

Derivatives Quiz

You have 20 min. for this quiz. For each problem simply take the derivative and move on do not simplify your answers.

1. $y = x^7 + 7x^3 - 17x$

$$y' = 7x^6 + 21x^2 - 17$$

2. $z = r^{-5} + \sqrt[3]{r} + \frac{1}{r^7}$

$$z' = -5r^{-6} + \frac{1}{3}r^{-2/3} - 7r^{-8}$$

3. $s = \frac{\cos(\theta)}{\theta^2+1}$

$$s' = \frac{(\theta^2+1) \cdot (-\sin(\theta)) - \cos(\theta) \cdot 2\theta}{(\theta^2+1)^2}$$

4. $f(x) = \sin(x) e^x$

$$f'(x) = \cos(x) e^x + \sin(x) e^x$$

5. $y = (x^3 - 4x + 15)^9$

$$y' = 9(x^3 - 4x + 15)^8 (3x^2 - 4)$$

6. $y = \tan(x^3 + 1)$

$$y' = \sec^2(x^3 + 1) 3x^2$$

7. $y = \ln(3x + 1)$

$$y' = \frac{1}{3x+1} 3$$

8. $s = (t - \sin(t^2 + 1))^4$

$$s' = 4(t - \sin(t^2 + 1))^3 (1 - \cos(t^2 + 1) 2t)$$

9. Find $\frac{dy}{dx}$ given:

$$x^3 + y^3 - 9xy = 0$$

$$3x^2 + 3y^2 \frac{dy}{dx} - 9y - 9x \frac{dy}{dx} = 0$$

$$\frac{dy}{dx} = \frac{3y - x^2}{y^2 - 3x}$$

10. $\theta = \arctan(x)$

$$\theta' = \frac{1}{\sec^2(\arctan(x))} = \frac{1}{x^2+1}$$