

7.6 Computer Algebra System, CAS: HW

Use a CAS to Evaluate:

$$\int \ln x \, dx$$

$$\int x \ln x \, dx$$

$$\int x^2 \ln x \, dx$$

$$\int x^3 \ln x \, dx$$

$$\int x^7 \ln x \, dx$$

$$\int x^n \ln x \, dx$$

For this problem, use a Computer Algebra System

One option is geogebra,

for computer

[geogebra webstart](#)

or device

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$$\int \ln x \, dx$$

$$f(x) = \ln x$$

$$g(x) = \text{integral}(f)$$

☒ $f(x) = \ln(x)$

☐ $c_1 = 0$

$g(x) = \text{Integral}[f]$

$\rightarrow g(x) = x \ln(x) - x$

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$$\int x \ln x \, dx$$

$$f(x) = x \ln x$$

$$g(x) = \text{integral}(f)$$

☒ $f(x) = x \ln(x)$

☐ $c_1 = 0$

$$-5 \quad \text{slider} \quad 5$$

☐ $g(x) = \text{Integral}[f]$

☒ $\rightarrow g(x) = \frac{1}{2} x^2 \ln(x) - \frac{1}{4} x^2$

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$$\int x \ln x \, dx$$

$$f(x) = x^2 \ln x$$

$$g(x) = \text{integral}(f)$$

☒ $f(x) = x^2 \ln(x)$

☐ $c_1 = 0$

$$-5 \quad \text{slider} \quad 5$$

☐ $g(x) = \text{Integral}[f]$

☒ $\rightarrow g(x) = \frac{1}{3} x^3 \ln(x) - \frac{1}{9} x^3$

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$$\int x \ln x \, dx$$

$$f(x) = x^3 \ln x$$

$$g(x) = \text{integral}(f)$$

☒	$f(x) = x^3 \ln(x)$
☐	$c_1 = 0$
	-5 
☐	$g(x) = \text{Integral}[f]$
☒	$\rightarrow g(x) = \frac{1}{4} x^4 \ln(x) - \frac{1}{16} x^4$

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$$\int x^n \ln x \, dx$$

$$\int x \ln x \, dx$$

$$f(x) = x^7 \ln x$$

$$g(x) = \text{integral}(f)$$

☒	$f(x) = x^7 \ln(x)$
☐	$c_1 = 0$
	-5 
☐	$g(x) = \text{Integral}[f]$
☒	$\rightarrow g(x) = \frac{1}{8} x^8 \ln(x) - \frac{1}{64} x^8$

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$$\int x^n \ln x \, dx$$

☐ $f(x) = \ln(x) \rightarrow g(x) = x \ln(x) - x$

☐ $f(x) = x \ln(x) \rightarrow g(x) = \frac{1}{2} x^2 \ln(x) - \frac{1}{4} x^2$

☒ $f(x) = x^2 \ln(x) \rightarrow g(x) = \frac{1}{3} x^3 \ln(x) - \frac{1}{9} x^3$

☐ $f(x) = x^3 \ln(x) \rightarrow g(x) = \frac{1}{4} x^4 \ln(x) - \frac{1}{16} x^4$

☐ $f(x) = x^7 \ln(x) \rightarrow g(x) = \frac{1}{8} x^8 \ln(x) - \frac{1}{64} x^8$

$$\int x^n \ln x \, dx \quad ?? \quad = \frac{1}{n+1} x^{n+1} \ln x - \frac{1}{(n+1)^2} x^{n+1} + c$$

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