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Course: Calc 1 11:30 AM / Internet
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Assignment: 3.5 Derivatives of
Trigonometric Functions

1. Find $\frac{dy}{dx}$ for $y = -8x + 5 \cos x$.

$$\frac{d}{dx}(-8x + 5 \cos x) = -8 - 5 \sin x$$

2. Find $\frac{dy}{dx}$ for $y = \frac{6}{x} + 5 \sin x$.

$$\frac{d}{dx}\left(\frac{6}{x} + 5 \sin x\right) = -\frac{6}{x^2} + 5 \cos x$$

3. Find $\frac{dy}{dx}$ for the following function.

$$y = x^4 \cos x$$

Choose the correct answer below.

A. $\frac{dy}{dx} = 4x^3 \sin x - x^4 \cos x$

B. $\frac{dy}{dx} = x^4 \sin x + 4x^3 \cos x$

C. $\frac{dy}{dx} = 4x^3 \cos x - x^4 \sin x$

D. $\frac{dy}{dx} = 4x^3 \sin x + x^4 \cos x$

4. Find $\frac{dy}{dx}$.

$$y = \sec x - 8\sqrt{x} + 2$$

$$\frac{dy}{dx} = \sec x \tan x - \frac{4}{\sqrt{x}}$$

5. Find $\frac{dy}{dx}$ for the following function.

$$y = 4 \sin x \tan x$$

Choose the correct answer below.

A. $\frac{dy}{dx} = 4 \sin x \sec^2 x + 4 \sin x$

B. $\frac{dy}{dx} = 4 \sin x \sec^2 x - \sin x$

$$\frac{dy}{dx} = 5 \sin x \sec^2 x + 5 \sin x$$

6. Find $\frac{dy}{dx}$ for $y = \frac{\cos x}{1 + \cos x}$.

$$\frac{dy}{dx} = \frac{-\sin x}{(1 + \cos x)^2}$$

7. Find $\frac{dy}{dx}$ for the following function.

$$y = \frac{3 \cos x}{1 + \sin x}$$

$$\frac{dy}{dx} = \frac{-3}{1 + \sin x}$$

8. Find $\frac{dy}{dx}$.

$$y = 2(\tan x + \sec x)(\tan x - \sec x)$$

$$\frac{dy}{dx} = 0$$

9. Find $\frac{dy}{dx}$ for $y = 2x^2 \sin x + 4x \cos x - 4 \sin x$.

$$\frac{dy}{dx} = 2x^2 \cos x$$

10. Find $\frac{dy}{dx}$ for the following function.

$$y = x^7 \sin x \cos x$$

Choose the correct answer below.

$$\frac{dy}{dx} = 7x^6 \sin x \cos x + \cos^2 x - \sin^2 x$$

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11. Find $\frac{ds}{dt}$ for $s = -t - \cot t$.

$$\frac{ds}{dt} = \cot^2 t$$

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12. Find $\frac{dy}{dx}$ for the following function.

$$y = \frac{3 \cos x}{1 - \sin x}$$

$$\frac{dy}{dx} = \frac{3}{1 - \sin x}$$

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13. Find $\frac{dr}{d\theta}$.

$$r = 5 - \theta^4 \sin \theta$$

$$\frac{dr}{d\theta} = -\theta^4 \cos \theta - 4\theta^3 \sin \theta$$

14. Find $\frac{dr}{d\theta}$ for the following function.

$$r = 4 \sec \theta \csc \theta$$

Choose the correct answer below.

A. $\frac{dr}{d\theta} = 5 \sec^2 \theta - 5 \csc^2 \theta$

B. $\frac{dr}{d\theta} = 4 \sec^2 \theta - 4 \csc^2 \theta$

C. $\frac{dr}{d\theta} = 4 \sec^2 \theta + 4 \csc^2 \theta$

15. Find $\frac{dp}{dq}$ for $p = \frac{\sin q + \cos q}{\cos q}$.

$$\frac{dp}{dq} = \boxed{\sec^2 q}$$

16. Find y'' if $y = 5 \sec x$.

$$y'' = \boxed{10 \sec^3 x - 5 \sec x}$$