Mathematica 11.3 Integration Test Results

Test results for the 193 problems in "3.1.2 (d x)^m (a+b log(c x^n))^p.m"

Problem 54: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 22 leaves, 2 steps):

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

Result (type 3, 46 leaves):

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

Problem 61: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a + b \, \text{Log}\left[c \, x^n\right]\right)^3}{x} \, dx$$
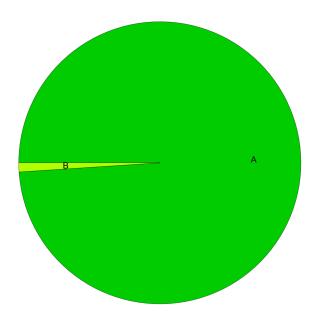
Optimal (type 3, 22 leaves, 2 steps):

$$\frac{\left(a + b \, \text{Log}\left[c \, x^n\right]\right)^4}{4 \, b \, n}$$

Result (type 3, 67 leaves):

$$\frac{a^3 \, \text{Log}\left[c \, x^n\right]}{n} + \frac{3 \, a^2 \, b \, \text{Log}\left[c \, x^n\right]^2}{2 \, n} + \frac{a \, b^2 \, \text{Log}\left[c \, x^n\right]^3}{n} + \frac{b^3 \, \text{Log}\left[c \, x^n\right]^4}{4 \, n}$$

Summary of Integration Test Results

193 integration problems

A - 191 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