Mathematica 11.3 Integration Test Results

Test results for the 250 problems in "4.7.5 x^m trig(a+b log(c x^n))^p.m"

Problem 26: Unable to integrate problem.

$$\int x^m \operatorname{Sin}\left[a+\sqrt{-\frac{(1+m)^2}{n^2}}\operatorname{Log}\left[c\,x^n\right]\right]dx$$

Optimal (type 3, 133 leaves, 3 steps):

$$-\frac{e^{\frac{a(1+m)}{\sqrt{-\frac{(1+m)^2}{n^2}}\,n}}\,x^{1+m}\,(c\,x^n)^{\frac{1+m}{n}}}{4\sqrt{-\frac{(1+m)^2}{n^2}}\,n}+\frac{e^{\frac{a\sqrt{-\frac{(1+m)^2}{n^2}}\,n}{1+m}}\,(1+m)\,x^{1+m}\,(c\,x^n)^{-\frac{1+m}{n}}\operatorname{Log}[x]}{2\sqrt{-\frac{(1+m)^2}{n^2}}\,n}$$

Result (type 8, 30 leaves):

$$\int x^m \operatorname{Sin}\left[a+\sqrt{-\frac{(1+m)^2}{n^2}}\operatorname{Log}\left[c\,x^n\right]\right]dx$$

Problem 27: Unable to integrate problem.

$$\int x^2 \operatorname{Sin}\left[a+3\sqrt{-\frac{1}{n^2}}\operatorname{Log}\left[c\,x^n\right]\right]dx$$

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

$$\frac{1}{12}\,e^{-a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^3\,(c\,x^n)^{3/n}-\frac{1}{2}\,e^{a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^3\,(c\,x^n)^{-3/n}\operatorname{Log}[x]$$

Result (type 8, 26 leaves):

$$\int x^2 \operatorname{Sin}\left[a+3\sqrt{-\frac{1}{n^2}}\operatorname{Log}\left[c\,x^n\right]\right]dx$$

Problem 28: Unable to integrate problem.

$$\int x\,\text{Sin}\left[a+2\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]\,dx$$

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

$$\frac{1}{8}\,e^{-a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^2\,\left(c\,x^n\right)^{2/n}-\frac{1}{2}\,e^{a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^2\,\left(c\,x^n\right)^{-2/n}\,\text{Log}[x]$$

Result (type 8, 24 leaves):

$$\int x\,\text{Sin}\left[a+2\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]\,dx$$

Problem 29: Unable to integrate problem.

$$\int \text{Sin}\left[a+\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]\,dx$$

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

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

Result (type 8, 21 leaves):

$$\int \text{Sin}\left[a+\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]\,dx$$

Problem 31: Unable to integrate problem.

$$\int \frac{\text{Sin}\left[a+\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]}{x^2}\,dx$$

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

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

Result (type 8, 25 leaves):

$$\int \frac{\operatorname{Sin}\left[a+\sqrt{-\frac{1}{n^2}}\ \operatorname{Log}\left[c\,x^n\right]\right]}{x^2}\,dx$$

Problem 32: Unable to integrate problem.

$$\int \frac{\operatorname{Sin}\left[a+2\sqrt{-\frac{1}{n^2}}\ \operatorname{Log}\left[c\,x^n\right]\right]}{x^3}\,dx$$

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

$$\frac{e^{a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\ n\left(c\,x^n\right)^{-2/n}}{8\,x^2}+\frac{e^{-a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\ n\left(c\,x^n\right)^{2/n}\operatorname{Log}[x]}{2\,x^2}$$

Result (type 8, 26 leaves):

$$\int \frac{\operatorname{Sin}\left[a+2\sqrt{-\frac{1}{n^2}}\ \operatorname{Log}\left[c\,x^n\right]\right]}{x^3}\,dx$$

Problem 33: Unable to integrate problem.

$$\int x^m \operatorname{Sin}\left[a+\frac{1}{2}\sqrt{-\frac{(1+m)^2}{n^2}}\ \operatorname{Log}\left[c\,x^n\right]\right]^2 dx$$

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

$$\frac{x^{1+m}}{2\,(1+m)}-\frac{e^{-\frac{2\,a\sqrt{-\frac{(1+m)^2}{n^2}}\,n}{1+m}}\,x^{1+m}\left(c\,x^n\right)^{\frac{1+m}{n}}}{8\,(1+m)}-\frac{1}{4}\,e^{\frac{2\,a\sqrt{-\frac{(1+m)^2}{n^2}}\,n}{1+m}}\,x^{1+m}\left(c\,x^n\right)^{-\frac{1+m}{n}}\operatorname{Log}[x]$$

Result (type 8, 35 leaves):

$$\int x^m \operatorname{Sin}\left[a+\frac{1}{2}\sqrt{-\frac{(1+m)^2}{n^2}}\ \operatorname{Log}\left[c\,x^n\right]\right]^2 dx$$

Problem 34: Unable to integrate problem.

$$\int x^2 \operatorname{Sin}\left[a+\frac{3}{2}\sqrt{-\frac{1}{n^2}}\ \operatorname{Log}\left[c\,x^n\right]\right]^2 dx$$

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

$$\frac{x^3}{6}-\frac{1}{24}e^{-2a\sqrt{-\frac{1}{n^2}}\,n}x^3\left(c\,x^n\right)^{3/n}-\frac{1}{4}e^{2a\sqrt{-\frac{1}{n^2}}\,n}x^3\left(c\,x^n\right)^{-3/n}\text{Log}[x]$$

Result (type 8, 30 leaves):

$$\int x^2\,\text{Sin}\left[a+\frac{3}{2}\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^2\,dx$$

Problem 35: Unable to integrate problem.

$$\int x\,\text{Sin}\left[a+\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^2\,dx$$

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

$$\frac{x^2}{4}-\frac{1}{16}e^{-2a\sqrt{-\frac{1}{n^2}}\,n}x^2\left(c\,x^n\right)^{2/n}-\frac{1}{4}e^{2a\sqrt{-\frac{1}{n^2}}\,n}x^2\left(c\,x^n\right)^{-2/n}\text{Log}[x]$$

Result (type 8, 25 leaves):

$$\int x\,\text{Sin}\left[a+\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^2\,dx$$

Problem 36: Unable to integrate problem.

$$\int \text{Sin}\left[a+\frac{1}{2}\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^2\,dx$$

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

$$\frac{x}{2}-\frac{1}{8}e^{-2a\sqrt{-\frac{1}{n^2}}\,n}x\left(c\,x^n\right)^{\frac{1}{n}}-\frac{1}{4}e^{2a\sqrt{-\frac{1}{n^2}}\,n}x\left(c\,x^n\right)^{-1/n}\text{Log}[x]$$

Result (type 8, 26 leaves):

$$\int \text{Sin}\left[a+\frac{1}{2}\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^2\,dx$$

Problem 38: Unable to integrate problem.

$$\int \frac{\text{Sin}\left[a+\frac{1}{2}\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^2}{x^2}\,dx$$

Optimal (type 3, 74 leaves, 3 steps):

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

Result (type 8, 30 leaves):

$$\int\frac{\text{Sin}\left[a+\frac{1}{2}\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^2}{x^2}\,dx$$

Problem 39: Unable to integrate problem.

$$\int\frac{\text{Sin}\left[a+\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^2}{x^3}\,dx$$

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

$$-\frac{1}{4x^2}+\frac{e^{2a\sqrt{-\frac{1}{n^2}}\,n}\left(c\,x^n\right)^{-2/n}}{16x^2}-\frac{e^{-2a\sqrt{-\frac{1}{n^2}}\,n}\left(c\,x^n\right)^{2/n}\,\text{Log}[x]}{4x^2}$$

Result (type 8, 27 leaves):

$$\int\frac{\text{Sin}\left[a+\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^2}{x^3}\,dx$$

Problem 41: Unable to integrate problem.

$$\int x^2\,\text{Sin}\left[a+\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^3\,dx$$

Optimal (type 3, 172 leaves, 3 steps):

$$-\frac{3}{16}e^{a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^3\left(c\,x^n\right)^{-1/n}+\frac{3}{32}e^{-a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^3\left(c\,x^n\right)^{\frac{1}{n}}-$$
$$\frac{1}{48}e^{-3a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^3\left(c\,x^n\right)^{3/n}+\frac{1}{8}e^{3a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^3\left(c\,x^n\right)^{-3/n}\,\text{Log}[x]$$

Result (type 8, 27 leaves):

$$\int x^2\,\text{Sin}\left[a+\sqrt{-\frac{1}{n^2}}\,\text{Log}\left[c\,x^n\right]\right]^3\,dx$$

Problem 42: Unable to integrate problem.

$$\int x\,\mathrm{Sin}\left[a+\frac{2}{3}\sqrt{-\frac{1}{n^2}}\,\mathrm{Log}\left[c\,x^n\right]\right]^3\,dx$$

Optimal (type 3, 178 leaves, 3 steps):

$$-\frac{9}{32}\,e^{a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^2\left(c\,x^n\right)^{-\frac{2}{3}/n}+\frac{9}{64}\,e^{-a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^2\left(c\,x^n\right)^{\frac{2}{3}/n}-\frac{1}{32}\,e^{-3a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^2\left(c\,x^n\right)^{2/n}+\frac{1}{8}\,e^{3a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x^2\left(c\,x^n\right)^{-2/n}\,\mathrm{Log}[x]$$

Result (type 8, 28 leaves):

$$\int x\,\mathrm{Sin}\left[a+\frac{2}{3}\sqrt{-\frac{1}{n^2}}\,\mathrm{Log}\left[c\,x^n\right]\right]^3\,dx$$

Problem 43: Unable to integrate problem.

$$\int \mathrm{Sin}\left[a+\frac{1}{3}\sqrt{-\frac{1}{n^2}}\,\mathrm{Log}\left[c\,x^n\right]\right]^3\,dx$$

Optimal (type 3, 168 leaves, 3 steps):

$$-\frac{9}{16}\,e^{a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x\left(c\,x^n\right)^{-\frac{1}{3}/n}+\frac{9}{32}\,e^{-a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x\left(c\,x^n\right)^{\frac{1}{3}/n}-\frac{1}{16}\,e^{-3a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x\left(c\,x^n\right)^{\frac{1}{n}}+\frac{1}{8}\,e^{3a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,x\left(c\,x^n\right)^{-1/n}\,\mathrm{Log}[x]$$

Result (type 8, 26 leaves):

$$\int \mathrm{Sin}\left[a+\frac{1}{3}\sqrt{-\frac{1}{n^2}}\,\mathrm{Log}\left[c\,x^n\right]\right]^3\,dx$$

Problem 45: Unable to integrate problem.

$$\int \frac{\mathrm{Sin}\left[a+\frac{1}{3}\sqrt{-\frac{1}{n^2}}\,\mathrm{Log}\left[c\,x^n\right]\right]^3}{x^2}\,dx$$

Optimal (type 3, 176 leaves, 3 steps):

$$-\frac{e^{3a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,\left(c\,x^n\right)^{-1/n}}{16\,x}+\frac{9\,e^{a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,\left(c\,x^n\right)^{-\frac{1}{3}/n}}{32\,x}-\frac{9\,e^{-a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,\left(c\,x^n\right)^{\frac{1}{3}/n}}{16\,x}-\frac{e^{-3a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,\left(c\,x^n\right)^{\frac{1}{n}}\,\mathrm{Log}[x]}{8\,x}$$

Result (type 8, 30 leaves):

$$\int\frac{\mathrm{Sin}\left[a+\frac{1}{3}\sqrt{-\frac{1}{n^2}}\,\mathrm{Log}\left[c\,x^n\right]\right]^3}{x^2}\,dx$$

Problem 46: Unable to integrate problem.

$$\int\frac{\mathrm{Sin}\left[a+\frac{2}{3}\sqrt{-\frac{1}{n^2}}\,\mathrm{Log}\left[c\,x^n\right]\right]^3}{x^3}\,dx$$

Optimal (type 3, 178 leaves, 3 steps):

$$-\frac{e^{3a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,\left(c\,x^n\right)^{-2/n}}{32\,x^2}+\frac{9\,e^{a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,\left(c\,x^n\right)^{-\frac{2}{3}/n}}{64\,x^2}-\frac{9\,e^{-a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,\left(c\,x^n\right)^{\frac{2}{3}/n}}{32\,x^2}-\frac{e^{-3a\sqrt{-\frac{1}{n^2}}\,n}\sqrt{-\frac{1}{n^2}}\,n\,\left(c\,x^n\right)^{2/n}\,\mathrm{Log}[x]}{8\,x^2}$$

Result (type 8, 30 leaves):

$$\int\frac{\mathrm{Sin}\left[a+\frac{2}{3}\sqrt{-\frac{1}{n^2}}\,\mathrm{Log}\left[c\,x^n\right]\right]^3}{x^3}\,dx$$

Problem 47: Unable to integrate problem.

$$\int x^m\,\mathrm{Sin}\left[a+\frac{1}{2}\sqrt{-(1+m)^2}\,\mathrm{Log}\left[c\,x^2\right]\right]\,dx$$

Optimal (type 3, 112 leaves, 3 steps):

$$-\frac{e^{\frac{a\,(1+m)}{\sqrt{-(1+m)^2}}}\,x^{1+m}\,\left(c\,x^2\right)^{\frac{1+m}{2}}}{4\sqrt{-(1+m)^2}}+\frac{e^{\frac{a\sqrt{-(1+m)^2}}{1+m}}\,(1+m)\,x^{1+m}\,\left(c\,x^2\right)^{\frac{1}{2}(-1-m)}\,\mathrm{Log}[x]}{2\sqrt{-(1+m)^2}}$$

Result (type 8, 30 leaves):

$$\int x^m \operatorname{Sin}\left[a+\frac{1}{2}\sqrt{-(1+m)^2}\operatorname{Log}\left[c\,x^2\right]\right]dx$$

Problem 49: Unable to integrate problem.

$$\int x^m \operatorname{Sin}\left[a+\frac{1}{4}\sqrt{-(1+m)^2}\operatorname{Log}\left[c\,x^2\right]\right]^2dx$$

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

$$\frac{x^{1+m}}{2\,(1+m)}-\frac{e^{\frac{2\,a\,(1+m)}{\sqrt{-(1+m)^2}}}\,x^{1+m}\,\left(c\,x^2\right)^{\frac{1+m}{2}}}{8\,(1+m)}-\frac{1}{4}\,e^{-\frac{2\,a\,(1+m)}{\sqrt{-(1+m)^2}}}\,x^{1+m}\,\left(c\,x^2\right)^{\frac{1}{2}(-1-m)}\operatorname{Log}[x]$$

Result (type 8, 32 leaves):

$$\int x^m \operatorname{Sin}\left[a+\frac{1}{4}\sqrt{-(1+m)^2}\operatorname{Log}\left[c\,x^2\right]\right]^2dx$$

Problem 51: Unable to integrate problem.

$$\int x^m \operatorname{Sin}\left[a+\frac{1}{6}\sqrt{-(1+m)^2}\operatorname{Log}\left[c\,x^2\right]\right]^3dx$$

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

$$\frac{9\,e^{\frac{a\sqrt{-(1+m)^2}}{1+m}}\,x^{1+m}\,\left(c\,x^2\right)^{\frac{1}{6}(-1-m)}}{16\sqrt{-(1+m)^2}}-\frac{9\,e^{\frac{a\,(1+m)}{\sqrt{-(1+m)^2}}}\,x^{1+m}\,\left(c\,x^2\right)^{\frac{1+m}{6}}}{32\sqrt{-(1+m)^2}}+$$
$$\frac{e^{\frac{3\,a\,(1+m)}{\sqrt{-(1+m)^2}}}\,x^{1+m}\,\left(c\,x^2\right)^{\frac{1+m}{2}}}{16\sqrt{-(1+m)^2}}-\frac{e^{-\frac{3\,a\,(1+m)}{\sqrt{-(1+m)^2}}}\,(1+m)\,x^{1+m}\,\left(c\,x^2\right)^{\frac{1}{2}(-1-m)}\operatorname{Log}[x]}{8\sqrt{-(1+m)^2}}$$

Result (type 8, 32 leaves):

$$\int x^m \operatorname{Sin}\left[a+\frac{1}{6}\sqrt{-(1+m)^2}\operatorname{Log}\left[c\,x^2\right]\right]^3dx$$

Problem 72: Result unnecessarily involves imaginary or complex numbers.

$$\int (e\,x)^m \operatorname{Sin}\left[d\,\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)\right]^2dx$$

Optimal (type 3, 154 leaves, 2 steps):

$$\frac{2\,b^2\,d^2\,n^2\,(e\,x)^{1+m}}{e\,(1+m)\,\left((1+m)^2+4\,b^2\,d^2\,n^2\right)}-\frac{2\,b\,d\,n\,(e\,x)^{1+m}\operatorname{Cos}\left[d\,\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)\right]\operatorname{Sin}\left[d\,\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)\right]}{e\,\left((1+m)^2+4\,b^2\,d^2\,n^2\right)}+$$
$$\frac{(1+m)\,(e\,x)^{1+m}\operatorname{Sin}\left[d\,\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)\right]^2}{e\,\left((1+m)^2+4\,b^2\,d^2\,n^2\right)}$$

Result (type 3, 102 leaves):

$$-\left(\left(x\,(e\,x)^m\left(-1-2\,m-m^2-4\,b^2\,d^2\,n^2+(1+m)^2\,\text{Cos}\left[2\,d\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right]+2\,b\,d\,(1+m)\,n\,\text{Sin}\left[2\,d\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right]\right)\right)\Big/\left(2\,(1+m)\,(1+m-2\,i\,b\,d\,n)\,(1+m+2\,i\,b\,d\,n)\right)\right)$$

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

$$\int (e\,x)^m\,\sqrt{\text{Sin}\left[d\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right]}\,dx$$

Optimal (type 5, 149 leaves, 3 steps):

$$\left(2\,(e\,x)^{1+m}\,\text{Hypergeometric2F1}\left[-\frac{1}{2},-\frac{2\,i+2\,i\,m+b\,d\,n}{4\,b\,d\,n},-\frac{2\,i+2\,i\,m-3\,b\,d\,n}{4\,b\,d\,n},e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]\sqrt{\text{Sin}\left[d\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right]}\right)\Big/\left(e\,(2+2\,m-i\,b\,d\,n)\,\sqrt{1-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}}\right)$$

Result (type 5, 582 leaves):

$$\left(2\,b\,d\,e^{i\,d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,n\,x^{1-i\,b\,d\,n}\,(e\,x)^m\,\sqrt{2-2\,e^{2\,i\,d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,d\,n}}\right.$$
$$\left((2+2\,m-i\,b\,d\,n)\,x^{2\,i\,b\,d\,n}\,\text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\,i+2\,i\,m-3\,b\,d\,n}{4\,b\,d\,n},-\frac{2\,i+2\,i\,m-7\,b\,d\,n}{4\,b\,d\,n},e^{2\,i\,d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,d\,n}\right]-(2+2\,m+3\,i\,b\,d\,n)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\right.\right.$$
$$\left.\left.\left.-\frac{2\,i+2\,i\,m+b\,d\,n}{4\,b\,d\,n},-\frac{2\,i+2\,i\,m-3\,b\,d\,n}{4\,b\,d\,n},e^{2\,i\,d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,d\,n}\right]\right)\right)\Big/$$
$$\left((2+2\,m-i\,b\,d\,n)\,(2+2\,m+3\,i\,b\,d\,n)\,\left(-2-2\,m+i\,b\,d\,n+e^{2\,i\,d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,(2+2\,m+i\,b\,d\,n)\right)\right.$$
$$\left.\sqrt{\left(-i\,e^{-i\,d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{-i\,b\,d\,n}\left(-1+e^{2\,i\,d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,d\,n}\right)\right)}\right)+$$
$$\left(2\,x\,(e\,x)^m\,\text{Sin}\left[d\left(a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)\right]\sqrt{\text{Sin}\left[b\,d\,n\,\text{Log}[x]+d\left(a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)\right]}\right)\Big/$$
$$\left(b\,d\,n\,\text{Cos}\left[d\left(a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)\right]+2\,\text{Sin}\left[d\left(a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)\right]+2\,m\,\text{Sin}\left[d\left(a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)\right]\right)$$

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

$$\int \frac{(e\,x)^m}{\text{Sin}\left[d\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right]^{3/2}}\,dx$$

Optimal (type 5, 150 leaves, 3 steps):

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

Result (type 5, 2040 leaves):

$$\left(4\, \mathbb{i}\, x^{1-\mathbb{i}\, b\, d\, n}\, (e\, x)^m \sqrt{2-2\, e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}}\right.$$
$$\left(\left(2+2\, m-\mathbb{i}\, b\, d\, n\right) x^{2\, \mathbb{i}\, b\, d\, n}\, \text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-3\, b\, d\, n}{4\, b\, d\, n},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-7\, b\, d\, n}{4\, b\, d\, n},\right.\right.$$
$$\left. e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}\right]-\left(2+2\, m+3\, \mathbb{i}\, b\, d\, n\right) \text{Hypergeometric2F1}\left[\frac{1}{2},\right.$$
$$\left.\left.\left. -\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m+b\, d\, n}{4\, b\, d\, n},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-3\, b\, d\, n}{4\, b\, d\, n},e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}\right]\right)\right)\Big/$$
$$\left(b\, d\, n\, \left(2+2\, m-\mathbb{i}\, b\, d\, n\right) \left(2+2\, m+3\, \mathbb{i}\, b\, d\, n\right) \sqrt{\left(-\mathbb{i}\, e^{-\mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\right.}\right.$$
$$\left.x^{-\mathbb{i}\, b\, d\, n} \left(-1+e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}\right)\right)$$
$$\left(b\, d\, n\, \text{Cos}\left[d\, \left(a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)\right]+2\, \text{Sin}\left[d\, \left(a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)\right]+\right.$$
$$\left.\left. 2\, m\, \text{Sin}\left[d\, \left(a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)\right]\right)\right)+$$

$$\left(8\, \mathbb{i}\, m\, x^{1-\mathbb{i}\, b\, d\, n}\, (e\, x)^m \sqrt{2-2\, e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}}\right.$$
$$\left(\left(2+2\, m-\mathbb{i}\, b\, d\, n\right) x^{2\, \mathbb{i}\, b\, d\, n}\, \text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-3\, b\, d\, n}{4\, b\, d\, n},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-7\, b\, d\, n}{4\, b\, d\, n},\right.\right.$$
$$\left. e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}\right]-\left(2+2\, m+3\, \mathbb{i}\, b\, d\, n\right) \text{Hypergeometric2F1}\left[\frac{1}{2},\right.$$
$$\left.\left.\left. -\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m+b\, d\, n}{4\, b\, d\, n},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-3\, b\, d\, n}{4\, b\, d\, n},e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}\right]\right)\right)\Big/$$
$$\left(b\, d\, n\, \left(2+2\, m-\mathbb{i}\, b\, d\, n\right) \left(2+2\, m+3\, \mathbb{i}\, b\, d\, n\right) \sqrt{\left(-\mathbb{i}\, e^{-\mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\right.}\right.$$
$$\left.x^{-\mathbb{i}\, b\, d\, n} \left(-1+e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}\right)\right)$$
$$\left(b\, d\, n\, \text{Cos}\left[d\, \left(a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)\right]+2\, \text{Sin}\left[d\, \left(a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)\right]+\right.$$
$$\left.\left. 2\, m\, \text{Sin}\left[d\, \left(a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)\right]\right)\right)+$$

$$\left(4\, \mathbb{i}\, m^2\, x^{1-\mathbb{i}\, b\, d\, n}\, (e\, x)^m \sqrt{2-2\, e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}}\right.$$
$$\left(\left(2+2\, m-\mathbb{i}\, b\, d\, n\right) x^{2\, \mathbb{i}\, b\, d\, n}\, \text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-3\, b\, d\, n}{4\, b\, d\, n},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-7\, b\, d\, n}{4\, b\, d\, n},\right.\right.$$
$$\left. e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}\right]-\left(2+2\, m+3\, \mathbb{i}\, b\, d\, n\right) \text{Hypergeometric2F1}\left[\frac{1}{2},\right.$$
$$\left.\left.\left. -\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m+b\, d\, n}{4\, b\, d\, n},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-3\, b\, d\, n}{4\, b\, d\, n},e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}\right]\right)\right)\Big/$$
$$\left(b\, d\, n\, \left(2+2\, m-\mathbb{i}\, b\, d\, n\right) \left(2+2\, m+3\, \mathbb{i}\, b\, d\, n\right) \sqrt{\left(-\mathbb{i}\, e^{-\mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\right.}\right.$$
$$\left.x^{-\mathbb{i}\, b\, d\, n} \left(-1+e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}\right)\right)$$
$$\left(b\, d\, n\, \text{Cos}\left[d\, \left(a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)\right]+2\, \text{Sin}\left[d\, \left(a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)\right]+\right.$$
$$\left.\left. 2\, m\, \text{Sin}\left[d\, \left(a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)\right]\right)\right)+$$

$$\left(\mathbb{i}\, b\, d\, n\, x^{1-\mathbb{i}\, b\, d\, n}\, (e\, x)^m \sqrt{2-2\, e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}}\right.$$
$$\left(\left(2+2\, m-\mathbb{i}\, b\, d\, n\right) x^{2\, \mathbb{i}\, b\, d\, n}\, \text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-3\, b\, d\, n}{4\, b\, d\, n},-\frac{2\, \mathbb{i}+2\, \mathbb{i}\, m-7\, b\, d\, n}{4\, b\, d\, n},\right.\right.$$
$$\left. e^{2\, \mathbb{i}\, d\, (a+b\, (-n\, \text{Log}[x]+\text{Log}[c\, x^n]))}\, x^{2\, \mathbb{i}\, b\, d\, n}\right]-\left(2+2\, m+3\, \mathbb{i}\, b\, d\, n\right) \text{Hypergeometric2F1}\left[\frac{1}{2},\right.$$

$$-\frac{2\,i+2\,i\,m+b\,d\,n}{4\,b\,d\,n},\ -\frac{2\,i+2\,i\,m-3\,b\,d\,n}{4\,b\,d\,n},\ e^{2\,i\,d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,d\,n}\Big]\Big)\Big)\Big/$$

$$\Big(\big(2+2\,m-i\,b\,d\,n\big)\,\big(2+2\,m+3\,i\,b\,d\,n\big)\,\sqrt{\left(-i\,e^{-i\,d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{-i\,b\,d\,n}\right.}$$
$$\left.\left(-1+e^{2\,i\,d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,d\,n}\right)\right)\,\big(b\,d\,n\,\text{Cos}[d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]+$$
$$2\,\text{Sin}[d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]+2\,m\,\text{Sin}[d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]\big)\Big)+$$

$$x^{-m}\,(e\,x)^m\,\Big(\frac{1}{b\,d\,n}2\,x^{1+m}\,\text{Csc}[d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]$$
$$\text{Csc}[b\,d\,n\,\text{Log}[x]+d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]\,\text{Sin}[b\,d\,n\,\text{Log}[x]]-$$
$$\big(2\,x^{1+m}\,\text{Csc}[d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]\big)\Big/\big(b\,d\,n\,\text{Cos}[d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]+$$
$$2\,\text{Sin}[d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]+2\,m\,\text{Sin}[d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]\big)\Big)$$
$$\sqrt{\text{Sin}[b\,d\,n\,\text{Log}[x]+d\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]}$$

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

$$\int\frac{\text{Cos}[a+b\,\text{Log}[c\,x^n]]}{x}\,dx$$

Optimal (type 3, 18 leaves, 2 steps):

$$\frac{\text{Sin}[a+b\,\text{Log}[c\,x^n]]}{b\,n}$$

Result (type 3, 37 leaves):

$$\frac{\text{Cos}[b\,\text{Log}[c\,x^n]]\,\text{Sin}[a]}{b\,n}+\frac{\text{Cos}[a]\,\text{Sin}[b\,\text{Log}[c\,x^n]]}{b\,n}$$

Problem 104: Unable to integrate problem.

$$\int x^m\,\text{Cos}\left[a+\sqrt{-\frac{(1+m)^2}{n^2}}\,\text{Log}[c\,x^n]\right]\,dx$$

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

$$\frac{e^{\frac{a\,(1+m)}{\sqrt{-\frac{(1+m)^2}{n^2}}\,n}}\,x^{1+m}\,(c\,x^n)^{\frac{1+m}{n}}}{4\,(1+m)}+\frac{1}{2}\,e^{\frac{a\sqrt{-\frac{(1+m)^2}{n^2}}\,n}{1+m}}\,x^{1+m}\,(c\,x^n)^{-\frac{1+m}{n}}\,\text{Log}[x]$$

Result (type 8, 30 leaves):

$$\int x^m\,\text{Cos}\left[a+\sqrt{-\frac{(1+m)^2}{n^2}}\,\text{Log}[c\,x^n]\right]\,dx$$

Problem 105: Unable to integrate problem.

$$\int \text{Cos}\left[a+\sqrt{-\frac{1}{n^2}}\ \text{Log}\left[c\,x^n\right]\right]\,dx$$

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

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

Result (type 8, 21 leaves):

$$\int \text{Cos}\left[a+\sqrt{-\frac{1}{n^2}}\ \text{Log}\left[c\,x^n\right]\right]\,dx$$

Problem 106: Unable to integrate problem.

$$\int x^m\,\text{Cos}\left[a+\frac{1}{2}\sqrt{-\frac{(1+m)^2}{n^2}}\ \text{Log}\left[c\,x^n\right]\right]^2\,dx$$

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

$$\frac{x^{1+m}}{2\,(1+m)}+\frac{e^{-\frac{2\,a\sqrt{-\frac{(1+m)^2}{n^2}}\,n}{1+m}}\,x^{1+m}\,\left(c\,x^n\right)^{\frac{1+m}{n}}}{8\,(1+m)}+\frac{1}{4}\,e^{\frac{2\,a\sqrt{-\frac{(1+m)^2}{n^2}}\,n}{1+m}}\,x^{1+m}\,\left(c\,x^n\right)^{-\frac{1+m}{n}}\,\text{Log}[x]$$

Result (type 8, 35 leaves):

$$\int x^m\,\text{Cos}\left[a+\frac{1}{2}\sqrt{-\frac{(1+m)^2}{n^2}}\ \text{Log}\left[c\,x^n\right]\right]^2\,dx$$

Problem 107: Unable to integrate problem.

$$\int \text{Cos}\left[a+\frac{1}{2}\sqrt{-\frac{1}{n^2}}\ \text{Log}\left[c\,x^n\right]\right]^2\,dx$$

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

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

Result (type 8, 26 leaves):

$$\int \text{Cos}\left[a+\frac{1}{2}\sqrt{-\frac{1}{n^2}}\ \text{Log}\left[c\,x^n\right]\right]^2\,dx$$

Problem 109: Unable to integrate problem.

$$\int \mathrm{Cos}\left[a+\frac{1}{3}\sqrt{-\frac{1}{n^2}}\ \mathrm{Log}\left[c\,x^n\right]\right]^3 dx$$

Optimal (type 3, 128 leaves, 3 steps):

$$\frac{9}{16}\,e^{a\sqrt{-\frac{1}{n^2}}\,n}\,x\,\left(c\,x^n\right)^{-\frac{1}{3}/n}+\frac{9}{32}\,e^{-a\sqrt{-\frac{1}{n^2}}\,n}\,x\,\left(c\,x^n\right)^{\frac{1}{3}/n}+$$
$$\frac{1}{16}\,e^{-3a\sqrt{-\frac{1}{n^2}}\,n}\,x\,\left(c\,x^n\right)^{\frac{1}{n}}+\frac{1}{8}\,e^{3a\sqrt{-\frac{1}{n^2}}\,n}\,x\,\left(c\,x^n\right)^{-1/n}\,\mathrm{Log}[x]$$

Result (type 8, 26 leaves):

$$\int \mathrm{Cos}\left[a+\frac{1}{3}\sqrt{-\frac{1}{n^2}}\ \mathrm{Log}\left[c\,x^n\right]\right]^3 dx$$

Problem 110: Result more than twice size of optimal antiderivative.

$$\int \sqrt{\mathrm{Cos}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]}\ dx$$

Optimal (type 5, 110 leaves, 3 steps):

$$\left(2\,x\,\sqrt{\mathrm{Cos}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]}\ \mathrm{Hypergeometric2F1}\left[-\frac{1}{2},-\frac{2\,i+b\,n}{4\,b\,n},\frac{1}{4}\left(3-\frac{2\,i}{b\,n}\right),-e^{2\,i\,a}\left(c\,x^n\right)^{2\,i\,b}\right]\right)\Big/$$
$$\left(\left(2-i\,b\,n\right)\sqrt{1+e^{2\,i\,a}\left(c\,x^n\right)^{2\,i\,b}}\right)$$

Result (type 5, 361 leaves):

$$\left(2\,i\,\sqrt{2}\,b\,e^{-i\,a}\,n\,x\left(c\,x^n\right)^{-i\,b}\left(\left(2\,i+b\,n\right)\left(1+e^{2\,i\,a}\left(c\,x^n\right)^{2\,i\,b}\right)+\right.\right.$$
$$\sqrt{1+e^{2\,i\,a}\left(c\,x^n\right)^{2\,i\,b}}\left(-2\,i-b\,n+e^{2\,i\,a}\left(-2\,i+b\,n\right)x^{-2\,i\,b\,n}\left(c\,x^n\right)^{2\,i\,b}\right)$$
$$\left.\left.\mathrm{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\,i+b\,n}{4\,b\,n},\frac{3}{4}-\frac{i}{2\,b\,n},-e^{2\,i\,a}\left(c\,x^n\right)^{2\,i\,b}\right]\right)\right)\Big/$$
$$\left(\left(4+b^2\,n^2\right)\sqrt{e^{-i\,a}\left(c\,x^n\right)^{-i\,b}+e^{i\,a}\left(c\,x^n\right)^{i\,b}}\left(-2\,i-b\,n+e^{2\,i\,a}\left(-2\,i+b\,n\right)x^{-2\,i\,b\,n}\left(c\,x^n\right)^{2\,i\,b}\right)\right)-$$
$$\left(2\,x\,\sqrt{\mathrm{Cos}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]}\ \mathrm{Cos}\left[a-b\,n\,\mathrm{Log}[x]+b\,\mathrm{Log}\left[c\,x^n\right]\right]\right)\Big/$$
$$\left(-2\,\mathrm{Cos}\left[a-b\,n\,\mathrm{Log}[x]+b\,\mathrm{Log}\left[c\,x^n\right]\right]+b\,n\,\mathrm{Sin}\left[a-b\,n\,\mathrm{Log}[x]+b\,\mathrm{Log}\left[c\,x^n\right]\right]\right)$$

Problem 112: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]^{3/2} dx$$

Optimal (type 5, 109 leaves, 3 steps):

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

Result (type 5, 220 leaves):

$$-\left(\left(6\,i\,\sqrt{2}\,b^2\,\sqrt{1+e^{2\,i\,(a+b\,\text{Log}[c\,x^n])}}\,n^2\,x\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{4}-\frac{i}{2\,b\,n},\frac{5}{4}-\frac{i}{2\,b\,n},-e^{2\,i\,(a+b\,\text{Log}[c\,x^n])}\right]\right)\Big/\left(\sqrt{e^{-i\,(a+b\,\text{Log}[c\,x^n])}\left(1+e^{2\,i\,(a+b\,\text{Log}[c\,x^n])}\right)}\,(-2\,i+b\,n)\,(-2\,i+3\,b\,n)\,(2\,i+3\,b\,n)\right)\right)+\frac{1}{4+9\,b^2\,n^2}2\,x\,\sqrt{\text{Cos}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]}\,\left(2\,\text{Cos}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]+3\,b\,n\,\text{Sin}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]\right)$$

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

$$\int \text{Cos}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^{5/2}\,dx$$

Optimal (type 5, 110 leaves, 3 steps):

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

Result (type 5, 681 leaves):

$$\left(30\,i\,\sqrt{2}\,b^3\,e^{-i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,n^3\,x^{1-i\,b\,n}\left((2\,i+b\,n)\left(1+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right)+\left(-2\,i-b\,n+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,(-2\,i+b\,n)\right)\sqrt{1+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}}\,\text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\,i+b\,n}{4\,b\,n},\frac{3}{4}-\frac{i}{2\,b\,n},-e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right]\right)\right)\Big/\left((-2\,i+5\,b\,n)\,(2\,i+5\,b\,n)\,(4+b^2\,n^2)\left(-2\,i-b\,n+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,(-2\,i+b\,n)\right)\sqrt{\left(e^{-i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{-i\,b\,n}\left(1+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right)\right)}\right)+$$

$$\sqrt{\text{Cos}\left[a+b\,n\,\text{Log}[x]+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]}\left(-\left(\left(2\,x\left(2\,\text{Cos}\left[a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]+15\,b^2\,n^2\,\text{Cos}\left[a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]-b\,n\,\text{Sin}\left[a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\right)\right)\Big/\left((-2\,i+5\,b\,n)\,(2\,i+5\,b\,n)\left(-2\,\text{Cos}\left[a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]+b\,n\,\text{Sin}\left[a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\right)\right)\right)+\left(x\,\text{Sin}[2\,b\,n\,\text{Log}[x]]\left(5\,b\,n\,\text{Cos}\left[2\left(a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)\right]-2\,\text{Sin}\left[2\left(a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)\right]\right)\right)\Big/\left((-2\,i+5\,b\,n)\,(2\,i+5\,b\,n)\right)+\left(x\,\text{Cos}[2\,b\,n\,\text{Log}[x]]\left(2\,\text{Cos}\left[2\left(a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)\right]+5\,b\,n\,\text{Sin}\left[2\left(a+b\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)\right]\right)\right)\Big/\left((-2\,i+5\,b\,n)\,(2\,i+5\,b\,n)\right)\right)$$

Problem 118: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\text{Cos}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^{3/2}}\,dx$$

Optimal (type 5, 109 leaves, 3 steps):

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

Result (type 5, 847 leaves):

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

Problem 123: Result unnecessarily involves imaginary or complex numbers.

$$\int x^m\,\text{Cos}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^4\,dx$$

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

$$\frac{24 b^4 n^4 x^{1+m}}{(1+m)\left((1+m)^2+4 b^2 n^2\right)\left((1+m)^2+16 b^2 n^2\right)}+\frac{12 b^2 (1+m) n^2 x^{1+m} \text{Cos}[a+b \text{Log}[c x^n]]^2}{\left((1+m)^2+4 b^2 n^2\right)\left((1+m)^2+16 b^2 n^2\right)}+\frac{(1+m) x^{1+m} \text{Cos}[a+b \text{Log}[c x^n]]^4}{(1+m)^2+16 b^2 n^2}+\frac{24 b^3 n^3 x^{1+m} \text{Cos}[a+b \text{Log}[c x^n]] \text{Sin}[a+b \text{Log}[c x^n]]}{\left((1+m)^2+4 b^2 n^2\right)\left((1+m)^2+16 b^2 n^2\right)}+\frac{4 b n x^{1+m} \text{Cos}[a+b \text{Log}[c x^n]]^3 \text{Sin}[a+b \text{Log}[c x^n]]}{(1+m)^2+16 b^2 n^2}$$

Result (type 3, 435 leaves):

$$\frac{3 x^{1+m}}{8 (1+m)}-\left(x^{1+m} \text{Sin}[2 b n \text{Log}[x]] \left(-2 b n \text{Cos}\left[2 a+2 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]+\text{Sin}\left[2 a+2 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]+m \text{Sin}\left[2 a+2 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]\right)\right)/\left(2 (1+m-2 i b n)(1+m+2 i b n)\right)+\left(x^{1+m} \text{Cos}[2 b n \text{Log}[x]] \left(\text{Cos}\left[2 a+2 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]+m \text{Cos}\left[2 a+2 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]+2 b n \text{Sin}\left[2 a+2 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]\right)\right)/\left(2 (1+m-2 i b n)(1+m+2 i b n)\right)-\left(x^{1+m} \text{Sin}[4 b n \text{Log}[x]] \left(-4 b n \text{Cos}\left[4 a+4 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]+\text{Sin}\left[4 a+4 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]+m \text{Sin}\left[4 a+4 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]\right)\right)/\left(8 (1+m-4 i b n)(1+m+4 i b n)\right)+\left(x^{1+m} \text{Cos}[4 b n \text{Log}[x]] \left(\text{Cos}\left[4 a+4 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]+m \text{Cos}\left[4 a+4 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]+4 b n \text{Sin}\left[4 a+4 b (-n \text{Log}[x]+\text{Log}[c x^n])\right]\right)\right)/\left(8 (1+m-4 i b n)(1+m+4 i b n)\right)$$

Problem 125: Result unnecessarily involves imaginary or complex numbers.

$$\int x^m \text{Cos}\left[a+b \text{Log}[c x^n]\right]^2 dx$$

Optimal (type 3, 120 leaves, 2 steps):

$$\frac{2 b^2 n^2 x^{1+m}}{(1+m)\left((1+m)^2+4 b^2 n^2\right)}+\frac{(1+m) x^{1+m} \text{Cos}[a+b \text{Log}[c x^n]]^2}{(1+m)^2+4 b^2 n^2}+\frac{2 b n x^{1+m} \text{Cos}[a+b \text{Log}[c x^n]] \text{Sin}[a+b \text{Log}[c x^n]]}{(1+m)^2+4 b^2 n^2}$$

Result (type 3, 91 leaves):

$$\left(x^{1+m} \left(1+2 m+m^2+4 b^2 n^2+(1+m)^2 \text{Cos}\left[2 (a+b \text{Log}[c x^n])\right]+2 b (1+m) n \text{Sin}\left[2 (a+b \text{Log}[c x^n])\right]\right)\right)/\left(2 (1+m)(1+m-2 i b n)(1+m+2 i b n)\right)$$

Problem 128: Result more than twice size of optimal antiderivative.

$$\int x^m \sqrt{\text{Cos}\left[a+b \text{Log}[c x^n]\right]} dx$$

Optimal (type 5, 129 leaves, 3 steps):

$$\left(2\,x^{1+m}\,\sqrt{\text{Cos}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]}\right.$$
$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{2},-\frac{2\,i+2\,i\,m+b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-e^{2\,i\,a}\,\left(c\,x^n\right)^{2\,i\,b}\right]\right)\Big/$$
$$\left(\left(2+2\,m-i\,b\,n\right)\,\sqrt{1+e^{2\,i\,a}\,\left(c\,x^n\right)^{2\,i\,b}}\right)$$

Result (type 5, 529 leaves) :

$$-\left(\left(2\,b\,e^{i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,n\,x^{1+m-i\,b\,n}\,\sqrt{2+2\,e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}}\right.\right.$$
$$\left(\left(2\,i+2\,i\,m+b\,n\right)\,x^{2\,i\,b\,n}\,\text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-7\,b\,n}{4\,b\,n},\right.\right.$$
$$\left.-e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right]+\left(-2\,i-2\,i\,m+3\,b\,n\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\right.$$
$$\left.\left.\left.-\frac{2\,i+2\,i\,m+b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right]\right)\right)\Big/$$
$$\left(\left(2+2\,m-i\,b\,n\right)\,\left(2+2\,m+3\,i\,b\,n\right)\,\left(2+2\,m-i\,b\,n+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,\left(2+2\,m+i\,b\,n\right)\right)\right.$$
$$\left.\left.\sqrt{\left(e^{-i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{-i\,b\,n}\,\left(1+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right)\right)}\right)\right)+$$
$$\left(2\,x^{1+m}\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\,\sqrt{\text{Cos}\left[a+b\,n\,\text{Log}[x]+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]}\right)\Big/$$
$$\left(2\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]+\right.$$
$$\left.2\,m\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]-b\,n\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\right)$$

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

$$\int\frac{x^m}{\text{Cos}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^{3/2}}\,dx$$

Optimal (type 5, 130 leaves, 3 steps) :

$$\left(2\,x^{1+m}\,\left(1+e^{2\,i\,a}\,\left(c\,x^n\right)^{2\,i\,b}\right)^{3/2}\right.$$
$$\left.\text{Hypergeometric2F1}\left[\frac{3}{2},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-7\,b\,n}{4\,b\,n},-e^{2\,i\,a}\,\left(c\,x^n\right)^{2\,i\,b}\right]\right)\Big/$$
$$\left(\left(2+2\,m+3\,i\,b\,n\right)\,\text{Cos}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^{3/2}\right)$$

Result (type 5, 1822 leaves) :

$$-\left(\left(4\,i\,x^{1+m-i\,b\,n}\,\sqrt{2+2\,e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}}\right.\right.$$
$$\left(\left(2+2\,m-i\,b\,n\right)\,x^{2\,i\,b\,n}\,\text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-7\,b\,n}{4\,b\,n},\right.\right.$$
$$\left.-e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right]-\left(2+2\,m+3\,i\,b\,n\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\right.$$
$$\left.\left.\left.-\frac{2\,i+2\,i\,m+b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right]\right)\right)\Big/$$
$$\left(b\,n\,\left(2+2\,m-i\,b\,n\right)\,\left(2+2\,m+3\,i\,b\,n\right)\,\sqrt{\left(e^{-i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{-i\,b\,n}\right.}\right.$$
$$\left.\left(1+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right)\right)\,\left(-2\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]-\right.$$

$$2\,m\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]+b\,n\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\Big)\Big)\Big)-$$

$$\Bigg(8\,i\,m\,x^{1+m-i\,b\,n}\,\sqrt{2+2\,e^{2\,i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{2\,i\,b\,n}}$$

$$\Bigg(\left(2+2\,m-i\,b\,n\right)\,x^{2\,i\,b\,n}\,\text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-7\,b\,n}{4\,b\,n},\right.$$

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

$$\left.-\frac{2\,i+2\,i\,m+b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-e^{2\,i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{2\,i\,b\,n}\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(b\,n\,\left(2+2\,m-i\,b\,n\right)\,\left(2+2\,m+3\,i\,b\,n\right)\,\sqrt{\left(e^{-i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{-i\,b\,n}\right.}$$

$$\left.\left(1+e^{2\,i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{2\,i\,b\,n}\right)\right)$$

$$\Big(-2\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]-2\,m\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]+$$

$$b\,n\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\Big)\Bigg)-$$

$$\Bigg(4\,i\,m^2\,x^{1+m-i\,b\,n}\,\sqrt{2+2\,e^{2\,i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{2\,i\,b\,n}}$$

$$\Bigg(\left(2+2\,m-i\,b\,n\right)\,x^{2\,i\,b\,n}\,\text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-7\,b\,n}{4\,b\,n},\right.$$

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

$$\left.-\frac{2\,i+2\,i\,m+b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-e^{2\,i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{2\,i\,b\,n}\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(b\,n\,\left(2+2\,m-i\,b\,n\right)\,\left(2+2\,m+3\,i\,b\,n\right)\,\sqrt{\left(e^{-i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{-i\,b\,n}\right.}$$

$$\left.\left(1+e^{2\,i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{2\,i\,b\,n}\right)\right)$$

$$\Big(-2\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]-2\,m\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]+$$

$$b\,n\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\Big)\Bigg)-$$

$$\Bigg(i\,b\,n\,x^{1+m-i\,b\,n}\,\sqrt{2+2\,e^{2\,i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{2\,i\,b\,n}}$$

$$\Bigg(\left(2+2\,m-i\,b\,n\right)\,x^{2\,i\,b\,n}\,\text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-7\,b\,n}{4\,b\,n},\right.$$

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

$$\left.-\frac{2\,i+2\,i\,m+b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-e^{2\,i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{2\,i\,b\,n}\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(2+2\,m-i\,b\,n\right)\,\left(2+2\,m+3\,i\,b\,n\right)\,\sqrt{\left(e^{-i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{-i\,b\,n}\right.}$$

$$\left.\left(1+e^{2\,i\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\,x^{2\,i\,b\,n}\right)\right)$$

$$\Big(-2\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]-2\,m\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]+$$

$$b\,n\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\Big)\Bigg)+$$

$$\sqrt{\text{Cos}\left[a+b\,n\,\text{Log}[x]+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]}$$

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

$$\text{Sec}\left[a+b\,n\,\text{Log}[x]+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\,\text{Sin}[b\,n\,\text{Log}[x]]-$$

$$\left(2\,x^{1+m}\,\text{Sec}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\right)\Big/\Big(2\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]+$$

$$2\,m\,\mathrm{Cos}\left[a+b\left(-n\,\mathrm{Log}[x]+\mathrm{Log}\left[c\,x^n\right]\right)\right]-b\,n\,\mathrm{Sin}\left[a+b\left(-n\,\mathrm{Log}[x]+\mathrm{Log}\left[c\,x^n\right]\right)\right]\Big)\Big)$$

Problem 131: Result more than twice size of optimal antiderivative.

$$\int \frac{x^m}{\mathrm{Cos}[a+b\,\mathrm{Log}[c\,x^n]]^{5/2}}\,dx$$

Optimal (type 5, 130 leaves, 3 steps):

$$\left(2\,x^{1+m}\left(1+e^{2\,i\,a}\left(c\,x^n\right)^{2\,i\,b}\right)^{5/2}\,\mathrm{Hypergeometric2F1}\left[\frac{5}{2},-\frac{2\,i+2\,i\,m-5\,b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-9\,b\,n}{4\,b\,n},-e^{2\,i\,a}\left(c\,x^n\right)^{2\,i\,b}\right]\right)\Big/\left(\left(2+2\,m+5\,i\,b\,n\right)\mathrm{Cos}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]^{5/2}\right)$$

Result (type 5, 263 leaves):

$$\left(x^{1+m}\left(-4\,(1+m)\,\mathrm{Cos}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]+\left(\left(2+2\,m-i\,b\,n\right)\sqrt{1+e^{2\,i\,a}\left(c\,x^n\right)^{2\,i\,b}}\;\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{-2\,i-2\,i\,m+b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-5\,b\,n}{4\,b\,n},-e^{2\,i\,(a+b\,\mathrm{Log}[c\,x^n])}\right]\left(e^{-i\,a}\left(\left(1+e^{2\,i\,a}\right)\mathrm{Cos}\left[b\,\mathrm{Log}\left[c\,x^n\right]\right]+i\left(-1+e^{2\,i\,a}\right)\mathrm{Sin}\left[b\,\mathrm{Log}\left[c\,x^n\right]\right]\right)\right)^{3/2}\right)\Big/\left(\sqrt{e^{-i\,a}\left(c\,x^n\right)^{-i\,b}+e^{i\,a}\left(c\,x^n\right)^{i\,b}}\right)+2\,b\,n\,\mathrm{Sin}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]\right)\right)\Big/\left(3\,b^2\,n^2\,\mathrm{Cos}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]^{3/2}\right)$$

Problem 160: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Sec}[a+b\,\mathrm{Log}[c\,x^n]]}{x}\,dx$$

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

$$\frac{\mathrm{ArcTanh}[\mathrm{Sin}[a+b\,\mathrm{Log}[c\,x^n]]]}{b\,n}$$

Result (type 3, 94 leaves):

$$-\frac{\mathrm{Log}\left[\mathrm{Cos}\left[\frac{a}{2}+\frac{1}{2}\,b\,\mathrm{Log}[c\,x^n]\right]-\mathrm{Sin}\left[\frac{a}{2}+\frac{1}{2}\,b\,\mathrm{Log}[c\,x^n]\right]\right]}{b\,n}+\frac{\mathrm{Log}\left[\mathrm{Cos}\left[\frac{a}{2}+\frac{1}{2}\,b\,\mathrm{Log}[c\,x^n]\right]+\mathrm{Sin}\left[\frac{a}{2}+\frac{1}{2}\,b\,\mathrm{Log}[c\,x^n]\right]\right]}{b\,n}$$

Problem 169: Result more than twice size of optimal antiderivative.

$$\int x\,\mathrm{Sec}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]^3\,dx$$

Optimal (type 5, 87 leaves, 3 steps):

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

Result (type 5, 708 leaves):

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

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

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

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

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

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

$$\int \frac{\text{Sec}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^3}{x^2}\,dx$$

Optimal (type 5, 87 leaves, 3 steps):

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

Result (type 5, 717 leaves):

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

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

$$\int\frac{\text{Sec}[a+b\,\text{Log}[c\,x^n]]^3}{x^3}\,dx$$

Optimal (type 5, 87 leaves, 3 steps):

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

Result (type 5, 705 leaves):

$$\frac{1}{b^2\,n^2\,(-2+i\,b\,n)}e^{i\,(a+(2\,i+b\,n)\,\text{Log}[x]+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,(4+b^2\,n^2)$$
$$\text{Hypergeometric2F1}\left[1,\,\frac{1}{2}+\frac{i}{b\,n},\,\frac{3}{2}+\frac{i}{b\,n},\,-e^{2\,i\,(a+b\,\text{Log}[c\,x^n])}\right]+\frac{\text{Sec}[a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])]}{b^2\,n^2\,x^2}+$$
$$1\Big/\left(4\,b\,n\,x^2\left(\text{Cos}\left[\frac{1}{2}\,b\,n\,\text{Log}[x]+\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]-\right.\right.$$
$$\left.\left.\text{Sin}\left[\frac{1}{2}\,b\,n\,\text{Log}[x]+\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]\right)^2\right)+$$
$$\text{Sin}\left[\frac{1}{2}\,b\,n\,\text{Log}[x]\right]\Big/\left(b^2\,n^2\,x^2\left(\left(\frac{1}{2}-\frac{i}{2}\right)\text{Cos}\left[\frac{1}{2}\,(-a-b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]+\right.\right.$$
$$\left(\frac{1}{2}+\frac{i}{2}\right)\text{Cos}\left[\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]+\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sin}\Big[$$
$$\left.\frac{1}{2}\,(-a-b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\Big]-\left(\frac{1}{2}-\frac{i}{2}\right)\text{Sin}\left[\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]\right)$$
$$\left(\text{Cos}\left[\frac{1}{2}\,b\,n\,\text{Log}[x]+\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]-\right.$$
$$\left.\left.\text{Sin}\left[\frac{1}{2}\,b\,n\,\text{Log}[x]+\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]\right)\right)-$$
$$1\Big/\left(4\,b\,n\,x^2\left(\text{Cos}\left[\frac{1}{2}\,b\,n\,\text{Log}[x]+\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]+\right.\right.$$
$$\left.\left.\text{Sin}\left[\frac{1}{2}\,b\,n\,\text{Log}[x]+\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]\right)^2\right)-$$
$$\text{Sin}\left[\frac{1}{2}\,b\,n\,\text{Log}[x]\right]\Big/\left(b^2\,n^2\,x^2\left(\left(\frac{1}{2}+\frac{i}{2}\right)\text{Cos}\left[\frac{1}{2}\,(-a-b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]+\right.\right.$$
$$\left(\frac{1}{2}-\frac{i}{2}\right)\text{Cos}\left[\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]-\left(\frac{1}{2}-\frac{i}{2}\right)\text{Sin}\Big[$$
$$\left.\frac{1}{2}\,(-a-b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\Big]+\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sin}\left[\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]\right)$$
$$\left(\text{Cos}\left[\frac{1}{2}\,b\,n\,\text{Log}[x]+\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]+\right.$$
$$\left.\left.\text{Sin}\left[\frac{1}{2}\,b\,n\,\text{Log}[x]+\frac{1}{2}\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))\right]\right)\right)$$

Problem 174: Result more than twice size of optimal antiderivative.

$$\int x\,\text{Sec}[a+b\,\text{Log}[c\,x^n]]^4\,dx$$

Optimal (type 5, 79 leaves, 3 steps):

$$\frac{1}{1+2\,i\,b\,n}8\,e^{4\,i\,a}\,x^2\,(c\,x^n)^{4\,i\,b}\,\text{Hypergeometric2F1}\left[4,\,2-\frac{i}{b\,n},\,3-\frac{i}{b\,n},\,-e^{2\,i\,a}\,(c\,x^n)^{2\,i\,b}\right]$$

Result (type 5, 668 leaves) :

$$\frac{1}{3 b^3 n^3}2 \left(1+b^2 n^2\right) x^2 \text{Sec}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])] \text{Sec}[a+b n \text{Log}[x]+b (-n \text{Log}[x]+\text{Log}[c x^n])] \text{Sin}[b n \text{Log}[x]]+\frac{1}{3 b n} x^2 \text{Sec}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])] \text{Sec}[a+b n \text{Log}[x]+b (-n \text{Log}[x]+\text{Log}[c x^n])]^3 \text{Sin}[b n \text{Log}[x]]-\frac{1}{3 b^3 n^3 (-2-2 i b n)} 4 x^2 \text{Sec}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])] \left(i e^{2 i (a+b \text{Log}[c x^n])} \text{Cos}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])] \text{Hypergeometric2F1}\left[1,1-\frac{i}{b n},2-\frac{i}{b n},-e^{2 i (a+b \text{Log}[c x^n])}\right]+(-i+b n) \left(\text{Cos}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])] \text{Hypergeometric2F1}\left[1,-\frac{i}{b n},1-\frac{i}{b n},-e^{2 i (a+b n \text{Log}[x]+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\right]+i \text{Sin}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])]\right)\right)-\frac{1}{3 b n (-2-2 i b n)} 4 x^2 \text{Sec}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])] \left(i e^{2 i (a+b \text{Log}[c x^n])} \text{Cos}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])] \text{Hypergeometric2F1}\left[1,1-\frac{i}{b n},2-\frac{i}{b n},-e^{2 i (a+b \text{Log}[c x^n])}\right]+(-i+b n) \left(\text{Cos}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])] \text{Hypergeometric2F1}\left[1,-\frac{i}{b n},1-\frac{i}{b n},-e^{2 i (a+b n \text{Log}[x]+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\right]+i \text{Sin}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])]\right)\right)+\frac{1}{3 b^2 n^2} x^2 \text{Sec}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])] \text{Sec}[a+b n \text{Log}[x]+b (-n \text{Log}[x]+\text{Log}[c x^n])]^2 (-\text{Cos}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])]+b n \text{Sin}[a+b (-n \text{Log}[x]+\text{Log}[c x^n])])$$

Problem 175: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[a+b \text{Log}[c x^n]]^4 \, dx$$

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

$$\frac{1}{1+4 i b n}16 e^{4 i a} x (c x^n)^{4 i b} \text{Hypergeometric2F1}\left[4,\frac{1}{2} \left(4-\frac{i}{b n}\right),\frac{1}{2} \left(6-\frac{i}{b n}\right),-e^{2 i a} (c x^n)^{2 i b}\right]$$

Result (type 5, 517 leaves) :

$$\frac{1}{6 b^3 n^3}\left(1+4 b^2 n^2\right) x \operatorname{Sec}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]$$
$$\operatorname{Sec}\left[a+b n \operatorname{Log}[x]+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right] \operatorname{Sin}[b n \operatorname{Log}[x]]+\frac{1}{3 b n}$$
$$x \operatorname{Sec}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right] \operatorname{Sec}\left[a+b n \operatorname{Log}[x]+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]^3$$
$$\operatorname{Sin}[b n \operatorname{Log}[x]]-\frac{1}{6 b^3 n^3\left(-i+2 b n\right)} e^{-\frac{a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)}{b n}}\left(1+4 b^2 n^2\right)$$
$$\operatorname{Sec}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]\left(-e^{\left(2 i+\frac{1}{b n}\right)\left(a+b \operatorname{Log}\left[c x^n\right]\right)} \operatorname{Cos}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]\right.$$
$$\operatorname{Hypergeometric2F1}\left[1, 1-\frac{i}{2 b n}, 2-\frac{i}{2 b n}, -e^{2 i\left(a+b \operatorname{Log}\left[c x^n\right]\right)}\right]+e^{\frac{a}{b n}+\frac{-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]}{n}}\left(1+2 i b n\right)$$
$$x\left(\operatorname{Cos}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right] \operatorname{Hypergeometric2F1}\left[1,-\frac{i}{2 b n}, 1-\frac{i}{2 b n},\right.\right.$$
$$\left.\left.\left.-e^{2 i\left(a+b n \operatorname{Log}[x]+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right)}\right]+i \operatorname{Sin}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]\right)\right)+\frac{1}{6 b^2 n^2}$$
$$x \operatorname{Sec}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right] \operatorname{Sec}\left[a+b n \operatorname{Log}[x]+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]^2$$
$$\left(-\operatorname{Cos}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]+2 b n \operatorname{Sin}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]\right)$$

Problem 177: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}\left[a+b \operatorname{Log}\left[c x^n\right]\right]^4}{x^2} \, dx$$

Optimal (type 5, 87 leaves, 3 steps):

$$-\frac{1}{\left(1-4 i b n\right) x} 16 e^{4 i a}\left(c x^n\right)^{4 i b} \operatorname{Hypergeometric2F1}\left[4, \frac{1}{2}\left(4+\frac{i}{b n}\right), \frac{1}{2}\left(6+\frac{i}{b n}\right), -e^{2 i a}\left(c x^n\right)^{2 i b}\right]$$

Result (type 5, 660 leaves):

$$\frac{1}{6\,b^3\,n^3\,x}\left(1+4\,b^2\,n^2\right)\,\text{Sec}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]$$
$$\text{Sec}\left[a+b\,n\,\text{Log}[x]+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\,\text{Sin}[b\,n\,\text{Log}[x]]+$$
$$\frac{1}{3\,b\,n\,x}\text{Sec}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]$$
$$\text{Sec}\left[a+b\,n\,\text{Log}[x]+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]^3\,\text{Sin}[b\,n\,\text{Log}[x]]+\frac{1}{6\,b^3\,n^3\,x}$$
$$\text{Sec}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\,\left(-\frac{1}{i+2\,b\,n}e^{2\,i\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\right.$$
$$\text{Hypergeometric2F1}\left[1,\,1+\frac{i}{2\,b\,n},\,2+\frac{i}{2\,b\,n},\,-e^{2\,i\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}\right]-$$
$$i\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\,\text{Hypergeometric2F1}\left[1,\,\frac{i}{2\,b\,n},\,1+\frac{i}{2\,b\,n},\right.$$
$$\left.\left.-e^{2\,i\,\left(a+b\,n\,\text{Log}[x]+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\right]+\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\right)+\frac{1}{3\,b\,n\,x}$$
$$2\,\text{Sec}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\,\left(-\frac{1}{i+2\,b\,n}e^{2\,i\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\right.$$
$$\text{Hypergeometric2F1}\left[1,\,1+\frac{i}{2\,b\,n},\,2+\frac{i}{2\,b\,n},\,-e^{2\,i\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}\right]-$$
$$i\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\,\text{Hypergeometric2F1}\left[1,\,\frac{i}{2\,b\,n},\,1+\frac{i}{2\,b\,n},\right.$$
$$\left.\left.-e^{2\,i\,\left(a+b\,n\,\text{Log}[x]+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}\right]+\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\right)+\frac{1}{6\,b^2\,n^2\,x}$$
$$\text{Sec}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\,\text{Sec}\left[a+b\,n\,\text{Log}[x]+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]^2$$
$$\left(\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]+2\,b\,n\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right]\right)$$

Problem 178: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^4}{x^3}\,dx$$

Optimal (type 5, 79 leaves, 3 steps):

$$-\frac{1}{\left(1-2\,i\,b\,n\right)\,x^2}8\,e^{4\,i\,a}\,\left(c\,x^n\right)^{4\,i\,b}\,\text{Hypergeometric2F1}\left[4,\,2+\frac{i}{b\,n},\,3+\frac{i}{b\,n},\,-e^{2\,i\,a}\,\left(c\,x^n\right)^{2\,i\,b}\right]$$

Result (type 5, 640 leaves):

$$\frac{1}{3 b^3 n^3 x^2} 2 \left(1+b^2 n^2\right) \text{Sec}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right]$$
$$\text{Sec}\left[a+b n \text{Log}[x]+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right] \text{Sin}[b n \text{Log}[x]]+$$
$$\frac{1}{3 b n x^2} \text{Sec}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right]$$
$$\text{Sec}\left[a+b n \text{Log}[x]+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right]^3 \text{Sin}[b n \text{Log}[x]]+\frac{1}{3 b^3 n^3 x^2}$$
$$2 \text{Sec}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right] \left(-\frac{1}{i+b n} e^{2 i \left(a+b \text{Log}\left[c x^n\right]\right)} \text{Cos}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right]\right.$$
$$\text{Hypergeometric2F1}\left[1, 1+\frac{i}{b n}, 2+\frac{i}{b n}, -e^{2 i \left(a+b \text{Log}\left[c x^n\right]\right)}\right]-$$
$$i \text{Cos}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right] \text{Hypergeometric2F1}\left[1, \frac{i}{b n}, 1+\frac{i}{b n},\right.$$
$$\left.\left.-e^{2 i \left(a+b n \text{Log}[x]+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right)}\right]+\text{Sin}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right]\right)+\frac{1}{3 b n x^2}$$
$$2 \text{Sec}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right] \left(-\frac{1}{i+b n} e^{2 i \left(a+b \text{Log}\left[c x^n\right]\right)} \text{Cos}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right]\right.$$
$$\text{Hypergeometric2F1}\left[1, 1+\frac{i}{b n}, 2+\frac{i}{b n}, -e^{2 i \left(a+b \text{Log}\left[c x^n\right]\right)}\right]-$$
$$i \text{Cos}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right] \text{Hypergeometric2F1}\left[1, \frac{i}{b n}, 1+\frac{i}{b n},\right.$$
$$\left.\left.-e^{2 i \left(a+b n \text{Log}[x]+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right)}\right]+\text{Sin}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right]\right)+\frac{1}{3 b^2 n^2 x^2}$$
$$\text{Sec}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right] \text{Sec}\left[a+b n \text{Log}[x]+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right]^2$$
$$\left(\text{Cos}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right]+b n \text{Sin}\left[a+b \left(-n \text{Log}[x]+\text{Log}\left[c x^n\right]\right)\right]\right)$$

Problem 181: Result more than twice size of optimal antiderivative.

$$\int x \text{Sec}\left[a+2 \text{Log}\left[c x^i\right]\right]^3 \, dx$$

Optimal (type 3, 45 leaves, 3 steps):

$$\frac{e^{i a} \left(c x^i\right)^{2 i} x^2}{\left(1+e^{2 i a} \left(c x^i\right)^{4 i}\right)^2}$$

Result (type 3, 127 leaves):

$$-\frac{1}{4 x^4} \text{Sec}\left[a+2 \text{Log}\left[c x^i\right]\right]^2$$
$$\left(\left(1+2 x^4\right) \text{Cos}\left[a+2 \text{Log}\left[c x^i\right]-2 i \text{Log}[x]\right]+i \left(1-2 x^4\right) \text{Sin}\left[a+2 \text{Log}\left[c x^i\right]-2 i \text{Log}[x]\right]\right)$$
$$\left(\text{Cos}\left[2 \left(a+2 \text{Log}\left[c x^i\right]-2 i \text{Log}[x]\right)\right]+i \text{Sin}\left[2 \left(a+2 \text{Log}\left[c x^i\right]-2 i \text{Log}[x]\right)\right]\right)$$

Problem 182: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}\left[a+2 \text{Log}\left[c x^{\frac{i}{2}}\right]\right]^3 \, dx$$

Optimal (type 3, 58 leaves, 3 steps):

$$\frac{1}{2} x \operatorname{Sec}\left[a+2 \operatorname{Log}\left[c x^{\frac{i}{2}}\right]\right]-\frac{1}{2} i x \operatorname{Sec}\left[a+2 \operatorname{Log}\left[c x^{\frac{i}{2}}\right]\right] \operatorname{Tan}\left[a+2 \operatorname{Log}\left[c x^{\frac{i}{2}}\right]\right]$$

Result (type 3, 137 leaves):

$$-\frac{1}{2 x^2}\operatorname{Sec}\left[a+2 \operatorname{Log}\left[c x^{\frac{i}{2}}\right]\right]^2 \left(\left(1+2 x^2\right) \operatorname{Cos}\left[a+2 \operatorname{Log}\left[c x^{\frac{i}{2}}\right]-i \operatorname{Log}[x]\right]+i \left(1-2 x^2\right) \operatorname{Sin}\left[a+2 \operatorname{Log}\left[c x^{\frac{i}{2}}\right]-i \operatorname{Log}[x]\right]\right) \left(\operatorname{Cos}\left[2 \left(a+2 \operatorname{Log}\left[c x^{\frac{i}{2}}\right]-i \operatorname{Log}[x]\right)\right]+i \operatorname{Sin}\left[2 \left(a+2 \operatorname{Log}\left[c x^{\frac{i}{2}}\right]-i \operatorname{Log}[x]\right)\right]\right)$$

Problem 183: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}\left[a+2 \operatorname{Log}\left[c x^{-\frac{i}{2}}\right]\right]^3 dx$$

Optimal (type 3, 48 leaves, 3 steps):

$$\frac{2 e^{3 i a} \left(c x^{-\frac{i}{2}}\right)^{6 i} x}{\left(1+e^{2 i a} \left(c x^{-\frac{i}{2}}\right)^{4 i}\right)^2}$$

Result (type 3, 139 leaves):

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

Problem 188: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}\left[a+b \operatorname{Log}\left[c x^n\right]\right]^{3/2} dx$$

Optimal (type 5, 109 leaves, 3 steps):

$$\frac{1}{2+3 i b n} 2 x \left(1+e^{2 i a} \left(c x^n\right)^{2 i b}\right)^{3/2} \text{Hypergeometric2F1}\left[\frac{3}{2}, \frac{1}{4} \left(3-\frac{2 i}{b n}\right), \frac{1}{4} \left(7-\frac{2 i}{b n}\right), -e^{2 i a} \left(c x^n\right)^{2 i b}\right] \operatorname{Sec}\left[a+b \operatorname{Log}\left[c x^n\right]\right]^{3/2}$$

Result (type 5, 843 leaves):

$$-\Bigg(\Bigg(\Bigg(4\sqrt{2}\, e^{-2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{1-i b n} \sqrt{\frac{e^{i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{i b n}}{1+e^{2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{2 i b n}}} \Big((2 i+b n)\left(1+e^{2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{2 i b n}\right)+ \left(-2 i-b n+e^{2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}(-2 i+b n)\right)\sqrt{1+e^{2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{2 i b n}}\ \text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2 i+b n}{4 b n},\frac{3}{4}-\frac{i}{2 b n},-e^{2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{2 i b n}\right]\Big)\Bigg)\Big/ \left(b n \left(4+b^2 n^2\right)\left(-2 \text{Cos}[a+b(-n \text{Log}[x]+\text{Log}[c x^n])]+ b n \text{Sin}[a+b(-n \text{Log}[x]+\text{Log}[c x^n])]\right)\right)\Bigg)-$$

$$\Bigg(\sqrt{2}\, b\, e^{-2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, n\, x^{1-i b n}\sqrt{\frac{e^{i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{i b n}}{1+e^{2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{2 i b n}}} \Big((2 i+b n)\left(1+e^{2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{2 i b n}\right)+ \left(-2 i-b n+e^{2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}(-2 i+b n)\right)\sqrt{1+e^{2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{2 i b n}}\ \text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2 i+b n}{4 b n},\frac{3}{4}-\frac{i}{2 b n},-e^{2 i (a+b (-n \text{Log}[x]+\text{Log}[c x^n]))}\, x^{2 i b n}\right]\Big)\Bigg)\Big/ \left(\left(4+b^2 n^2\right)\left(-2 \text{Cos}[a+b(-n \text{Log}[x]+\text{Log}[c x^n])]+b n \text{Sin}[a+b(-n \text{Log}[x]+\text{Log}[c x^n])]\right)\right)+$$

$$\sqrt{\text{Sec}[a+b n \text{Log}[x]+b(-n \text{Log}[x]+\text{Log}[c x^n])]}\ \Big(\left(2 x \text{Cos}[b n \text{Log}[x]]\right)\Big/\left(-2 \text{Cos}[a+b(-n \text{Log}[x]+\text{Log}[c x^n])]+ b n \text{Sin}[a+b(-n \text{Log}[x]+\text{Log}[c x^n])]\right)-\left(4 x \text{Sin}[b n \text{Log}[x]]\right)\Big/ \left(b n\left(-2 \text{Cos}[a+b(-n \text{Log}[x]+\text{Log}[c x^n])]+b n \text{Sin}[a+b(-n \text{Log}[x]+\text{Log}[c x^n])]\right)\right)\Big)$$

Problem 192: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{\text{Sec}[a+b \text{Log}[c x^n]]}}\, dx$$

Optimal (type 5, 110 leaves, 3 steps):

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

Result (type 5, 364 leaves):

$$\left(2 i \sqrt{2}\, b\, e^{-i a} n\, x\, (c\, x^n)^{-i b} \sqrt{\frac{e^{i a} (c\, x^n)^{i b}}{1+e^{2 i a} (c\, x^n)^{2 i b}}} \left((2 i+b n)\left(1+e^{2 i a} (c\, x^n)^{2 i b}\right)+\sqrt{1+e^{2 i a} (c\, x^n)^{2 i b}} \left(-2 i-b n+e^{2 i a}(-2 i+b n)\, x^{-2 i b n} (c\, x^n)^{2 i b}\right) \text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2 i+b n}{4 b n},\frac{3}{4}-\frac{i}{2 b n},-e^{2 i a} (c\, x^n)^{2 i b}\right]\right)\right) \Big/ \left(\left(4+b^2 n^2\right)\left(-2 i-b n+e^{2 i a}(-2 i+b n)\, x^{-2 i b n} (c\, x^n)^{2 i b}\right)\right)-\left(2\, x \cos[a-b n \log[x]+b \log[c\, x^n]]\right) \Big/ \left(\sqrt{\sec[a+b \log[c\, x^n]]}\left(-2 \cos[a-b n \log[x]+b \log[c\, x^n]]+b n \sin[a-b n \log[x]+b \log[c\, x^n]]\right)\right)$$

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

$$\int \frac{1}{\sec[a+b \log[c\, x^n]]^{5/2}}\, dx$$

Optimal (type 5, 110 leaves, 3 steps):

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

Result (type 5, 861 leaves):

$$\Bigg(30\,i\,\sqrt{2}\,b^3\,e^{-i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,n^3\,x^{1-i\,b\,n}$$

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

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

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

$$\left(\left(-2\,i+5\,b\,n\right)\left(2\,i+5\,b\,n\right)\left(4+b^2\,n^2\right)\left(-2\,i-b\,n+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\left(-2\,i+b\,n\right)\right)\right)+$$

$$\sqrt{\text{Sec}\left[a+b\,n\,\text{Log}[x]+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]}$$

$$\Big(-\Big(\Big(x\,\text{Cos}[b\,n\,\text{Log}[x]]\,\Big(12+55\,b^2\,n^2+12\,\text{Cos}\left[2\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]+$$

$$65\,b^2\,n^2\,\text{Cos}\left[2\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]+$$

$$4\,b\,n\,\text{Sin}\left[2\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]\Big)\Big)\Big/\Big(4\,\left(-2\,i+5\,b\,n\right)\left(2\,i+5\,b\,n\right)$$

$$\left(-2\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]+b\,n\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]\right)\Big)\Big)+$$

$$\Big(x\,\text{Sin}[b\,n\,\text{Log}[x]]\,\Big(-16\,b\,n-4\,b\,n\,\text{Cos}\left[2\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]+$$

$$12\,\text{Sin}\left[2\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]+$$

$$65\,b^2\,n^2\,\text{Sin}\left[2\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]\Big)\Big)\Big/\Big(4\,\left(-2\,i+5\,b\,n\right)\left(2\,i+5\,b\,n\right)$$

$$\left(-2\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]+b\,n\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]\right)\Big)+$$

$$\Big(x\,\text{Sin}[3\,b\,n\,\text{Log}[x]]\,\Big(5\,b\,n\,\text{Cos}\left[3\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]-$$

$$2\,\text{Sin}\left[3\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]\Big)\Big)\Big/\left(2\,\left(-2\,i+5\,b\,n\right)\left(2\,i+5\,b\,n\right)\right)+$$

$$\Big(x\,\text{Cos}[3\,b\,n\,\text{Log}[x]]\,\Big(2\,\text{Cos}\left[3\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]+$$

$$5\,b\,n\,\text{Sin}\left[3\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]\Big)\Big)\Big/\left(2\,\left(-2\,i+5\,b\,n\right)\left(2\,i+5\,b\,n\right)\right)\Big)$$

Problem 202: Result more than twice size of optimal antiderivative.

$$\int x^m\,\text{Sec}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^{3/2}\,dx$$

Optimal (type 5, 130 leaves, 3 steps):

$$\frac{1}{2+2\,m+3\,i\,b\,n}2\,x^{1+m}\left(1+e^{2\,i\,a}\left(c\,x^n\right)^{2\,i\,b}\right)^{3/2}$$

$$\text{Hypergeometric2F1}\left[\frac{3}{2},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-7\,b\,n}{4\,b\,n},-e^{2\,i\,a}\left(c\,x^n\right)^{2\,i\,b}\right]$$

$$\text{Sec}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^{3/2}$$

Result (type 5, 470 leaves):

$$\left(\sqrt{2}\, x^{1+m-i b n} \left(-\left(4+8 m+4 m^2+b^2 n^2\right) x^{2 i b n} \sqrt{\frac{e^{i a} \left(c x^n\right)^{i b}}{1+e^{2 i a} \left(c x^n\right)^{2 i b}}} \sqrt{1+e^{2 i a} \left(c x^n\right)^{2 i b}} \right.\right.$$
$$\text{Hypergeometric2F1}\left[\frac{1}{2}, -\frac{2 i+2 i m-3 b n}{4 b n}, -\frac{2 i+2 i m-7 b n}{4 b n}, -e^{2 i a} \left(c x^n\right)^{2 i b}\right] +$$
$$(2+2 m+3 i b n) \left((2+2 m+i b n) \sqrt{\frac{e^{i a} \left(c x^n\right)^{i b}}{1+e^{2 i a} \left(c x^n\right)^{2 i b}}} \sqrt{1+e^{2 i a} \left(c x^n\right)^{2 i b}}\right.$$
$$\text{Hypergeometric2F1}\left[\frac{1}{2}, -\frac{2 i+2 i m+b n}{4 b n}, -\frac{2 i+2 i m-3 b n}{4 b n}, -e^{2 i a} \left(c x^n\right)^{2 i b}\right] -$$
$$\left.\left.\left. i \sqrt{2}\, x^{i b n} \sqrt{\text{Sec}[a+b \text{Log}[c x^n]]} \left(b n \text{Cos}[b n \text{Log}[x]] - 2 (1+m) \text{Sin}[b n \text{Log}[x]]\right)\right)\right)\right) \Big/$$
$$\left(b n (-2 i-2 i m+3 b n) \left(-2 (1+m) \text{Cos}\left[a-b n \text{Log}[x]+b \text{Log}[c x^n]\right] + b n \text{Sin}\left[a-b n \text{Log}[x]+b \text{Log}[c x^n]\right]\right)\right)$$

Problem 204: Result more than twice size of optimal antiderivative.

$$\int \frac{x^m}{\sqrt{\text{Sec}[a+b \text{Log}[c x^n]]}}\, dx$$

Optimal (type 5, 129 leaves, 3 steps):

$$\left(2 x^{1+m} \text{Hypergeometric2F1}\left[-\frac{1}{2}, -\frac{2 i+2 i m+b n}{4 b n}, -\frac{2 i+2 i m-3 b n}{4 b n}, -e^{2 i a} \left(c x^n\right)^{2 i b}\right]\right) \Big/$$
$$\left((2+2 m-i b n) \sqrt{1+e^{2 i a} \left(c x^n\right)^{2 i b}} \sqrt{\text{Sec}[a+b \text{Log}[c x^n]]}\right)$$

Result (type 5, 630 leaves):

$$-\Bigg(\Big(2\,b\,e^{2\,i\,(a+b\,(-n\,Log[x]+Log[c\,x^n]))}\,n\,x^{1+m}\Big(\big(2\,i+2\,i\,m+b\,n\big)\,x^{2\,i\,b\,n}\,Hypergeometric2F1\Big[\frac{1}{2},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-7\,b\,n}{4\,b\,n},-e^{2\,i\,(a+b\,(-n\,Log[x]+Log[c\,x^n]))}\,x^{2\,i\,b\,n}\Big]+\big(-2\,i-2\,i\,m+3\,b\,n\big)\,Hypergeometric2F1\Big[\frac{1}{2},-\frac{2\,i+2\,i\,m+b\,n}{4\,b\,n},-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},-e^{2\,i\,(a+b\,(-n\,Log[x]+Log[c\,x^n]))}\,x^{2\,i\,b\,n}\Big]\Big)\Big)\Big/$$

$$\Bigg(\big(2+2\,m-i\,b\,n\big)\,\big(2+2\,m+3\,i\,b\,n\big)\,\big(2+2\,m-i\,b\,n+e^{2\,i\,(a+b\,(-n\,Log[x]+Log[c\,x^n]))}\,\big(2+2\,m+i\,b\,n\big)\big)\,\sqrt{1+e^{2\,i\,(a+b\,(-n\,Log[x]+Log[c\,x^n]))}\,x^{2\,i\,b\,n}}\,\sqrt{\frac{e^{i\,(a+b\,(-n\,Log[x]+Log[c\,x^n]))}\,x^{i\,b\,n}}{2+2\,e^{2\,i\,(a+b\,(-n\,Log[x]+Log[c\,x^n]))}\,x^{2\,i\,b\,n}}}\Bigg)\Bigg)+$$

$$\sqrt{Sec[a+b\,n\,Log[x]+b\,(-n\,Log[x]+Log[c\,x^n])]}\,\Big(\Big(2\,x^{1+m}\,Cos[b\,n\,Log[x]]\,Cos[a+b\,(-n\,Log[x]+Log[c\,x^n])]^2\Big)\Big/\big(2\,Cos[a+b\,(-n\,Log[x]+Log[c\,x^n])]+2\,m\,Cos[a+b\,(-n\,Log[x]+Log[c\,x^n])]-b\,n\,Sin[a+b\,(-n\,Log[x]+Log[c\,x^n])]\big)-\big(x^{1+m}\,Sin[b\,n\,Log[x]]\,Sin[2\,(a+b\,(-n\,Log[x]+Log[c\,x^n]))]\big)\Big/\big(2\,Cos[a+b\,(-n\,Log[x]+Log[c\,x^n])]+2\,m\,Cos[a+b\,(-n\,Log[x]+Log[c\,x^n])]-b\,n\,Sin[a+b\,(-n\,Log[x]+Log[c\,x^n])]\big)\Big)$$

Problem 212: Result more than twice size of optimal antiderivative.

$$\int\frac{Csc[a+b\,Log[c\,x^n]]}{x}\,dx$$

Optimal (type 3, 20 leaves, 2 steps):

$$-\frac{ArcTanh[Cos[a+b\,Log[c\,x^n]]]}{b\,n}$$

Result (type 3, 54 leaves):

$$-\frac{Log\big[Cos\big[\frac{a}{2}+\frac{1}{2}\,b\,Log[c\,x^n]\big]\big]}{b\,n}+\frac{Log\big[Sin\big[\frac{a}{2}+\frac{1}{2}\,b\,Log[c\,x^n]\big]\big]}{b\,n}$$

Problem 219: Result more than twice size of optimal antiderivative.

$$\int Csc[a+b\,Log[c\,x^n]]^4\,dx$$

Optimal (type 5, 84 leaves, 3 steps):

$$\frac{1}{1+4\,i\,b\,n}16\,e^{4\,i\,a}\,x\,\left(c\,x^n\right)^{4\,i\,b}\,Hypergeometric2F1\Big[4,\frac{1}{2}\left(4-\frac{i}{b\,n}\right),\frac{1}{2}\left(6-\frac{i}{b\,n}\right),e^{2\,i\,a}\,\left(c\,x^n\right)^{2\,i\,b}\Big]$$

Result (type 5, 782 leaves) :

$$\frac{1}{6 b^3 n^3}\left(1+4 b^2 n^2\right) x \operatorname{Csc}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]$$
$$\operatorname{Csc}\left[a+b n \operatorname{Log}[x]+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right] \operatorname{Sin}[b n \operatorname{Log}[x]]+$$
$$\frac{1}{3 b n} x \operatorname{Csc}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]$$
$$\operatorname{Csc}\left[a+b n \operatorname{Log}[x]+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]^3 \operatorname{Sin}[b n \operatorname{Log}[x]]-\frac{1}{6 b^2 n^2}$$
$$x \operatorname{Csc}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right] \operatorname{Csc}\left[a+b n \operatorname{Log}[x]+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]^2$$
$$\left(2 b n \operatorname{Cos}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]+\operatorname{Sin}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]\right)-$$
$$\frac{1}{6 b^3 n^3(-i+2 b n)} e^{-\frac{a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)}{b n}} \operatorname{Csc}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]$$
$$\left(e^{\left(2 i+\frac{1}{b n}\right)\left(a+b \operatorname{Log}\left[c x^n\right]\right)} \text{Hypergeometric2F1}\left[1,1-\frac{i}{2 b n}, 2-\frac{i}{2 b n}, e^{2 i\left(a+b \operatorname{Log}\left[c x^n\right]\right)}\right]\right.$$
$$\operatorname{Sin}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]+e^{\frac{a}{b n}+\frac{-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]}{n}}(-i+2 b n) x$$
$$\left(\operatorname{Cos}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]+i \text{Hypergeometric2F1}\left[1,-\frac{i}{2 b n}, 1-\frac{i}{2 b n},\right.\right.$$
$$\left.\left.\left.e^{2 i\left(a+b n \operatorname{Log}[x]+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right)}\right] \operatorname{Sin}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]\right)\right)-$$
$$\frac{1}{3 b n(-i+2 b n)} 2 e^{-\frac{a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)}{b n}} \operatorname{Csc}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]$$
$$\left(e^{\left(2 i+\frac{1}{b n}\right)\left(a+b \operatorname{Log}\left[c x^n\right]\right)} \text{Hypergeometric2F1}\left[1,1-\frac{i}{2 b n}, 2-\frac{i}{2 b n}, e^{2 i\left(a+b \operatorname{Log}\left[c x^n\right]\right)}\right]\right.$$
$$\operatorname{Sin}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]+e^{\frac{a}{b n}+\frac{-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]}{n}}(-i+2 b n) x$$
$$\left(\operatorname{Cos}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]+i \text{Hypergeometric2F1}\left[1,-\frac{i}{2 b n}, 1-\frac{i}{2 b n},\right.\right.$$
$$\left.\left.\left.e^{2 i\left(a+b n \operatorname{Log}[x]+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right)}\right] \operatorname{Sin}\left[a+b\left(-n \operatorname{Log}[x]+\operatorname{Log}\left[c x^n\right]\right)\right]\right)\right)$$

Problem 223: Result more than twice size of optimal antiderivative.

$$\int x \operatorname{Csc}\left[a+2 \operatorname{Log}\left[c x^i\right]\right]^3 dx$$

Optimal (type 3, 49 leaves, 3 steps) :

$$-\frac{i e^{i a}\left(c x^i\right)^{2 i} x^2}{\left(1-e^{2 i a}\left(c x^i\right)^{4 i}\right)^2}$$

Result (type 3, 127 leaves) :

$$\frac{1}{4 x^4} \operatorname{Csc}\left[a+2 \operatorname{Log}\left[c x^i\right]\right]^2$$
$$\left(i\left(-1+2 x^4\right) \operatorname{Cos}\left[a+2 \operatorname{Log}\left[c x^i\right]-2 i \operatorname{Log}[x]\right]+\left(1+2 x^4\right) \operatorname{Sin}\left[a+2 \operatorname{Log}\left[c x^i\right]-2 i \operatorname{Log}[x]\right]\right)$$
$$\left(\operatorname{Cos}\left[2\left(a+2 \operatorname{Log}\left[c x^i\right]-2 i \operatorname{Log}[x]\right)\right]+i \operatorname{Sin}\left[2\left(a+2 \operatorname{Log}\left[c x^i\right]-2 i \operatorname{Log}[x]\right)\right]\right)$$

Problem 224: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{i}{2}}\right]\right]^3\,dx$$

Optimal (type 3, 58 leaves, 3 steps):

$$\frac{1}{2}\,x\,\mathrm{Csc}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{i}{2}}\right]\right]+\frac{1}{2}\,i\,x\,\mathrm{Cot}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{i}{2}}\right]\right]\,\mathrm{Csc}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{i}{2}}\right]\right]$$

Result (type 3, 137 leaves):

$$\frac{1}{2\,x^2}\mathrm{Csc}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{i}{2}}\right]\right]^2 \left(i\,\left(-1+2\,x^2\right)\,\mathrm{Cos}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{i}{2}}\right]-i\,\mathrm{Log}[x]\right]+\left(1+2\,x^2\right)\,\mathrm{Sin}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{i}{2}}\right]-i\,\mathrm{Log}[x]\right]\right) \left(\mathrm{Cos}\left[2\,\left(a+2\,\mathrm{Log}\left[c\,x^{\frac{i}{2}}\right]-i\,\mathrm{Log}[x]\right)\right]+i\,\mathrm{Sin}\left[2\,\left(a+2\,\mathrm{Log}\left[c\,x^{\frac{i}{2}}\right]-i\,\mathrm{Log}[x]\right)\right]\right)$$

Problem 225: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}\left[a+2\,\mathrm{Log}\left[c\,x^{-\frac{i}{2}}\right]\right]^3\,dx$$

Optimal (type 3, 51 leaves, 3 steps):

$$\frac{2\,i\,e^{3\,i\,a}\,\left(c\,x^{-\frac{i}{2}}\right)^{6\,i}\,x}{\left(1-e^{2\,i\,a}\,\left(c\,x^{-\frac{i}{2}}\right)^{4\,i}\right)^2}$$

Result (type 3, 137 leaves):

$$-\frac{1}{2\,x^2}\mathrm{Csc}\left[a+2\,\mathrm{Log}\left[c\,x^{-\frac{i}{2}}\right]\right]^2 \left(\left(-1+2\,x^2\right)\,\mathrm{Cos}\left[a+2\,\mathrm{Log}\left[c\,x^{-\frac{i}{2}}\right]+i\,\mathrm{Log}[x]\right]+i\,\left(1+2\,x^2\right)\,\mathrm{Sin}\left[a+2\,\mathrm{Log}\left[c\,x^{-\frac{i}{2}}\right]+i\,\mathrm{Log}[x]\right]\right) \left(i\,\mathrm{Cos}\left[2\,\left(a+2\,\mathrm{Log}\left[c\,x^{-\frac{i}{2}}\right]+i\,\mathrm{Log}[x]\right)\right]+\mathrm{Sin}\left[2\,\left(a+2\,\mathrm{Log}\left[c\,x^{-\frac{i}{2}}\right]+i\,\mathrm{Log}[x]\right)\right]\right)$$

Problem 234: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{\mathrm{Csc}[a+b\,\mathrm{Log}[c\,x^n]]}}\,dx$$

Optimal (type 5, 110 leaves, 3 steps):

$$\frac{2\,x\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2},\,-\frac{2\,i+b\,n}{4\,b\,n},\,\frac{1}{4}\,\left(3-\frac{2\,i}{b\,n}\right),\,e^{2\,i\,a}\,\left(c\,x^n\right)^{2\,i\,b}\right]}{\left(2-i\,b\,n\right)\,\sqrt{1-e^{2\,i\,a}\,\left(c\,x^n\right)^{2\,i\,b}}\,\sqrt{\mathrm{Csc}[a+b\,\mathrm{Log}[c\,x^n]]}}$$

Result (type 5, 367 leaves):

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

$$\sqrt{1-e^{2\,\mathrm{i}\,a}\,\left(c\,x^n\right)^{2\,\mathrm{i}\,b}}\,\left(2\,\mathrm{i}+b\,n+e^{2\,\mathrm{i}\,a}\,\left(-2\,\mathrm{i}+b\,n\right)\,x^{-2\,\mathrm{i}\,b\,n}\,\left(c\,x^n\right)^{2\,\mathrm{i}\,b}\right)$$

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

$$\left.\left(\left(4+b^2\,n^2\right)\,\left(-2+\mathrm{i}\,b\,n+e^{2\,\mathrm{i}\,a}\,\left(2+\mathrm{i}\,b\,n\right)\,x^{-2\,\mathrm{i}\,b\,n}\,\left(c\,x^n\right)^{2\,\mathrm{i}\,b}\right)\right)\right)+$$

$$\text{Sin}\left[a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right]\Big/\left(\sqrt{\text{Csc}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]}\right.$$

$$\left.\left.\left(b\,n\,\text{Cos}\left[a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right]+2\,\text{Sin}\left[a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right]\right)\right)\right)$$

Problem 238: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{\text{Csc}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^{5/2}}\,dx$$

Optimal (type 5, 110 leaves, 3 steps):

$$\frac{2\,x\,\text{Hypergeometric2F1}\left[-\frac{5}{2},\,\frac{1}{4}\,\left(-5-\frac{2\,\mathrm{i}}{b\,n}\right),\,-\frac{2\,\mathrm{i}+b\,n}{4\,b\,n},\,e^{2\,\mathrm{i}\,a}\,\left(c\,x^n\right)^{2\,\mathrm{i}\,b}\right]}{\left(2-5\,\mathrm{i}\,b\,n\right)\,\left(1-e^{2\,\mathrm{i}\,a}\,\left(c\,x^n\right)^{2\,\mathrm{i}\,b}\right)^{5/2}\,\text{Csc}\left[a+b\,\text{Log}\left[c\,x^n\right]\right]^{5/2}}$$

Result (type 5, 862 leaves):

$$-\left(\left(30\, i\, \sqrt{2}\, b^3\, e^{-i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\, n^3\, x^{1-i\,b\,n}\right.\right.$$

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

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

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

$$\left.\left((-2+5\,i\,b\,n)\,(-2\,i+5\,b\,n)\,(4+b^2\,n^2)\,\left(2\,i+b\,n+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,(-2\,i+b\,n)\right)\right)\right)+$$

$$\sqrt{\text{Csc}[a+b\,n\,\text{Log}[x]+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])]}$$

$$\Big(-\Big(\Big(x\,\text{Cos}[b\,n\,\text{Log}[x]]\,\Big(-12-55\,b^2\,n^2+12\,\text{Cos}[2\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]+$$

$$65\,b^2\,n^2\,\text{Cos}[2\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]+$$

$$4\,b\,n\,\text{Sin}[2\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]\Big)\Big)\Big/\Big(4\,(-2\,i+5\,b\,n)\,(2\,i+5\,b\,n)$$

$$(b\,n\,\text{Cos}[a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])]+2\,\text{Sin}[a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])])\Big)\Big)+$$

$$\Big(x\,\text{Sin}[b\,n\,\text{Log}[x]]\,\Big(16\,b\,n-4\,b\,n\,\text{Cos}[2\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]+$$

$$12\,\text{Sin}[2\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]+$$

$$65\,b^2\,n^2\,\text{Sin}[2\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]\Big)\Big)\Big/\Big(4\,(-2\,i+5\,b\,n)\,(2\,i+5\,b\,n)$$

$$(b\,n\,\text{Cos}[a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])]+2\,\text{Sin}[a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])])\Big)+$$

$$\Big(x\,\text{Cos}[3\,b\,n\,\text{Log}[x]]\,\Big(5\,b\,n\,\text{Cos}[3\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]-$$

$$2\,\text{Sin}[3\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]\Big)\Big)\Big/\big(2\,(-2\,i+5\,b\,n)\,(2\,i+5\,b\,n)\big)-$$

$$\Big(x\,\text{Sin}[3\,b\,n\,\text{Log}[x]]\,\Big(2\,\text{Cos}[3\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]+$$

$$5\,b\,n\,\text{Sin}[3\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))]\Big)\Big)\Big/\big(2\,(-2\,i+5\,b\,n)\,(2\,i+5\,b\,n)\big)\Big)$$

Problem 240: Result more than twice size of optimal antiderivative.

$$\int (e\,x)^m\,\text{Csc}[d\,(a+b\,\text{Log}[c\,x^n])]^3\,dx$$

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

$$-\left(\left(8\,e^{3\,i\,a\,d}\,(e\,x)^{1+m}\,(c\,x^n)^{3\,i\,b\,d}\,\text{Hypergeometric2F1}\left[3,\,-\frac{i\,(1+m)-3\,b\,d\,n}{2\,b\,d\,n},\right.\right.\right.$$

$$\left.\left.\left.-\frac{i\,(1+m)-5\,b\,d\,n}{2\,b\,d\,n},\,e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]\right)\Big/\left(e\,(i\,(1+m)-3\,b\,d\,n)\right)\right)$$

Result (type 5, 367 leaves):

$$\frac{1}{8 b^2 d^2 n^2} x (e x)^m \left(-b d n \operatorname{Csc}\left[\frac{1}{2} d \left(a+b \operatorname{Log}\left[c x^n\right]\right)\right]^2-4 (1+m) \operatorname{Csc}\left[d \left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right)\right]+b d n \operatorname{Sec}\left[\frac{1}{2} d \left(a+b \operatorname{Log}\left[c x^n\right]\right)\right]^2+2 (1+m) \operatorname{Csc}\left[\frac{1}{2} d \left(a+b \operatorname{Log}\left[c x^n\right]\right)\right] \operatorname{Csc}\left[\frac{1}{2} d \left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right)\right] \operatorname{Sin}\left[\frac{1}{2} b d n \operatorname{Log}[x]\right]-2 (1+m) \operatorname{Sec}\left[\frac{1}{2} d \left(a+b \operatorname{Log}\left[c x^n\right]\right)\right] \operatorname{Sec}\left[\frac{1}{2} d \left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right)\right] \operatorname{Sin}\left[\frac{1}{2} b d n \operatorname{Log}[x]\right]+8 (1+m-i b d n) x^{i b d n} \operatorname{Hypergeometric2F1}\left[1,\frac{-i-i m+b d n}{2 b d n},-\frac{i (1+m+3 i b d n)}{2 b d n},x^{2 i b d n} \left(\operatorname{Cos}\left[2 d \left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right)\right]+i \operatorname{Sin}\left[2 d \left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right)\right]\right)\right] \left(-i \operatorname{Cos}\left[d \left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right)\right]+\operatorname{Sin}\left[d \left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right)\right]\right)\right)$$

Problem 244: Result more than twice size of optimal antiderivative.

$$\int x^m \operatorname{Csc}\left[a+b \operatorname{Log}\left[c x^n\right]\right]^{3/2} \, dx$$

Optimal (type 5, 130 leaves, 3 steps):

$$\frac{1}{2+2 m+3 i b n} 2 x^{1+m} \left(1-e^{2 i a} \left(c x^n\right)^{2 i b}\right)^{3/2} \operatorname{Csc}\left[a+b \operatorname{Log}\left[c x^n\right]\right]^{3/2} \operatorname{Hypergeometric2F1}\left[\frac{3}{2},-\frac{2 i+2 i m-3 b n}{4 b n},-\frac{2 i+2 i m-7 b n}{4 b n},e^{2 i a} \left(c x^n\right)^{2 i b}\right]$$

Result (type 5, 466 leaves):

$$\left(x^{1+m-i b n} \left(\left(4+8 m+4 m^2+b^2 n^2\right) x^{2 i b n} \sqrt{2-2 e^{2 i a} \left(c x^n\right)^{2 i b}} \sqrt{\frac{i e^{i a} \left(c x^n\right)^{i b}}{-1+e^{2 i a} \left(c x^n\right)^{2 i b}}} \operatorname{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2 i+2 i m-3 b n}{4 b n},-\frac{2 i+2 i m-7 b n}{4 b n},e^{2 i a} \left(c x^n\right)^{2 i b}\right]+(-2 i-2 i m+3 b n) \left((-2 i-2 i m+b n) \sqrt{2-2 e^{2 i a} \left(c x^n\right)^{2 i b}} \sqrt{\frac{i e^{i a} \left(c x^n\right)^{i b}}{-1+e^{2 i a} \left(c x^n\right)^{2 i b}}} \operatorname{Hypergeometric2F1}\left[\frac{1}{2},-\frac{2 i+2 i m+b n}{4 b n},-\frac{2 i+2 i m-3 b n}{4 b n},e^{2 i a} \left(c x^n\right)^{2 i b}\right]-2 x^{i b n} \sqrt{\operatorname{Csc}\left[a+b \operatorname{Log}\left[c x^n\right]\right]} \left(b n \operatorname{Cos}[b n \operatorname{Log}[x]]-2 (1+m) \operatorname{Sin}[b n \operatorname{Log}[x]]\right)\right)\right)\right) \Big/ \left(b n (-2 i-2 i m+3 b n) \left(b n \operatorname{Cos}\left[a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right]+2 (1+m) \operatorname{Sin}\left[a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right]\right)\right)$$

Problem 246: Result more than twice size of optimal antiderivative.

$$\int \frac{x^m}{\sqrt{\text{Csc}[a+b\,\text{Log}[c\,x^n]]}}\,dx$$

Optimal (type 5, 129 leaves, 3 steps):

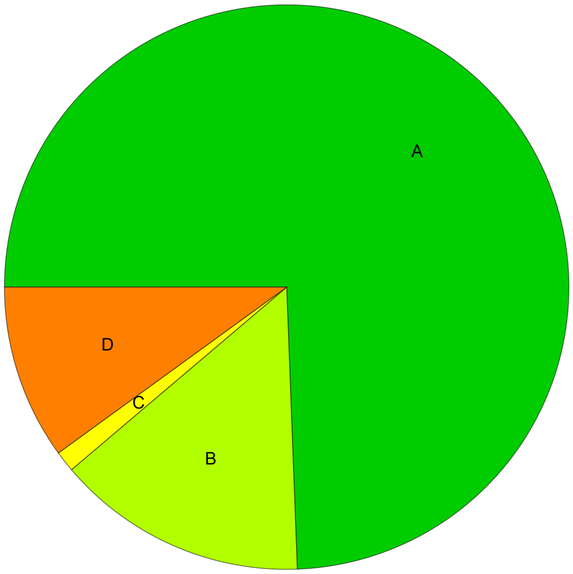
$$\left(2\,x^{1+m}\,\text{Hypergeometric2F1}\left[-\frac{1}{2},\,-\frac{2\,i+2\,i\,m+b\,n}{4\,b\,n},\,-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},\,e^{2\,i\,a}\,\left(c\,x^n\right)^{2\,i\,b}\right]\right)\Big/\left(\left(2+2\,m-i\,b\,n\right)\,\sqrt{1-e^{2\,i\,a}\,\left(c\,x^n\right)^{2\,i\,b}}\,\sqrt{\text{Csc}[a+b\,\text{Log}[c\,x^n]]}\right)$$

Result (type 5, 637 leaves):

$$\left(2\,\sqrt{2}\,b\,e^{i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,n\,x^{1+m-i\,b\,n}\,\sqrt{1-e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}}\,\sqrt{\frac{i\,e^{i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{i\,b\,n}}{-1+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}}}\right.$$
$$\left(\left(2+2\,m-i\,b\,n\right)\,x^{2\,i\,b\,n}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},\,-\frac{2\,i+2\,i\,m-7\,b\,n}{4\,b\,n},\right.\right.$$
$$\left.e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right]-\left(2+2\,m+3\,i\,b\,n\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\right.$$
$$\left.\left.\left.-\frac{2\,i+2\,i\,m+b\,n}{4\,b\,n},\,-\frac{2\,i+2\,i\,m-3\,b\,n}{4\,b\,n},\,e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,x^{2\,i\,b\,n}\right]\right)\right)\Big/$$
$$\left(\left(2+2\,m-i\,b\,n\right)\,\left(2+2\,m+3\,i\,b\,n\right)\,\left(-2-2\,m+i\,b\,n+e^{2\,i\,(a+b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n]))}\,\left(2+2\,m+i\,b\,n\right)\right)\right)+$$
$$\sqrt{\text{Csc}\left[a+b\,n\,\text{Log}[x]+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]}$$
$$\left(\left(2\,x^{1+m}\,\text{Cos}[b\,n\,\text{Log}[x]]\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]^2\right)\Big/\right.$$
$$\left(b\,n\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]+\right.$$
$$\left.2\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]+2\,m\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]\right)+$$
$$\left(x^{1+m}\,\text{Sin}[b\,n\,\text{Log}[x]]\,\text{Sin}\left[2\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\right]\right)\Big/$$
$$\left(b\,n\,\text{Cos}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]+\right.$$
$$\left.\left.2\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]+2\,m\,\text{Sin}\left[a+b\,\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right]\right)\right)$$

Summary of Integration Test Results

250 integration problems



A - 186 optimal antiderivatives

B - 36 more than twice size of optimal antiderivatives

C - 3 unnecessarily complex antiderivatives

D - 25 unable to integrate problems

E - 0 integration timeouts