

Derivatives of Exponential and Logarithmic Functions

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

Find the derivative of y with respect to the independent variable.

1) $y = 10^x$ 1) _____
A) 10^x B) $10^x \ln 10$ C) $10^x \ln x$ D) $x \ln 10$

2) $y = 4^x$ 2) _____
A) $4^x \ln x$ B) $4^x \ln 4$ C) 4^x D) $x \ln 4$

Find the derivative of the function.

3) $y = \log(8x)$ 3) _____
A) $\frac{1}{x}$ B) $\frac{1}{\ln 10}$ C) $\frac{1}{x(\ln 8)}$ D) $\frac{1}{x(\ln 10)}$

4) $y = \log(2x)$ 4) _____
A) $\frac{1}{x}$ B) $\frac{1}{x(\ln 10)}$ C) $\frac{1}{\ln 10}$ D) $\frac{1}{x(\ln 2)}$

5) $y = \log(2x - 7)$ 5) _____
A) $\frac{2x - 7}{2 \ln 10}$ B) $\frac{2}{\ln 10 (2x - 7)}$ C) $\frac{2}{\ln 10}$ D) $\frac{1}{\ln 10 (2x - 7)}$

Find the derivative of y with respect to the independent variable.

6) $y = 10^{\ln 5t}$ 6) _____
A) $\frac{5 \ln 10}{t} 10^{\ln 5t}$ B) $\frac{5 \ln 10}{t}$ C) $10^{\ln 5t}$ D) $\frac{\ln 10}{t} 10^{\ln 5t}$

Find the derivative of the function.

7) $y = 3 \ln \sin^2 8x$ 7) _____
A) $\frac{6}{\ln \sin 8x}$ B) $\frac{48}{\sin 8x}$ C) $16 \tan 8x$ D) $48 \cot 8x$

8) $y = \log_5(9x)$ 8) _____
A) $\frac{9}{x \ln 5}$ B) $\frac{1}{x \ln 5}$ C) $\frac{\ln 5}{x}$ D) $\frac{1}{x}$

9) $f(x) = \log_6(x^5 + 1)$ 9) _____
A) $\frac{1}{(\ln 6)(x^5 + 1)} + 5x^4$ B) $\frac{5x^4}{(x^5 + 1)}$
C) $\frac{5x^4}{(\ln 6)(x^5 + 1)}$ D) $\frac{5(\ln 6)x^4}{(x^5 + 1)}$

Answer Key

Testname: DERIVATIVE OF EXPONENTIAL AND LOGARITHMIC FUNCTIONS

- 1) B
- 2) B
- 3) D
- 4) B
- 5) B
- 6) D
- 7) D
- 8) B
- 9) C