

Introduction to Logarithmic Derivatives May 11 to 15.

Differentiate each function with respect to x .

1) $y = \ln 4x^3$

2) $y = \ln 4x^5$

3) $y = \ln 2x^5$

4) $y = \ln 5x^2$

5) $y = \ln 4x^2$

6) $y = \ln 3x^2$

7) $y = \ln 5x^4$

8) $y = \ln 3x^5$

$$9) y = \ln x^3$$

$$10) y = \ln 2x^3$$

$$11) y = \ln \ln 5x^4$$

$$12) y = \ln \ln x^3$$

$$13) y = \ln \ln 4x^5$$

$$14) y = \ln \ln 3x^3$$

$$15) y = \ln \ln x^4$$

Answers to Introduction to Logarithmic Derivatives May 11 to 15. (ID: 1)

$$1) \frac{dy}{dx} = \frac{1}{4x^3} \cdot 12x^2$$

$$= \frac{3}{x}$$

$$2) \frac{dy}{dx} = \frac{1}{4x^5} \cdot 20x^4$$

$$= \frac{5}{x}$$

$$3) \frac{dy}{dx} = \frac{1}{2x^5} \cdot 10x^4$$

$$= \frac{5}{x}$$

$$4) \frac{dy}{dx} = \frac{1}{5x^2} \cdot 10x$$

$$= \frac{2}{x}$$

$$5) \frac{dy}{dx} = \frac{1}{4x^2} \cdot 8x$$

$$= \frac{2}{x}$$

$$6) \frac{dy}{dx} = \frac{1}{3x^2} \cdot 6x$$

$$= \frac{2}{x}$$

$$7) \frac{dy}{dx} = \frac{1}{5x^4} \cdot 20x^3$$

$$= \frac{4}{x}$$

$$8) \frac{dy}{dx} = \frac{1}{3x^5} \cdot 15x^4$$

$$= \frac{5}{x}$$

$$9) \frac{dy}{dx} = \frac{1}{x^3} \cdot 3x^2$$

$$= \frac{3}{x}$$

$$10) \frac{dy}{dx} = \frac{1}{2x^3} \cdot 6x^2$$

$$= \frac{3}{x}$$

$$11) \frac{dy}{dx} = \frac{1}{\ln 5x^4} \cdot \frac{1}{5x^4} \cdot 20x^3$$

$$= \frac{4}{x \ln 5x^4}$$

$$12) \frac{dy}{dx} = \frac{1}{\ln x^3} \cdot \frac{1}{x^3} \cdot 3x^2$$

$$= \frac{3}{x \ln x^3}$$

$$13) \frac{dy}{dx} = \frac{1}{\ln 4x^5} \cdot \frac{1}{4x^5} \cdot 20x^4$$

$$= \frac{5}{x \ln 4x^5}$$

$$14) \frac{dy}{dx} = \frac{1}{\ln 3x^3} \cdot \frac{1}{3x^3} \cdot 9x^2$$

$$= \frac{3}{x \ln 3x^3}$$

$$15) \frac{dy}{dx} = \frac{1}{\ln x^4} \cdot \frac{1}{x^4} \cdot 4x^3$$

$$= \frac{4}{x \ln x^4}$$