

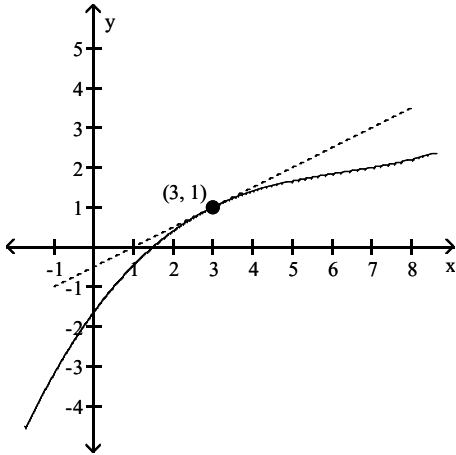
Provide an appropriate response.

1) What information does the difference quotient, $\frac{f(x+h) - f(x)}{h}$, provide about the differentiable function $f(x)$? 1) _____

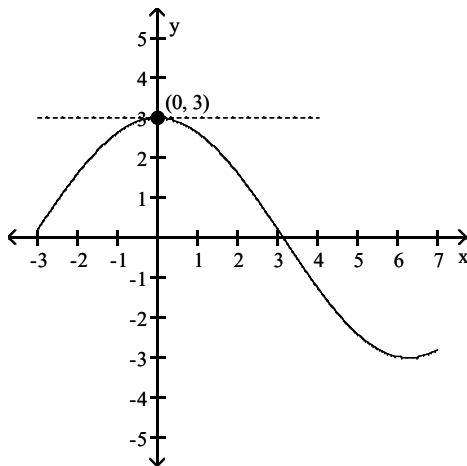
2) What is the derivative of a function $f(x)$? 2) _____

Estimate the slope of the tangent line to the curve at the given point.

3) 3) _____

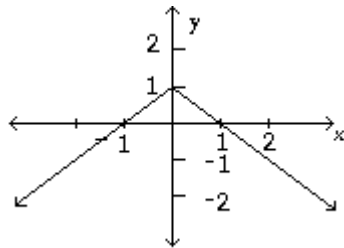


4) 4) _____

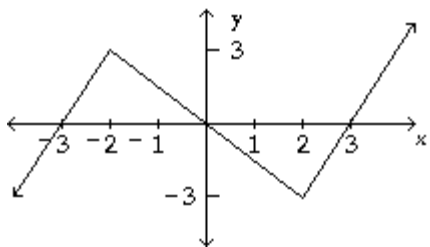


Find the x-values where the function does not have a derivative.

5) 5) _____

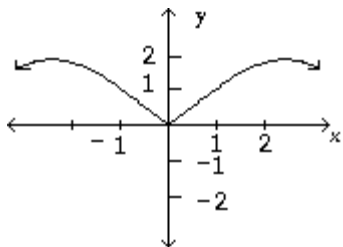


6)



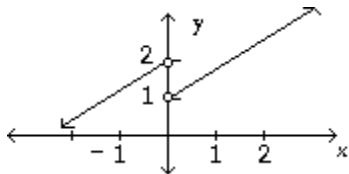
6) _____

7)



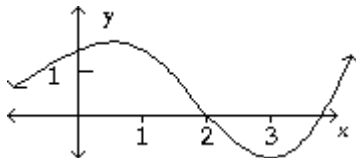
7) _____

8)



8) _____

9)

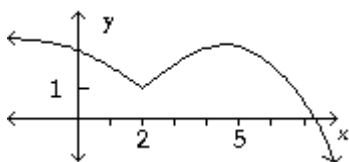


9) _____

- A) $x = 1, x = 3$
- C) $x = 2$

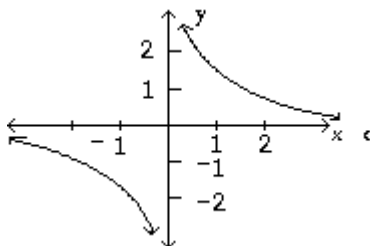
- B) $x = 1, x = 2, x = 3$
- D) Exists at all points

10)



10) _____

11)



11) _____

Find the derivative.

12) $f(x) = 6x + 8$ 12) _____

13) $y = x^7$ 13) _____

14) $y = 8 - 4x^2$ 14) _____

15) $y = 0.25x^{6.6}$ 15) _____

16) $y = 4 - 3x^3$ 16) _____

17) $f(x) = 4x^2 + 2x + 9$ 17) _____

18) $y = \frac{1}{2}x^6 - \frac{1}{5}x^5$ 18) _____

19) $f(x) = 6x^{210}$ 19) _____

20) $f(x) = 3x^4 - 9x^3 + 5$ 20) _____

Find the derivative of the function and evaluate the derivative at the given x -value.

21) $f(x) = 3x^2$ at $x = 1$ 21) _____

22) $f(x) = 5x + 9$ at $x = 2$ 22) _____

23) $f(x) = \frac{1}{5}x - \frac{1}{2}$ at $x = 10$ 23) _____

24) $f(x) = 5x^2 + x$ at $x = -4$ 24) _____

25) $f(x) = 3x^2 + 5x - 7$ at $x = -2$ 25) _____

26) $f(x) = 1 - x^3$ at $x = 1$ 26) _____

Find $f'(x)$ at the given value of x.

27) $f(x) = x^2 - 9x - 3$; Find $f'(-1)$. 27) _____

Find the derivative of the function and evaluate the derivative at the given x -value.

28) $f(x) = \frac{8}{x}$ at $x = -1$ 28) _____

Find $f'(x)$ at the given value of x .

29) $f(x) = \frac{-11}{x}$; Find $f'(-8)$. 29) _____

30) $f(x) = \sqrt{x}$; Find $f'(81)$. 30) _____

31) $f(x) = 7\sqrt{x}$; Find $f'(5)$. 31) _____

Find the derivative.

32) $y = -8\sqrt{x}$ 32) _____

33) $y = \sqrt[6]{x^5}$ 33) _____

34) $y = \frac{8}{x} - \frac{x}{8}$ 34) _____

35) $y = \frac{6}{x^4} - \frac{9}{x}$ 35) _____

Evaluate the derivative at the given value of x .

36) If $f(x) = -4x^2 + 7x - 5$, find $f'(5)$. 36) _____

37) If $y = -\frac{8}{x} + \frac{5}{x^2}$, find $\left. \frac{dy}{dx} \right|_{x=2}$ 37) _____

Differentiate.

38) $y = 7x(9x^4 - 8x)$ 38) _____

39) $y = (3 - 3x^2)(5x^2 - 60)$ 39) _____

40) $f(x) = (4x - 2)(4x + 1)$ 40) _____

41) $f(x) = (5x^3 + 5)(2x^7 - 6)$ 41) _____

42) $f(x) = (3x + 5)^2$ 42) _____

43) $f(x) = (5x + 3)^2$ 43) _____

44) $f(x) = (3x^4 + 8)^2$ 44) _____

45) $f(x) = (2x^2 + 2)^3$ 45) _____

$$46) f(x) = (-5x - 2)^4$$

46) _____

$$47) y = \frac{x}{2x - 4}$$

47) _____

$$48) y = \frac{x^2 - 4}{x}$$

48) _____

$$49) y = \frac{x^3}{x - 1}$$

49) _____

$$50) f(x) = \frac{x + 6}{x - 6}$$

50) _____

$$51) y = \frac{4x + 3}{2x - 1}$$

51) _____

$$52) g(x) = \frac{x^2 + 5}{x^2 + 6x}$$

52) _____

$$53) f(x) = \sqrt{1 - 18x}$$

53) _____

$$54) f(x) = \sqrt{12x - x^3}$$

54) _____