

Find the derivative.

1)  $y = \frac{6}{x} + 8 \sec x$  1) \_\_\_\_\_

A)  $y' = -\frac{6}{x^2} + 8 \sec x \tan x$

B)  $y' = -\frac{6}{x^2} - 8 \csc x$

C)  $y' = -\frac{6}{x^2} + 8 \tan^2 x$

D)  $y' = \frac{6}{x^2} - 8 \sec x \tan x$

2)  $s = t^6 \tan t - \sqrt{t}$  2) \_\_\_\_\_

A)  $\frac{ds}{dt} = 6t^5 \sec^2 t - \frac{1}{2\sqrt{t}}$

B)  $\frac{ds}{dt} = t^6 \sec t \tan t + 6t^5 \tan t - \frac{1}{2\sqrt{t}}$

C)  $\frac{ds}{dt} = t^6 \sec^2 t + 6t^5 \tan t - \frac{1}{2\sqrt{t}}$

D)  $\frac{ds}{dt} = -t^6 \sec^2 t + 6t^5 \tan t + \frac{1}{2\sqrt{t}}$

3)  $r = 7 - \theta^5 \cos \theta$  3) \_\_\_\_\_

A)  $\frac{dr}{d\theta} = 5\theta^4 \cos \theta - \theta^5 \sin \theta$

B)  $\frac{dr}{d\theta} = -5\theta^4 \cos \theta + \theta^5 \sin \theta$

C)  $\frac{dr}{d\theta} = 5\theta^4 \sin \theta$

D)  $\frac{dr}{d\theta} = 5\theta^4 \sin \theta - \theta^5 \cos \theta$

4)  $y = (\csc x + \cot x)(\csc x - \cot x)$  4) \_\_\_\_\_

A)  $y' = -\csc x \cot x$

B)  $y' = 1$

C)  $y' = -\csc^2 x$

D)  $y' = 0$

5)  $s = t^6 - \csc t + 17$  5) \_\_\_\_\_

A)  $\frac{ds}{dt} = 6t^5 - \csc t \cot t$

B)  $\frac{ds}{dt} = t^5 - \cot^2 t + 17$

C)  $\frac{ds}{dt} = 6t^5 + \csc t \cot t$

D)  $\frac{ds}{dt} = 6t^5 + \cot^2 t$

6)  $y = \frac{\sin x}{8x} + \frac{8x}{\sin x}$  6) \_\_\_\_\_

A)  $\frac{dy}{dx} = \frac{x \cos x + \sin x}{8x^2} + \frac{8 \sin x + 8x \cos x}{\sin^2 x}$

B)  $\frac{dy}{dx} = \frac{x \cos x - \sin x}{8x^2} + \frac{8 \sin x - 8x \cos x}{\sin^2 x}$

C)  $\frac{dy}{dx} = \frac{\cos x}{8} + \frac{8}{\cos x}$

D)  $\frac{dy}{dx} = \frac{\sin x - x \cos x}{64x^2} + \frac{8x \cos x - 8 \sin x}{\sin^2 x}$

Find the indicated derivative.

7) Find  $y^{(4)}$  if  $y = 8 \sin x$ . 7) \_\_\_\_\_

A)  $y^{(4)} = 8 \sin x$

B)  $y^{(4)} = -8 \cos x$

C)  $y^{(4)} = -8 \sin x$

D)  $y^{(4)} = 8 \cos x$

- 8) Find  $y''$  if  $y = -6 \cos x$ .  
 A)  $y'' = -6 \sin x$       B)  $y'' = 6 \sin x$       C)  $y'' = 6 \cos x$       D)  $y'' = -6 \cos x$       8) \_\_\_\_\_

Find the limit.

- 9)  $\lim_{x \rightarrow 8} \cos\left(\frac{1}{x} - \frac{1}{8}\right)$       9) \_\_\_\_\_  
 A) 0      B)  $\frac{1}{2}$       C) -1      D) 1

- 10)  $\lim_{x \rightarrow \pi/3} \sqrt{5^2 + \sin(\pi \sec x)}$       10) \_\_\_\_\_  
 A)  $\sqrt{5^2 + 1}$       B) 1      C) 0      D) 5

Solve the problem.

- 11) Find the tangent to  $y = \cos x$  at  $x = \frac{\pi}{2}$ .      11) \_\_\_\_\_  
 A)  $y = -x - \frac{\pi}{2}$       B)  $y = 1$       C)  $y = x + \frac{\pi}{2}$       D)  $y = -x + \frac{\pi}{2}$

- 12) Find the tangent to  $y = 2 - \sin x$  at  $x = \pi$ .      12) \_\_\_\_\_  
 A)  $y = x - 2$       B)  $y = x - \pi + 2$       C)  $y = -x + \pi - 2$       D)  $y = -x + 2$

The equation gives the position  $s = f(t)$  of a body moving on a coordinate line ( $s$  in meters,  $t$  in seconds).

- 13)  $s = -4 + 3 \cos t$       13) \_\_\_\_\_  
 Find the body's velocity at time  $t = \pi/3$  sec.  
 A)  $-\frac{3}{2}$  m/sec      B)  $\frac{3}{2}$  m/sec      C)  $-\frac{3\sqrt{3}}{2}$  m/sec      D)  $\frac{3\sqrt{3}}{2}$  m/sec

- 14)  $s = 10 \sin t - \cos t$       14) \_\_\_\_\_  
 Find the body's velocity at time  $t = \pi/4$  sec.  
 A)  $-\frac{9\sqrt{2}}{2}$  m/sec      B)  $-\frac{11\sqrt{2}}{2}$  m/sec      C)  $\frac{11\sqrt{2}}{2}$  m/sec      D)  $\frac{9\sqrt{2}}{2}$  m/sec

Provide an appropriate response.

- 15) Find  $d^{998}/dx^{998} (\cos x)$ .      15) \_\_\_\_\_  
 16) Find  $d^{998}/dx^{998} (\sin x)$ .      16) \_\_\_\_\_  
 17) Find  $d^{997}/dx^{997} (\sin x)$ .      17) \_\_\_\_\_

## Answer Key

Testname: PRACTICE07

- 1) A
- 2) C
- 3) B
- 4) D
- 5) C
- 6) B
- 7) A
- 8) C
- 9) D
- 10) D
- 11) D
- 12) B
- 13) C
- 14) C
- 15)  $-\cos x$
- 16)  $-\sin x$
- 17)  $\cos x$