

Find an equation for the tangent to the curve at the given point.

1)  $y = x - x^2$ ,  $(2, -2)$

A)  $y = 3x + 4$

B)  $y = -3x + 4$

C)  $y = 5x - 4$

D)  $y = 5x + 4$

1) \_\_\_\_\_

Find the slope of the curve at the indicated point.

2)  $y = x^2 + 5x - 2$ ,  $x = -1$

A)  $m = -4$

B)  $m = 1$

C)  $m = -2$

D)  $m = 3$

2) \_\_\_\_\_

Solve the problem.

3) Find equations of all tangents to the curve  $f(x) = \frac{16}{x}$  that have slope  $-1$ .

A)  $y = -x + 8$

B)  $y = x - 8$

C)  $y = -x + 8$ ,  $y = -x - 8$

D)  $y = x + 8$ ,  $y = x - 8$

3) \_\_\_\_\_

4) Suppose an object moves along the  $y$ -axis so that its location is  $y = f(x) = x^2 + x$  at time  $x$  ( $y$  is in meters and  $x$  is in seconds). Find the instantaneous velocity at  $x = 4$  seconds.

A) 8 m/s

B) 10 m/s

C) 9 m/s

D) 20 m/s

4) \_\_\_\_\_

5) The electric power  $p$  (in W) as a function of the current  $i$  (in A) in a certain circuit is given by

$p(i) = 25i^2 + 70i$ . Find the instantaneous rate of change of  $p$  with respect to  $i$  for  $i = 0.7$  A.

A) 105 W/A

B) 61.25 W/A

C) 84 W/A

D) 87.5 W/A

5) \_\_\_\_\_

Calculate the derivative of the function. Then find the value of the derivative as specified.

6)  $f(x) = \frac{8}{x+2}$ ;  $f'(0)$

A)  $f'(x) = \frac{8}{(x+2)^2}$ ;  $f'(0) = 2$

B)  $f'(x) = 8$ ;  $f'(0) = 8$

C)  $f'(x) = -\frac{8}{(x+2)^2}$ ;  $f'(0) = -2$

D)  $f'(x) = -8(x+2)^2$ ;  $f'(0) = -32$

6) \_\_\_\_\_

Find the indicated derivative.

7)  $\frac{dt}{dx}$  if  $t = \frac{x}{7x-6}$

A)  $-\frac{6}{7x-6}$

B)  $-\frac{6x}{(7x-6)^2}$

C)  $\frac{14x-6}{(7x-6)^2}$

D)  $-\frac{6}{(7x-6)^2}$

7) \_\_\_\_\_

Find the derivative.

8)  $y = 17x^{-2} - 4x^3 + 13x$

A)  $-34x^{-3} - 12x^2 + 13$

B)  $-34x^{-3} - 12x^2$

C)  $-34x^{-1} - 12x^2$

D)  $-34x^{-1} - 12x^2 + 13$

8) \_\_\_\_\_

Find the second derivative.

9)  $y = 5x^3 - 6x^2 + 4$

A)  $20x - 12$

B)  $12x - 20$

C)  $12x - 30$

D)  $30x - 12$

9) \_\_\_\_\_

Find  $y'$ .

10)  $y = (4x - 5)(4x^3 - x^2 + 1)$

A)  $64x^3 - 72x^2 + 10x + 4$

C)  $64x^3 - 24x^2 + 72x + 4$

B)  $48x^3 + 72x^2 - 24x + 4$

D)  $16x^3 + 24x^2 - 72x + 4$

10) \_\_\_\_\_

Find the derivative of the function.

11)  $y = \frac{x^3}{x - 1}$

A)  $y' = \frac{-2x^3 - 3x^2}{(x - 1)^2}$

C)  $y' = \frac{-2x^3 + 3x^2}{(x - 1)^2}$

B)  $y' = \frac{2x^3 + 3x^2}{(x - 1)^2}$

D)  $y' = \frac{2x^3 - 3x^2}{(x - 1)^2}$

11) \_\_\_\_\_

Find the derivative.

12)  $y = \frac{4}{x} + 9 \sec x$

A)  $y' = -\frac{4}{x^2} - 9 \csc x$

C)  $y' = \frac{4}{x^2} - 9 \sec x \tan x$

B)  $y' = -\frac{4}{x^2} + 9 \sec x \tan x$

D)  $y' = -\frac{4}{x^2} + 9 \tan^2 x$

12) \_\_\_\_\_

13)  $y = \frac{\sin x}{3x} + \frac{3x}{\sin x}$

A)  $\frac{dy}{dx} = \frac{\sin x - x \cos x}{9x^2} + \frac{3x \cos x - 3 \sin x}{\sin^2 x}$

C)  $\frac{dy}{dx} = \frac{x \cos x + \sin x}{3x^2} + \frac{3 \sin x + 3x \cos x}{\sin^2 x}$

B)  $\frac{dy}{dx} = \frac{\cos x}{3} + \frac{3}{\cos x}$

D)  $\frac{dy}{dx} = \frac{x \cos x - \sin x}{3x^2} + \frac{3 \sin x - 3x \cos x}{\sin^2 x}$

13) \_\_\_\_\_

Find the indicated derivative.

14) Find  $y''$  if  $y = -7 \cos x$ .

A)  $y'' = 7 \sin x$

B)  $y'' = -7 \sin x$

C)  $y'' = 7 \cos x$

D)  $y'' = -7 \cos x$

14) \_\_\_\_\_

15) Find  $y'''$  if  $y = 3x \sin x$ .

A)  $y''' = 6 \cos x - 3x \sin x$

C)  $y''' = -3x \cos x + 9 \sin x$

B)  $y''' = 3x \cos x + 9 \sin x$

D)  $y''' = -3x \cos x - 9 \sin x$

15) \_\_\_\_\_

Find the derivative of the function.

16)  $y = x^4 \cos x - 7x \sin x - 7 \cos x$

A)  $x^4 \sin x - 4x^3 \cos x + 7x \cos x$

C)  $-x^4 \sin x + 4x^3 \cos x - 7x \cos x$

B)  $-x^4 \sin x + 4x^3 \cos x - 7x \cos x - 14 \sin x$

D)  $-4x^3 \sin x - 7 \cos x + 7 \sin x$

16) \_\_\_\_\_

Find  $dy/dt$ .

17)  $y = t^9(t^5 - 8)^3$

A)  $135t^{43}(t^5 - 8)^2$

C)  $9t^8(t^5 - 8)^2(15t^5 - 8)$

B)  $t^9(t^5 - 8)^2(24t^4 - 72)$

D)  $t^8(t^5 - 8)^2(24t^5 - 72)$

17) \_\_\_\_\_

Find the derivative of the function.

18)  $r = (\sec \theta + \tan \theta)^{-3}$

A)  $-3(\sec \theta + \tan \theta)^{-4}(\tan^2 \theta + \sec \theta \tan \theta)$

C)  $-3(\sec \theta \tan \theta + \sec^2 \theta)^{-4}$

B)  $\frac{-3 \sec \theta}{(\sec \theta + \tan \theta)^3}$

D)  $-3(\sec \theta + \tan \theta)^{-4}$

18) \_\_\_\_\_

Find  $dy/dt$ .

19)  $y = t^9(t^3 + 6)^4$

A)  $9t^8(t^3 + 6)^3(12t^3 + 6)$

C)  $t^8(t^3 + 6)^3(21t^3 + 54)$

B)  $t^9(t^3 + 6)^3(21t^2 + 54)$

D)  $108t^{25}(t^3 + 6)^3$

19) \_\_\_\_\_

20)  $y = (1 + \sin 10t)^{-5}$

A)  $-5(1 + \sin 10t)^{-6}$

C)  $-50(\cos 10t)^{-6}$

B)  $-5(1 + \sin 10t)^{-6} \cos 10t$

D)  $-50(1 + \sin 10t)^{-6} \cos 10t$

20) \_\_\_\_\_

Answer Key

Testname: REVIEW2\_CALC1

- 1) B
- 2) D
- 3) C
- 4) C
- 5) A
- 6) C
- 7) D
- 8) A
- 9) D
- 10) A
- 11) D
- 12) B
- 13) D
- 14) C
- 15) D
- 16) C
- 17) D
- 18) B
- 19) C
- 20) D