2}\,a^{5/2}\,d}$$

$$\left(3\,A-43\,B\right)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sec}[c+d\,x]}+$$

$$\frac{(A-B)\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{5/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}+\frac{\left(3\,A-11\,B\right)\,\text{Sin}[c+d\,x]}{16\,a\,d\,\text{Cos}[c+d\,x]^{3/2}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}$$

Result (type 3, 505 leaves) :

$$\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\left(\frac{1}{4}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(3\,A\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-11\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+\right.\right.$$

$$\left.\left.\frac{1}{2}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\left(A\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\right)\Big/$$

$$\left(d\,\text{Cos}[c+d\,x]^{5/2}\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)+\frac{1}{8\,d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}}$$

$$\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\text{Sec}[c+d\,x]^{5/2}$$

$$\left(-\left(\left(\sqrt{2}\,\left(3\,A-11\,B\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}\,\left(\text{Log}[1+\text{Cos}[c+d\,x]]-\right.\right.\right.\right.$$

$$\left.\text{Log}\left[2\,\sqrt{1+\text{Cos}[c+d\,x]}+\sqrt{2-2\,\text{Cos}[c+d\,x]^2}\right]\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\sqrt{\text{Sec}[c+d\,x]}$$

$$\left.\left.\text{Sin}[c+d\,x]\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right)-\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}}\,16\,B\,\sqrt{\text{Cos}[c+d\,x]}$$

$$\sqrt{1+\text{Cos}[c+d\,x]}\,\left(-\sqrt{2}\,\text{Log}\left[\left(1+\text{Cos}[c+d\,x]\right)^2\right]+4\,\text{Log}\left[\sqrt{\text{Cos}[c+d\,x]}+\text{Cos}[c+d\,x]^{3/2}\right]-\right.$$

$$4\,\text{Log}\left[1+\text{Cos}[c+d\,x]+\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right]+$$

$$\left.\sqrt{2}\,\text{Log}\left[3+2\,\text{Cos}[c+d\,x]-\text{Cos}[c+d\,x]^2+2\,\sqrt{2}\,\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right]\right)$$

$$\left.\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]\right)$$

Problem 578: Result more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{3/2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)}\,dx$$

Optimal (type 4, 86 leaves, 6 steps) :

$$-\frac{2\,B\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{b\,d}+\frac{2\,\left(A\,b-a\,B\right)\,\text{EllipticPi}\left[\frac{2\,a}{a+b},\frac{1}{2}\,(c+d\,x),2\right]}{b\,\left(a+b\right)\,d}+\frac{2\,B\,\text{Sin}[c+d\,x]}{b\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 4, 208 leaves) :

$$\frac{1}{2\,b\,d}\left(\frac{2\,(2\,A\,b-3\,a\,B)\,\text{EllipticPi}\left[\frac{2\,a}{a+b},\frac{1}{2}\,(c+d\,x),2\right]}{a+b}-\frac{2\,b\,B\left(2\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),2\right]-\frac{2\,b\,\text{EllipticPi}\left[\frac{2\,a}{a+b},\frac{1}{2}\,(c+d\,x),2\right]}{a+b}\right)}{a}+\frac{4\,B\,\text{Sin}[c+d\,x]}{\sqrt{\text{Cos}[c+d\,x]}}+\left(2\,B\left(2\,a\,b\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{\text{Cos}[c+d\,x]}\right],-1\right]-2\,b\,(a+b)\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\text{Cos}[c+d\,x]}\right],-1\right]+(a^2-2\,b^2)\,\text{EllipticPi}\left[-\frac{a}{b},-\text{ArcSin}\left[\sqrt{\text{Cos}[c+d\,x]}\right],-1\right]\right)\text{Sin}[c+d\,x]\right)\Big/\left(a\,b\,\sqrt{\text{Sin}[c+d\,x]^2}\right)\right)$$

Problem 594: Unable to integrate problem.

$$\int \text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 343 leaves, 11 steps):

$$\left(2\,(a^2-b^2)\,(25\,a^2\,A+8\,A\,b^2-14\,a\,b\,B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(105\,a^3\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+\left(2\,(19\,a^2\,A\,b+8\,A\,b^3+63\,a^3\,B-14\,a\,b^2\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(105\,a^3\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+\frac{1}{105\,a^2\,d}2\,(25\,a^2\,A-4\,A\,b^2+7\,a\,b\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+\frac{2\,(A\,b+7\,a\,B)\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{35\,a\,d}+\frac{2\,A\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{7\,d}$$

Result (type 8, 37 leaves):

$$\int \text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Problem 595: Unable to integrate problem.

$$\int \text{Cos}[c+d x]^{5/2} \sqrt{a+b\,\text{Sec}[c+d x]}\, (A+B\,\text{Sec}[c+d x])\, dx$$

Optimal (type 4, 267 leaves, 10 steps):

$$-\frac{2\left(a^2-b^2\right)(2 A b-5 a B)\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]}{15 a^2 d\sqrt{\text{Cos}[c+d x]}\sqrt{a+b\,\text{Sec}[c+d x]}}+\left(2\left(9 a^2 A-2 A b^2+5 a b B\right)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d x]}\right)\Bigg/\left(15 a^2 d\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\right)+\frac{2(A b+5 a B)\sqrt{\text{Cos}[c+d x]}\sqrt{a+b\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{15 a d}+\frac{2 A\,\text{Cos}[c+d x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{5 d}$$

Result (type 8, 37 leaves):

$$\int \text{Cos}[c+d x]^{5/2} \sqrt{a+b\,\text{Sec}[c+d x]}\, (A+B\,\text{Sec}[c+d x])\, dx$$

Problem 596: Unable to integrate problem.

$$\int \text{Cos}[c+d x]^{3/2} \sqrt{a+b\,\text{Sec}[c+d x]}\, (A+B\,\text{Sec}[c+d x])\, dx$$

Optimal (type 4, 201 leaves, 9 steps):

$$\frac{2 A\left(a^2-b^2\right)\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]}{3 a d\sqrt{\text{Cos}[c+d x]}\sqrt{a+b\,\text{Sec}[c+d x]}}+\left(2(A b+3 a B)\sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d x]}\right)\Bigg/\left(3 a d\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{a+b}}\right)+\frac{2 A\sqrt{\text{Cos}[c+d x]}\sqrt{a+b\,\text{Sec}[c+d x]}\ \text{Sin}[c+d x]}{3 d}$$

Result (type 8, 37 leaves):

$$\int \text{Cos}[c+d x]^{3/2} \sqrt{a+b\,\text{Sec}[c+d x]}\, (A+B\,\text{Sec}[c+d x])\, dx$$

Problem 597: Unable to integrate problem.

$$\int \sqrt{\text{Cos}[c+d x]}\sqrt{a+b\,\text{Sec}[c+d x]}\, (A+B\,\text{Sec}[c+d x])\, dx$$

Optimal (type 4, 208 leaves, 12 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, 37 leaves):

$$\int\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,(A+B\,\mathrm{Sec}[c+d\,x])\,dx$$

Problem 598: Unable to integrate problem.

$$\int\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,(A+B\,\mathrm{Sec}[c+d\,x])}{\sqrt{\mathrm{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 253 leaves, 13 steps):

$$\frac{(2\,a\,A+b\,B)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+\frac{(2\,A\,b+a\,B)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}-\frac{B\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}{d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}}+\frac{B\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{d\,\sqrt{\mathrm{Cos}[c+d\,x]}}$$

Result (type 8, 37 leaves):

$$\int\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,(A+B\,\mathrm{Sec}[c+d\,x])}{\sqrt{\mathrm{Cos}[c+d\,x]}}\,dx$$

Problem 599: Unable to integrate problem.

$$\int \frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 336 leaves, 14 steps):

$$\frac{(4\,A\,b+3\,a\,B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]}{4\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\frac{\left(4\,a\,A\,b-a^2\,B+4\,b^2\,B\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]}{4\,b\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}-$$

$$\left((4\,A\,b+a\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Bigg/$$

$$\left(4\,b\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+\frac{B\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{2\,d\,\text{Cos}[c+d\,x]^{3/2}}+$$

$$\frac{(4\,A\,b+a\,B)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,b\,d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 8, 37 leaves):

$$\int \frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Problem 600: Unable to integrate problem.

$$\int \text{Cos}[c+d\,x]^{9/2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 427 leaves, 12 steps):

$$\left(2\left(a^2-b^2\right)\left(39\,a^2\,A\,b+8\,A\,b^3+75\,a^3\,B-18\,a\,b^2\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\right)\Big/\left(315\,a^3\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\left(2\left(147\,a^4\,A+33\,a^2\,A\,b^2+8\,A\,b^4+246\,a^3\,b\,B-18\,a\,b^3\,B\right)\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/\left(315\,a^3\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right)+\frac{1}{315\,a^2\,d}2\left(88\,a^2\,A\,b-4\,A\,b^3+75\,a^3\,B+9\,a\,b^2\,B\right)\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]+\frac{1}{315\,a\,d}2\left(49\,a^2\,A+3\,A\,b^2+72\,a\,b\,B\right)\mathrm{Cos}[c+d\,x]^{3/2}\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]+\frac{2\left(10\,A\,b+9\,a\,B\right)\mathrm{Cos}[c+d\,x]^{5/2}\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{63\,d}+\frac{2\,a\,A\,\mathrm{Cos}[c+d\,x]^{7/2}\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{9\,d}$$

Result (type 8, 37 leaves):

$$\int \mathrm{Cos}[c+d\,x]^{9/2}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,dx$$

Problem 601: Unable to integrate problem.

$$\int \mathrm{Cos}[c+d\,x]^{7/2}\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 342 leaves, 11 steps):

$$\left(2\left(a^2-b^2\right)\left(25\,a^2\,A-6\,A\,b^2+21\,a\,b\,B\right)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\right)\Big/\left(105\,a^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\left(2\left(82\,a^2\,A\,b-6\,A\,b^3+63\,a^3\,B+21\,a\,b^2\,B\right)\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/\left(105\,a^2\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right)+\frac{1}{105\,a\,d}2\left(25\,a^2\,A+3\,A\,b^2+42\,a\,b\,B\right)\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]+\frac{2\left(8\,A\,b+7\,a\,B\right)\mathrm{Cos}[c+d\,x]^{3/2}\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{35\,d}+\frac{2\,a\,A\,\mathrm{Cos}[c+d\,x]^{5/2}\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{7\,d}$$

Result (type 8, 37 leaves):

$$\int \text{Cos}[c+d\,x]^{7/2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Problem 602: Unable to integrate problem.

$$\int \text{Cos}[c+d\,x]^{5/2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 266 leaves, 10 steps):

$$\frac{2\,\left(a^2-b^2\right)\,\left(3\,A\,b+5\,a\,B\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\frac{2\,a}{a+b}\right]}{15\,a\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$
$$\left(2\,\left(9\,a^2\,A+3\,A\,b^2+20\,a\,b\,B\right)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/$$
$$\left(15\,a\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+\frac{2\,\left(6\,A\,b+5\,a\,B\right)\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{15\,d}+$$
$$\frac{2\,a\,A\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{5\,d}$$

Result (type 8, 37 leaves):

$$\int \text{Cos}[c+d\,x]^{5/2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Problem 603: Unable to integrate problem.

$$\int \text{Cos}[c+d\,x]^{3/2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 276 leaves, 13 steps):

$$\frac{2\,\left(a^2\,A-A\,b^2+3\,a\,b\,B\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\frac{2\,a}{a+b}\right]}{3\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$
$$\frac{2\,b^2\,B\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}\,\left(c+d\,x\right),\frac{2\,a}{a+b}\right]}{d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+\frac{1}{3\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}}$$
$$2\,\left(4\,A\,b+3\,a\,B\right)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;+$$
$$\frac{2\,a\,A\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{3\,d}$$

Result (type 8, 37 leaves):

$$\int \text{Cos}[c+d\,x]^{3/2}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Problem 604: Unable to integrate problem.

$$\int \sqrt{\text{Cos}[c+d\,x]}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 272 leaves, 13 steps):

$$\frac{\left(2\,a\,A\,b+2\,a^2\,B+b^2\,B\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,\left(c+d\,x\right),\,\frac{2\,a}{a+b}\right]}{d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\frac{b\,\left(2\,A\,b+3\,a\,B\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\,\frac{1}{2}\,\left(c+d\,x\right),\,\frac{2\,a}{a+b}\right]}{d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+\frac{1}{d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}}$$

$$\left(2\,a\,A-b\,B\right)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,\left(c+d\,x\right),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;+$$

$$\frac{b\,B\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{d\,\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 8, 37 leaves):

$$\int \sqrt{\text{Cos}[c+d\,x]}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Problem 605: Unable to integrate problem.

$$\int \frac{\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 339 leaves, 14 steps):

$$\frac{\left(8 a^2 A+4 A b^2+7 a b B\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]}{4 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$

$$\left(\left(12 a A b+3 a^2 B+4 b^2 B\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/$$

$$\left(4 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-\frac{1}{4 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}}$$

$$(4 A b+5 a B) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}+$$

$$\frac{b B \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{2 d \operatorname{Cos}[c+d x]^{3/2}}+\frac{(4 A b+5 a B) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{4 d \sqrt{\operatorname{Cos}[c+d x]}}$$

Result (type 8, 37 leaves):

$$\int \frac{(a+b \operatorname{Sec}[c+d x])^{3/2}(A+B \operatorname{Sec}[c+d x])}{\sqrt{\operatorname{Cos}[c+d x]}} \, dx$$

Problem 606: Unable to integrate problem.

$$\int \frac{(a+b \operatorname{Sec}[c+d x])^{3/2}(A+B \operatorname{Sec}[c+d x])}{\operatorname{Cos}[c+d x]^{3/2}} \, dx$$

Optimal (type 4, 421 leaves, 15 steps):

$$\frac{\left(42 a A b+17 a^2 B+16 b^2 B\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]}{24 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$

$$\left(\left(6 a^2 A b+8 A b^3-a^3 B+12 a b^2 B\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticPi}\left[2, \frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/$$

$$\left(8 b d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right)-$$

$$\left(\left(30 a A b+3 a^2 B+16 b^2 B\right) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Big/$$

$$\left(24 b d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{b B \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{3 d \operatorname{Cos}[c+d x]^{5/2}}+$$

$$\frac{(6 A b+7 a B) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{12 d \operatorname{Cos}[c+d x]^{3/2}}+$$

$$\frac{\left(30 a A b+3 a^2 B+16 b^2 B\right) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{24 b d \sqrt{\operatorname{Cos}[c+d x]}}$$

Result (type 8, 37 leaves):

$$\int \frac{(a+b\,\text{Sec}[c+d\,x])^{3/2}\,(A+B\,\text{Sec}[c+d\,x])}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Problem 607: Unable to integrate problem.

$$\int \text{Cos}[c+d\,x]^{11/2}\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 519 leaves, 13 steps):

$$\left(2\,(a^2-b^2)\,(675\,a^4\,A+285\,a^2\,A\,b^2+40\,A\,b^4+1254\,a^3\,b\,B-110\,a\,b^3\,B)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(3465\,a^3\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$
$$\left(2\,(3705\,a^4\,A\,b+255\,a^2\,A\,b^3+40\,A\,b^5+1617\,a^5\,B+3069\,a^3\,b^2\,B-110\,a\,b^4\,B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(3465\,a^3\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+$$
$$\frac{1}{3465\,a^2\,d}2\,(675\,a^4\,A+1025\,a^2\,A\,b^2-20\,A\,b^4+1793\,a^3\,b\,B+55\,a\,b^3\,B)\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+\frac{1}{3465\,a\,d}$$
$$2\,(1145\,a^2\,A\,b+15\,A\,b^3+539\,a^3\,B+825\,a\,b^2\,B)\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+$$
$$\frac{1}{693\,d}2\,(81\,a^2\,A+113\,A\,b^2+209\,a\,b\,B)\,\text{Cos}[c+d\,x]^{5/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]+$$
$$\frac{2\,a\,(14\,A\,b+11\,a\,B)\,\text{Cos}[c+d\,x]^{7/2}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{99\,d}+$$
$$\frac{2\,a\,A\,\text{Cos}[c+d\,x]^{9/2}\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{11\,d}$$

Result (type 8, 37 leaves):

$$\int \text{Cos}[c+d\,x]^{11/2}\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Problem 608: Unable to integrate problem.

$$\int \text{Cos}[c+d\,x]^{9/2}\,(a+b\,\text{Sec}[c+d\,x])^{5/2}\,(A+B\,\text{Sec}[c+d\,x])\,dx$$

Optimal (type 4, 425 leaves, 12 steps):

$$\left(2\left(a^2-b^2\right)\left(114 a^2 A b-10 A b^3+75 a^3 B+45 a b^2 B\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(315 a^2 d \sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\right)+\left(2\left(147 a^4 A+279 a^2 A b^2-10 A b^4+435 a^3 b B+45 a b^3 B\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(315 a^2 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{1}{315 a d}2\left(163 a^2 A b+5 A b^3+75 a^3 B+135 a b^2 B\right)\sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]+\frac{1}{315 d}2\left(49 a^2 A+75 A b^2+135 a b B\right)\operatorname{Cos}[c+d x]^{3/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]+\frac{2 a(4 A b+3 a B)\operatorname{Cos}[c+d x]^{5/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{21 d}+\frac{2 a A \operatorname{Cos}[c+d x]^{7/2}(a+b \operatorname{Sec}[c+d x])^{3/2}\operatorname{Sin}[c+d x]}{9 d}$$

Result (type 8, 37 leaves):

$$\int \operatorname{Cos}[c+d x]^{9/2}(a+b \operatorname{Sec}[c+d x])^{5/2}(A+B \operatorname{Sec}[c+d x])\, dx$$

Problem 609: Unable to integrate problem.

$$\int \operatorname{Cos}[c+d x]^{7/2}(a+b \operatorname{Sec}[c+d x])^{5/2}(A+B \operatorname{Sec}[c+d x])\, dx$$

Optimal (type 4, 340 leaves, 11 steps):

$$\left(2\left(a^2-b^2\right)\left(25 a^2 A+15 A b^2+56 a b B\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(105 a d\sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\right)+\left(2\left(145 a^2 A b+15 A b^3+63 a^3 B+161 a b^2 B\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(105 a d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{1}{105 d}2\left(25 a^2 A+45 A b^2+77 a b B\right)\sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]+\frac{2 a(10 A b+7 a B)\operatorname{Cos}[c+d x]^{3/2}\sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]}{35 d}+\frac{2 a A \operatorname{Cos}[c+d x]^{5/2}(a+b \operatorname{Sec}[c+d x])^{3/2}\operatorname{Sin}[c+d x]}{7 d}$$

Result (type 8, 37 leaves):

$$\int \mathrm{Cos}[c+d\,x]^{7/2}\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,dx$$

Problem 610: Unable to integrate problem.

$$\int \mathrm{Cos}[c+d\,x]^{5/2}\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 342 leaves, 14 steps):

$$\left(2\,\left(8\,a^2\,A\,b-8\,A\,b^3+5\,a^3\,B+10\,a\,b^2\,B\right)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\bigg/$$
$$\left(15\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)+\frac{2\,b^3\,B\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$
$$\left(2\,\left(9\,a^2\,A+23\,A\,b^2+35\,a\,b\,B\right)\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\bigg/$$
$$\left(15\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right)+\frac{2\,a\,\left(8\,A\,b+5\,a\,B\right)\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Sin}[c+d\,x]}{15\,d}+$$
$$\frac{2\,a\,A\,\mathrm{Cos}[c+d\,x]^{3/2}\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{3/2}\,\mathrm{Sin}[c+d\,x]}{5\,d}$$

Result (type 8, 37 leaves):

$$\int \mathrm{Cos}[c+d\,x]^{5/2}\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,dx$$

Problem 611: Unable to integrate problem.

$$\int \mathrm{Cos}[c+d\,x]^{3/2}\,\left(a+b\,\mathrm{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\mathrm{Sec}[c+d\,x]\right)\,dx$$

Optimal (type 4, 349 leaves, 14 steps):

$$\left(\left(2 a^3 A + 4 a A b^2 + 12 a^2 b B + 3 b^3 B\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right]\right) \Big/ \left(3 d \sqrt{\operatorname{Cos}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}\right) + \frac{b^2 (2 A b + 5 a B) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticPi}\left[2, \frac{1}{2} (c + d x), \frac{2 a}{a+b}\right]}{d \sqrt{\operatorname{Cos}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}} + \frac{1}{3 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}} \left(14 a A b + 6 a^2 B - 3 b^2 B\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{a + b \operatorname{Sec}[c + d x]} - \frac{b (2 a A - 3 b B) \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{3 d \sqrt{\operatorname{Cos}[c + d x]}} + \frac{2 a A \sqrt{\operatorname{Cos}[c + d x]} (a + b \operatorname{Sec}[c + d x])^{3/2} \operatorname{Sin}[c + d x]}{3 d}$$

Result (type 8, 37 leaves):

$$\int \operatorname{Cos}[c + d x]^{3/2} (a + b \operatorname{Sec}[c + d x])^{5/2} (A + B \operatorname{Sec}[c + d x]) \, dx$$

Problem 612: Unable to integrate problem.

$$\int \sqrt{\operatorname{Cos}[c + d x]} (a + b \operatorname{Sec}[c + d x])^{5/2} (A + B \operatorname{Sec}[c + d x]) \, dx$$

Optimal (type 4, 359 leaves, 14 steps):

$$\left(\left(16 a^2 A b + 4 A b^3 + 8 a^3 B + 11 a b^2 B\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right]\right) \Big/ \left(4 d \sqrt{\operatorname{Cos}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}\right) + \left(b \left(20 a A b + 15 a^2 B + 4 b^2 B\right) \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}} \operatorname{EllipticPi}\left[2, \frac{1}{2} (c + d x), \frac{2 a}{a + b}\right]\right) \Big/ \left(4 d \sqrt{\operatorname{Cos}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}\right) + \frac{1}{4 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}} \left(8 a^2 A - 4 A b^2 - 9 a b B\right) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{a + b \operatorname{Sec}[c + d x]} + \frac{b (4 A b + 7 a B) \sqrt{a + b \operatorname{Sec}[c + d x]} \operatorname{Sin}[c + d x]}{4 d \sqrt{\operatorname{Cos}[c + d x]}} + \frac{b B (a + b \operatorname{Sec}[c + d x])^{3/2} \operatorname{Sin}[c + d x]}{2 d \sqrt{\operatorname{Cos}[c + d x]}}$$

Result (type 8, 37 leaves):

$$\int \sqrt{\text{Cos}[c+d\,x]}\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)\,dx$$

Problem 613: Unable to integrate problem.

$$\int \frac{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 4, 422 leaves, 15 steps):

$$\left(\left(48\,a^3\,A+66\,a\,A\,b^2+59\,a^2\,b\,B+16\,b^3\,B\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\left(24\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+\left(\left(30\,a^2\,A\,b+8\,A\,b^3+5\,a^3\,B+20\,a\,b^2\,B\right)\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\,\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\right)\Big/\left(8\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-\left(\left(54\,a\,A\,b+33\,a^2\,B+16\,b^2\,B\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(24\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+\frac{b\,(2\,A\,b+3\,a\,B)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{3/2}}+\frac{\left(54\,a\,A\,b+33\,a^2\,B+16\,b^2\,B\right)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]}{24\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{b\,B\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}\,\text{Sin}[c+d\,x]}{3\,d\,\text{Cos}[c+d\,x]^{3/2}}$$

Result (type 8, 37 leaves):

$$\int \frac{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{\text{Cos}[c+d\,x]}}\,dx$$

Problem 614: Attempted integration timed out after 120 seconds.

$$\int \frac{\left(a+b\,\text{Sec}[c+d\,x]\right)^{5/2}\,\left(A+B\,\text{Sec}[c+d\,x]\right)}{\text{Cos}[c+d\,x]^{3/2}}\,dx$$

Optimal (type 4, 513 leaves, 16 steps):

$$\left(\left(472\,a^2\,A\,b+128\,A\,b^3+133\,a^3\,B+356\,a\,b^2\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/$$
$$\left(192\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)+$$
$$\left(\left(40\,a^3\,A\,b+160\,a\,A\,b^3-5\,a^4\,B+120\,a^2\,b^2\,B+48\,b^4\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right.$$
$$\left.\text{EllipticPi}\left[2,\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/\left(64\,b\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$
$$\left(\left(264\,a^2\,A\,b+128\,A\,b^3+15\,a^3\,B+284\,a\,b^2\,B\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\frac{2\,a}{a+b}\right]\right.$$
$$\left.\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(192\,b\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+$$
$$\frac{b\,(8\,A\,b+11\,a\,B)\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{24\,d\,\text{Cos}[c+d\,x]^{5/2}}+$$
$$\frac{\left(104\,a\,A\,b+59\,a^2\,B+36\,b^2\,B\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{96\,d\,\text{Cos}[c+d\,x]^{3/2}}+$$
$$\left(\left(264\,a^2\,A\,b+128\,A\,b^3+15\,a^3\,B+284\,a\,b^2\,B\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]\right)\Big/$$
$$\left(192\,b\,d\,\sqrt{\text{Cos}[c+d\,x]}\right)+\frac{b\,B\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\text{Sin}[c+d\,x]}{4\,d\,\text{Cos}[c+d\,x]^{5/2}}$$

Result (type 1, 1 leaves):

???

Problem 615: Unable to integrate problem.

$$\int\frac{\text{Cos}[c+d\,x]^{5/2}\,(A+B\,\text{Sec}[c+d\,x])}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 280 leaves, 10 steps):

$$-\left(\left(2\left(7a^2Ab+8Ab^3-5a^3B-10ab^2B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]\right)\Big/\left(15a^3d\sqrt{\text{Cos}[c+d\,x]}\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\right)+$$

$$\left(2\left(9a^2A+8Ab^2-10abB\right)\sqrt{\text{Cos}[c+d\,x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(15a^3d\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)-$$

$$\frac{2(4Ab-5aB)\sqrt{\text{Cos}[c+d\,x]}\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{15a^2d}+\frac{2A\,\text{Cos}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{5ad}$$

Result (type 8, 37 leaves):

$$\int\frac{\text{Cos}[c+d\,x]^{5/2}\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Problem 616: Unable to integrate problem.

$$\int\frac{\text{Cos}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 212 leaves, 9 steps):

$$\frac{2\left(a^2A+2Ab^2-3abB\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]}{3a^2d\sqrt{\text{Cos}[c+d\,x]}\sqrt{a+b\,\text{Sec}[c+d\,x]}}-$$

$$\left(2(2Ab-3aB)\sqrt{\text{Cos}[c+d\,x]}\ \text{EllipticE}\left[\frac{1}{2}(c+d\,x),\frac{2a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(3a^2d\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+\frac{2A\sqrt{\text{Cos}[c+d\,x]}\sqrt{a+b\,\text{Sec}[c+d\,x]}\ \text{Sin}[c+d\,x]}{3ad}$$

Result (type 8, 37 leaves):

$$\int\frac{\text{Cos}[c+d\,x]^{3/2}\left(A+B\,\text{Sec}[c+d\,x]\right)}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Problem 617: Unable to integrate problem.

$$\int \frac{\sqrt{\text{Cos}[c+d x]}\ (A+B\ \text{Sec}[c+d x])}{\sqrt{a+b\ \text{Sec}[c+d x]}}\, dx$$

Optimal (type 4, 150 leaves, 8 steps):

$$-\frac{2\ (A b-a B)\ \sqrt{\frac{b+a\ \text{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}\ (c+d x),\ \frac{2 a}{a+b}\right]}{a d\ \sqrt{\text{Cos}[c+d x]}\ \sqrt{a+b\ \text{Sec}[c+d x]}}+\frac{2 A\ \sqrt{\text{Cos}[c+d x]}\ \text{EllipticE}\left[\frac{1}{2}\ (c+d x),\ \frac{2 a}{a+b}\right]\ \sqrt{a+b\ \text{Sec}[c+d x]}}{a d\ \sqrt{\frac{b+a\ \text{Cos}[c+d x]}{a+b}}}$$

Result (type 8, 37 leaves):

$$\int \frac{\sqrt{\text{Cos}[c+d x]}\ (A+B\ \text{Sec}[c+d x])}{\sqrt{a+b\ \text{Sec}[c+d x]}}\, dx$$

Problem 618: Unable to integrate problem.

$$\int \frac{A+B\ \text{Sec}[c+d x]}{\sqrt{\text{Cos}[c+d x]}\ \sqrt{a+b\ \text{Sec}[c+d x]}}\, dx$$

Optimal (type 4, 138 leaves, 8 steps):

$$\frac{2 A\ \sqrt{\frac{b+a\ \text{Cos}[c+d x]}{a+b}}\ \text{EllipticF}\left[\frac{1}{2}\ (c+d x),\ \frac{2 a}{a+b}\right]}{d\ \sqrt{\text{Cos}[c+d x]}\ \sqrt{a+b\ \text{Sec}[c+d x]}}+\frac{2 B\ \sqrt{\frac{b+a\ \text{Cos}[c+d x]}{a+b}}\ \text{EllipticPi}\left[2,\ \frac{1}{2}\ (c+d x),\ \frac{2 a}{a+b}\right]}{d\ \sqrt{\text{Cos}[c+d x]}\ \sqrt{a+b\ \text{Sec}[c+d x]}}$$

Result (type 8, 37 leaves):

$$\int \frac{A+B\ \text{Sec}[c+d x]}{\sqrt{\text{Cos}[c+d x]}\ \sqrt{a+b\ \text{Sec}[c+d x]}}\, dx$$

Problem 619: Unable to integrate problem.

$$\int \frac{A+B\ \text{Sec}[c+d x]}{\text{Cos}[c+d x]^{3/2}\ \sqrt{a+b\ \text{Sec}[c+d x]}}\, dx$$

Optimal (type 4, 256 leaves, 13 steps):

$$\frac{B\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]}{d\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\frac{(2\,A\,b-a\,B)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]}{b\,d\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}-$$

$$\frac{B\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}}{b\,d\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}}+$$

$$\frac{B\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{b\,d\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 8, 37 leaves):

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Problem 620: Unable to integrate problem.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{5/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 344 leaves, 14 steps):

$$\frac{(4\,A\,b-a\,B)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]}{4\,b\,d\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}-$$

$$\left(\left(4\,a\,A\,b-3\,a^2\,B-4\,b^2\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\right)\Big/$$
$$\left(4\,b^2\,d\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)-$$
$$\left((4\,A\,b-3\,a\,B)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}(c+d\,x),\frac{2\,a}{a+b}\right]\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/$$
$$\left(4\,b^2\,d\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+\frac{B\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{2\,b\,d\,\text{Cos}[c+d\,x]^{3/2}}+$$
$$\frac{(4\,A\,b-3\,a\,B)\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{4\,b^2\,d\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 8, 37 leaves):

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{5/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Problem 621: Unable to integrate problem.

$$\int \frac{\text{Cos}[c+d x]^{5/2} \left(A+B \text{Sec}[c+d x]\right)}{\left(a+b \text{Sec}[c+d x]\right)^{3/2}} \, dx$$

Optimal (type 4, 423 leaves, 11 steps):

$$-\left(\left(2 \left(12 a^2 A b+48 A b^3-5 a^3 B-40 a b^2 B\right) \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}} \text{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(15 a^4 d \sqrt{\text{Cos}[c+d x]} \sqrt{a+b \text{Sec}[c+d x]}\right)\right)+$$
$$\left(2 \left(9 a^4 A+24 a^2 A b^2-48 A b^4-25 a^3 b B+40 a b^3 B\right) \sqrt{\text{Cos}[c+d x]} \text{EllipticE}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \text{Sec}[c+d x]}\right) \Big/ \left(15 a^4 \left(a^2-b^2\right) d \sqrt{\frac{b+a \text{Cos}[c+d x]}{a+b}}\right)+$$
$$\frac{2 b (A b-a B) \text{Cos}[c+d x]^{3/2} \text{Sin}[c+d x]}{a \left(a^2-b^2\right) d \sqrt{a+b \text{Sec}[c+d x]}}-\frac{1}{15 a^3 \left(a^2-b^2\right) d}$$
$$2 \left(9 a^2 A b-24 A b^3-5 a^3 B+20 a b^2 B\right) \sqrt{\text{Cos}[c+d x]} \sqrt{a+b \text{Sec}[c+d x]} \text{Sin}[c+d x]+$$
$$\frac{1}{5 a^2 \left(a^2-b^2\right) d} 2 \left(a^2 A-6 A b^2+5 a b B\right) \text{Cos}[c+d x]^{3/2} \sqrt{a+b \text{Sec}[c+d x]} \text{Sin}[c+d x]$$

Result (type 8, 37 leaves):

$$\int \frac{\text{Cos}[c+d x]^{5/2} \left(A+B \text{Sec}[c+d x]\right)}{\left(a+b \text{Sec}[c+d x]\right)^{3/2}} \, dx$$

Problem 622: Unable to integrate problem.

$$\int \frac{\text{Cos}[c+d x]^{3/2} \left(A+B \text{Sec}[c+d x]\right)}{\left(a+b \text{Sec}[c+d x]\right)^{3/2}} \, dx$$

Optimal (type 4, 326 leaves, 10 steps):

$$\frac{2\left(a^2 A+8 A b^2-6 a b B\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]}{3 a^3 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}-$$

$$\left(2\left(5 a^2 A b-8 A b^3-3 a^3 B+6 a b^2 B\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(3 a^3\left(a^2-b^2\right) d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+$$

$$\frac{2 b(A b-a B)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{Sin}[c+d x]}{a\left(a^2-b^2\right) d \sqrt{a+b \operatorname{Sec}[c+d x]}}+\frac{1}{3 a^2\left(a^2-b^2\right) d}$$

$$2\left(a^2 A-4 A b^2+3 a b B\right)\sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\ \operatorname{Sin}[c+d x]$$

Result (type 8, 37 leaves):

$$\int \frac{\operatorname{Cos}[c+d x]^{3/2}(A+B \operatorname{Sec}[c+d x])}{(a+b \operatorname{Sec}[c+d x])^{3/2}}\, dx$$

Problem 623: Unable to integrate problem.

$$\int \frac{\sqrt{\operatorname{Cos}[c+d x]}\ (A+B \operatorname{Sec}[c+d x])}{(a+b \operatorname{Sec}[c+d x])^{3/2}}\, dx$$

Optimal (type 4, 235 leaves, 9 steps):

$$-\frac{2(2 A b-a B)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]}{a^2 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$

$$\left(2\left(a^2 A-2 A b^2+a b B\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/$$

$$\left(a^2\left(a^2-b^2\right) d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{2 b(A b-a B) \operatorname{Sin}[c+d x]}{a\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 8, 37 leaves):

$$\int \frac{\sqrt{\operatorname{Cos}[c+d x]}\ (A+B \operatorname{Sec}[c+d x])}{(a+b \operatorname{Sec}[c+d x])^{3/2}}\, dx$$

Problem 624: Unable to integrate problem.

$$\int \frac{A+B \operatorname{Sec}[c+d x]}{\sqrt{\operatorname{Cos}[c+d x]}\ (a+b \operatorname{Sec}[c+d x])^{3/2}}\, dx$$

Optimal (type 4, 215 leaves, 9 steps):

$$\frac{2\,A\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{a\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+\left(2\,(A\,b-a\,B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(a\,(a^2-b^2)\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)-\frac{2\,(A\,b-a\,B)\,\text{Sin}[c+d\,x]}{(a^2-b^2)\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 8, 37 leaves):

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\sqrt{\text{Cos}[c+d\,x]}\;(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Problem 625: Unable to integrate problem.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{3/2}\;(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 220 leaves, 10 steps):

$$\frac{2\,B\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{b\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}-\left(2\,(A\,b-a\,B)\,\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\Big/\left(b\,(a^2-b^2)\,d\,\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+\frac{2\,a\,(A\,b-a\,B)\,\text{Sin}[c+d\,x]}{b\,(a^2-b^2)\,d\,\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 8, 37 leaves):

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{3/2}\;(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Problem 626: Unable to integrate problem.

$$\int\frac{A+B\,\text{Sec}[c+d\,x]}{\text{Cos}[c+d\,x]^{5/2}\;(a+b\,\text{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 371 leaves, 14 steps):

$$\frac{B\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\ \mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\ \frac{2\,a}{a+b}\right]}{b\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\ \sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\frac{(2\,A\,b-3\,a\,B)\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\ \mathrm{EllipticPi}\left[2,\ \frac{1}{2}\,(c+d\,x),\ \frac{2\,a}{a+b}\right]}{b^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\ \sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\left((2\,a\,A\,b-3\,a^2\,B+b^2\,B)\sqrt{\mathrm{Cos}[c+d\,x]}\ \mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\ \frac{2\,a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/$$

$$\left(b^2\,(a^2-b^2)\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right)+\frac{2\,a\,(A\,b-a\,B)\,\mathrm{Sin}[c+d\,x]}{b\,(a^2-b^2)\,d\,\mathrm{Cos}[c+d\,x]^{3/2}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}-$$

$$\frac{(2\,a\,A\,b-3\,a^2\,B+b^2\,B)\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\ \mathrm{Sin}[c+d\,x]}{b^2\,(a^2-b^2)\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}}$$

Result (type 8, 37 leaves):

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]}{\mathrm{Cos}[c+d\,x]^{5/2}\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}\,dx$$

Problem 627: Attempted integration timed out after 120 seconds.

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]}{\mathrm{Cos}[c+d\,x]^{7/2}\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 487 leaves, 15 steps):

$$\frac{(4 A b - 5 a B) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticF}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right]}{4 b^2 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}} - \left((12 a A b - 15 a^2 B - 4 b^2 B) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticPi}\left[2, \frac{1}{2} (c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(4 b^3 d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right) - \left((12 a^2 A b - 4 A b^3 - 15 a^3 B + 7 a b^2 B) \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Big/ \left(4 b^3 (a^2-b^2) d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right) + \frac{2 a (A b - a B) \operatorname{Sin}[c+d x]}{b (a^2-b^2) d \operatorname{Cos}[c+d x]^{5/2} \sqrt{a+b \operatorname{Sec}[c+d x]}} - \frac{(4 a A b - 5 a^2 B + b^2 B) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{2 b^2 (a^2-b^2) d \operatorname{Cos}[c+d x]^{3/2}} + \frac{(12 a^2 A b - 4 A b^3 - 15 a^3 B + 7 a b^2 B) \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]}{4 b^3 (a^2-b^2) d \sqrt{\operatorname{Cos}[c+d x]}}$$

Result (type 1, 1 leaves) :

???

Problem 628: Unable to integrate problem.

$$\int \frac{\operatorname{Cos}[c+d x]^{5/2} (A + B \operatorname{Sec}[c+d x])}{(a+b \operatorname{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 4, 588 leaves, 12 steps) :

$$-\left(\left(2\left(17 a^4 A b+116 a^2 A b^3-128 A b^5-5 a^5 B-80 a^3 b^2 B+80 a b^4 B\right) \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.\right.$$
$$\left.\operatorname{EllipticF}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right]\right) \Big/ \left(15 a^5\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]}\right)+$$
$$\left(2\left(9 a^6 A+55 a^4 A b^2-212 a^2 A b^4+128 A b^6-40 a^5 b B+140 a^3 b^3 B-80 a b^5 B\right)\right.$$
$$\left.\sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2}(c+d x), \frac{2 a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[c+d x]}\right) \Big/$$
$$\left(15 a^5\left(a^2-b^2\right)^2 d \sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{2 b(A b-a B) \operatorname{Cos}[c+d x]^{3/2} \operatorname{Sin}[c+d x]}{3 a\left(a^2-b^2\right) d(a+b \operatorname{Sec}[c+d x])^{3/2}}+$$
$$\frac{2 b\left(12 a^2 A b-8 A b^3-9 a^3 B+5 a b^2 B\right) \operatorname{Cos}[c+d x]^{3/2} \operatorname{Sin}[c+d x]}{3 a^2\left(a^2-b^2\right)^2 d \sqrt{a+b \operatorname{Sec}[c+d x]}}-$$
$$\frac{1}{15 a^4\left(a^2-b^2\right)^2 d}$$
$$2\left(14 a^4 A b-98 a^2 A b^3+64 A b^5-5 a^5 B+65 a^3 b^2 B-40 a b^4 B\right)$$
$$\sqrt{\operatorname{Cos}[c+d x]} \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]+\frac{1}{15 a^3\left(a^2-b^2\right)^2 d}$$
$$2\left(3 a^4 A-71 a^2 A b^2+48 A b^4+50 a^3 b B-30 a b^3 B\right) \operatorname{Cos}[c+d x]^{3/2} \sqrt{a+b \operatorname{Sec}[c+d x]} \operatorname{Sin}[c+d x]$$

Result (type 8, 37 leaves):

$$\int \frac{\operatorname{Cos}[c+d x]^{5/2}(A+B \operatorname{Sec}[c+d x])}{(a+b \operatorname{Sec}[c+d x])^{5/2}} \, dx$$

Problem 629: Unable to integrate problem.

$$\int \frac{\operatorname{Cos}[c+d x]^{3/2}(A+B \operatorname{Sec}[c+d x])}{(a+b \operatorname{Sec}[c+d x])^{5/2}} \, dx$$

Optimal (type 4, 472 leaves, 11 steps):

$$\left(2\left(a^4 A+16 a^2 A b^2-16 A b^4-9 a^3 b B+8 a b^3 B\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right.$$

$$\left.\operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(3 a^4\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\right)-$$

$$\left(2\left(8 a^4 A b-28 a^2 A b^3+16 A b^5-3 a^5 B+15 a^3 b^2 B-8 a b^4 B\right)\sqrt{\operatorname{Cos}[c+d x]}\right.$$

$$\left.\operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/$$

$$\left(3 a^4\left(a^2-b^2\right)^2 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+\frac{2 b (A b-a B)\sqrt{\operatorname{Cos}[c+d x]}\operatorname{Sin}[c+d x]}{3 a\left(a^2-b^2\right) d (a+b \operatorname{Sec}[c+d x])^{3/2}}+$$

$$\frac{2 b\left(10 a^2 A b-6 A b^3-7 a^3 B+3 a b^2 B\right)\sqrt{\operatorname{Cos}[c+d x]}\operatorname{Sin}[c+d x]}{3 a^2\left(a^2-b^2\right)^2 d \sqrt{a+b \operatorname{Sec}[c+d x]}}+\frac{1}{3 a^3\left(a^2-b^2\right)^2 d}$$

$$2\left(a^4 A-13 a^2 A b^2+8 A b^4+8 a^3 b B-4 a b^3 B\right)\sqrt{\operatorname{Cos}[c+d x]}\sqrt{a+b \operatorname{Sec}[c+d x]}\operatorname{Sin}[c+d x]$$

Result (type 8, 37 leaves):

$$\int\frac{\operatorname{Cos}[c+d x]^{3/2}(A+B \operatorname{Sec}[c+d x])}{(a+b \operatorname{Sec}[c+d x])^{5/2}}\,dx$$

Problem 630: Unable to integrate problem.

$$\int\frac{\sqrt{\operatorname{Cos}[c+d x]}\,(A+B \operatorname{Sec}[c+d x])}{(a+b \operatorname{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 4, 368 leaves, 10 steps):

$$-\left(\left(2\left(9 a^2 A b-8 A b^3-3 a^3 B+2 a b^2 B\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\right)\Big/\left(3 a^3\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}\right)\right)+$$

$$\left(2\left(3 a^4 A-15 a^2 A b^2+8 A b^4+6 a^3 b B-2 a b^3 B\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(3 a^3\left(a^2-b^2\right)^2 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)+$$

$$\frac{2 b(A b-a B) \operatorname{Sin}[c+d x]}{3 a\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]}\ (a+b \operatorname{Sec}[c+d x])^{3/2}}+\frac{2 b\left(8 a^2 A b-4 A b^3-5 a^3 B+a b^2 B\right) \operatorname{Sin}[c+d x]}{3 a^2\left(a^2-b^2\right)^2 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 8, 37 leaves):

$$\int \frac{\sqrt{\operatorname{Cos}[c+d x]}\ (A+B \operatorname{Sec}[c+d x])}{(a+b \operatorname{Sec}[c+d x])^{5/2}}\, dx$$

Problem 631: Unable to integrate problem.

$$\int \frac{A+B \operatorname{Sec}[c+d x]}{\sqrt{\operatorname{Cos}[c+d x]}\ (a+b \operatorname{Sec}[c+d x])^{5/2}}\, dx$$

Optimal (type 4, 346 leaves, 10 steps):

$$\frac{2\left(3 a^2 A-2 A b^2-a b B\right)\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\ \operatorname{EllipticF}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]}{3 a^2\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$

$$\left(2\left(6 a^2 A b-2 A b^3-3 a^3 B-a b^2 B\right)\sqrt{\operatorname{Cos}[c+d x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(c+d x),\frac{2 a}{a+b}\right]\sqrt{a+b \operatorname{Sec}[c+d x]}\right)\Big/\left(3 a^2\left(a^2-b^2\right)^2 d\sqrt{\frac{b+a \operatorname{Cos}[c+d x]}{a+b}}\right)-$$

$$\frac{2(A b-a B) \operatorname{Sin}[c+d x]}{3\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]}\ (a+b \operatorname{Sec}[c+d x])^{3/2}}-\frac{2\left(5 a^2 A b-A b^3-2 a^3 B-2 a b^2 B\right) \operatorname{Sin}[c+d x]}{3 a\left(a^2-b^2\right)^2 d \sqrt{\operatorname{Cos}[c+d x]}\ \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 8, 37 leaves):

$$\int \frac{A + B \operatorname{Sec}[c + d x]}{\sqrt{\operatorname{Cos}[c + d x]} \, (a + b \operatorname{Sec}[c + d x])^{5/2}} \, dx$$

Problem 632: Unable to integrate problem.

$$\int \frac{A + B \operatorname{Sec}[c + d x]}{\operatorname{Cos}[c + d x]^{3/2} \, (a + b \operatorname{Sec}[c + d x])^{5/2}} \, dx$$

Optimal (type 4, 329 leaves, 10 steps):

$$-\frac{2 (A b - a B) \sqrt{\frac{b + a \operatorname{Cos}[c+d x]}{a+b}} \operatorname{EllipticF}\left[\frac{1}{2} (c + d x), \frac{2 a}{a+b}\right]}{3 a (a^2 - b^2) d \sqrt{\operatorname{Cos}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}} - \left(2 (3 a^2 A + A b^2 - 4 a b B) \sqrt{\operatorname{Cos}[c + d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c + d x), \frac{2 a}{a + b}\right] \sqrt{a + b \operatorname{Sec}[c + d x]}\right) \Big/ \left(3 a (a^2 - b^2)^2 d \sqrt{\frac{b + a \operatorname{Cos}[c + d x]}{a + b}}\right) + \frac{2 a (A b - a B) \operatorname{Sin}[c + d x]}{3 b (a^2 - b^2) d \sqrt{\operatorname{Cos}[c + d x]} (a + b \operatorname{Sec}[c + d x])^{3/2}} + \frac{2 (2 a^2 A b + 2 A b^3 + a^3 B - 5 a b^2 B) \operatorname{Sin}[c + d x]}{3 b (a^2 - b^2)^2 d \sqrt{\operatorname{Cos}[c + d x]} \sqrt{a + b \operatorname{Sec}[c + d x]}}$$

Result (type 8, 37 leaves):

$$\int \frac{A + B \operatorname{Sec}[c + d x]}{\operatorname{Cos}[c + d x]^{3/2} \, (a + b \operatorname{Sec}[c + d x])^{5/2}} \, dx$$

Problem 633: Unable to integrate problem.

$$\int \frac{A + B \operatorname{Sec}[c + d x]}{\operatorname{Cos}[c + d x]^{5/2} \, (a + b \operatorname{Sec}[c + d x])^{5/2}} \, dx$$

Optimal (type 4, 399 leaves, 14 steps):

$$\frac{2\,(A\,b-a\,B)\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{3\,b\,(a^2-b^2)\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\frac{2\,B\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\;\mathrm{EllipticPi}\left[2,\,\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]}{b^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}+$$

$$\left(2\,(4\,A\,b^3+3\,a^3\,B-7\,a\,b^2\,B)\,\sqrt{\mathrm{Cos}[c+d\,x]}\;\mathrm{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,\frac{2\,a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\right)\Big/$$

$$\left(3\,b^2\,(a^2-b^2)^2\,d\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{a+b}}\right)+\frac{2\,a\,(A\,b-a\,B)\,\mathrm{Sin}[c+d\,x]}{3\,b\,(a^2-b^2)\,d\,\mathrm{Cos}[c+d\,x]^{3/2}\,(a+b\,\mathrm{Sec}[c+d\,x])^{3/2}}-$$

$$\frac{2\,a\,(4\,A\,b^3+3\,a^3\,B-7\,a\,b^2\,B)\,\mathrm{Sin}[c+d\,x]}{3\,b^2\,(a^2-b^2)^2\,d\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 8, 37 leaves):

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]}{\mathrm{Cos}[c+d\,x]^{5/2}\,(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}}\,dx$$

Problem 634: Attempted integration timed out after 120 seconds.

$$\int\frac{A+B\,\mathrm{Sec}[c+d\,x]}{\mathrm{Cos}[c+d\,x]^{7/2}\,(a+b\,\mathrm{Sec}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 526 leaves, 15 steps):

$$-\frac{\left(2\,a\,A\,b-5\,a^2\,B+3\,b^2\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticF}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]}{3\,b^2\left(a^2-b^2\right)d\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\frac{\left(2\,A\,b-5\,a\,B\right)\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\;\text{EllipticPi}\left[2,\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]}{b^3\,d\sqrt{\text{Cos}[c+d\,x]}\;\sqrt{a+b\,\text{Sec}[c+d\,x]}}+$$

$$\left(\left(6\,a^3\,A\,b-14\,a\,A\,b^3-15\,a^4\,B+26\,a^2\,b^2\,B-3\,b^4\,B\right)\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\left(c+d\,x\right),\frac{2\,a}{a+b}\right]\right.$$
$$\left.\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)\bigg/\left(3\,b^3\left(a^2-b^2\right)^2 d\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{a+b}}\right)+$$

$$\frac{2\,a\left(A\,b-a\,B\right)\text{Sin}[c+d\,x]}{3\,b\left(a^2-b^2\right)d\,\text{Cos}[c+d\,x]^{5/2}\left(a+b\,\text{Sec}[c+d\,x]\right)^{3/2}}+$$

$$\frac{2\,a\left(2\,a^2\,A\,b-6\,A\,b^3-5\,a^3\,B+9\,a\,b^2\,B\right)\text{Sin}[c+d\,x]}{3\,b^2\left(a^2-b^2\right)^2 d\,\text{Cos}[c+d\,x]^{3/2}\sqrt{a+b\,\text{Sec}[c+d\,x]}}-$$

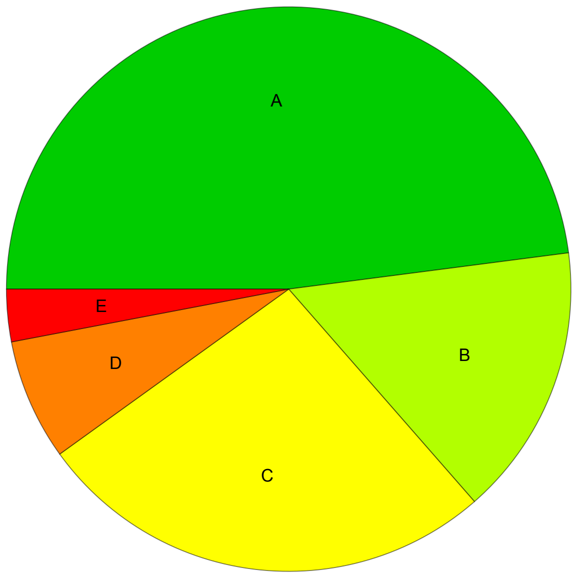
$$\frac{\left(6\,a^3\,A\,b-14\,a\,A\,b^3-15\,a^4\,B+26\,a^2\,b^2\,B-3\,b^4\,B\right)\sqrt{a+b\,\text{Sec}[c+d\,x]}\;\text{Sin}[c+d\,x]}{3\,b^3\left(a^2-b^2\right)^2 d\sqrt{\text{Cos}[c+d\,x]}}$$

Result (type 1, 1 leaves):

???

Summary of Integration Test Results

634 integration problems



A - 304 optimal antiderivatives

B - 99 more than twice size of optimal antiderivatives

C - 168 unnecessarily complex antiderivatives

D - 44 unable to integrate problems

E - 19 integration timeouts