

# Mathematica 11.3 Integration Test Results

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Test results for the 8 problems in "Wester Problems.m"

Problem 4: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{3 + 3 \cos [x] + 4 \sin [x]} dx$$

Optimal (type 3, 15 leaves, 2 steps):

$$\frac{1}{4} \operatorname{Log} \left[ 3 + 4 \operatorname{Tan} \left[ \frac{x}{2} \right] \right]$$

Result (type 3, 34 leaves):

$$-\frac{1}{4} \operatorname{Log} \left[ \cos \left[ \frac{x}{2} \right] \right] + \frac{1}{4} \operatorname{Log} \left[ 3 \cos \left[ \frac{x}{2} \right] + 4 \sin \left[ \frac{x}{2} \right] \right]$$

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

$$\int \frac{1}{5 + 3 \cos [x] + 4 \sin [x]} dx$$

Optimal (type 3, 12 leaves, 1 step):

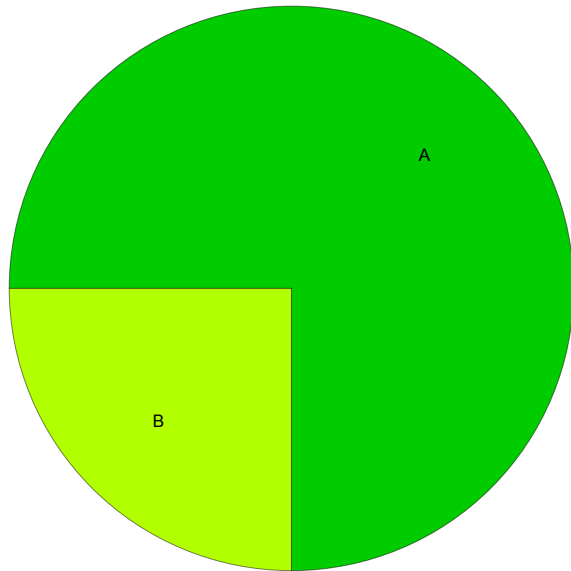
$$-\frac{1}{2 + \operatorname{Tan} \left[ \frac{x}{2} \right]}$$

Result (type 3, 26 leaves):

$$\frac{\sin \left[ \frac{x}{2} \right]}{4 \cos \left[ \frac{x}{2} \right] + 2 \sin \left[ \frac{x}{2} \right]}$$

## Summary of Integration Test Results

8 integration problems



A - 6 optimal antiderivatives

B - 2 more than twice size of optimal antiderivatives

C - 0 unnecessarily complex antiderivatives

D - 0 unable to integrate problems

E - 0 integration timeouts