Derivative of the Natural Logarithmic Function

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the derivative of y with respect to x, t, or θ, as appropriate.

1) $y = \ln 6x$ 1) _____

A) $\frac{1}{6x}$ B) $-\frac{1}{6x}$ C) $-\frac{1}{x}$ D) $\frac{1}{x}$

2) $y = \ln(x - 2)$ 2) _____

A) $\frac{1}{x + 2}$ B) $-\frac{1}{x + 2}$ C) $\frac{1}{2 - x}$ D) $\frac{1}{x - 2}$

3) $y = \ln 8x^2$ 3) _____

A) $\frac{2x}{x^2 + 8}$ B) $\frac{2}{x}$ C) $\frac{16}{x}$ D) $\frac{1}{2x + 8}$

4) $y = \frac{\ln x}{x^5}$ 4) _____

A) $\frac{1 + 5\ln x}{x^{10}}$ B) $\frac{1 - 5\ln x}{x^6}$ C) $\frac{1 - 5\ln x}{x^{10}}$ D) $\frac{5\ln x - 1}{x^6}$

5) $y = x^6 \ln x - \frac{1}{3}x^3$ 5) _____

A) $x^5 - x^2 + 6x^5 \ln x$ B) $x^6 \ln x - x^2 + 6x^5$

C) $6x^5 - x^2$ D) $7x^5 - x^2$

6) $y = \ln(\ln 2x)$ 6) _____

A) $\frac{1}{2x}$ B) $\frac{1}{\ln 2x}$ C) $\frac{1}{x}$ D) $\frac{1}{x \ln 2x}$

Find the derivative of y with respect to x, t, or θ, as appropriate.

7) $y = \ln(4\theta e^{-\theta})$ 7) _____

A) $\frac{1}{\theta} - 1$ B) $\ln(4e^{-\theta}(1-\theta))$ C) $\frac{1}{4\theta e^{\theta}}$ D) $e^{\theta}\left(\frac{1}{\theta} + 1\right)$

8) $y = \ln\left(\frac{e^{\theta}}{10 + e^{\theta}}\right)$ 8) _____

A) $\frac{10 + e^{\theta}}{e^{\theta}}$ B) $\frac{10}{10 + e^{\theta}}$ C) $\ln\left(\frac{10}{10 + e^{\theta}}\right)$ D) $\frac{10 + 2e^{\theta}}{10 + e^{\theta}}$

Answer Key
Testname: DERIVATIVE OF THE NATURAL LOGARITHMIC FUNCTION

1) D
2) D
3) B
4) B
5) A
6) D
7) A
8) B