

Derivatives of Logarithmic Functions

Solutions should show all of your work, not just a single final answer.

1. Compute dy/dx . Write your final answers in terms of x .

(a) $y = \ln(2 + \sin x)$

(b) $y = 5^x$

(c) $y = x^{\cos x}$

(d) $y = x^{2x}$

(e) $y = (x + 1)^x$

(f) $y = \frac{\ln^2(x)}{e^x - 1}$

2. T/F (with justification) If $f(x) = \ln 10$ for all x , then $f'(x) = \frac{1}{10}$.

3. T/F (with justification) If $f(x) = 10^x$ for all x , then $f'(x) = x10^{x-1}$.