

Student: Maria Saenz
Date: 07/16/19

Instructor: Sumithra Iyer
Course: 1325 Summer 2- 2019

Assignment: 11.1

1. Use the given graph to determine the value of the indicated limits.

(a) $\lim_{x \rightarrow -3} f(x)$

(b) $\lim_{x \rightarrow -6} f(x)$

(a) Select the correct choice below, and if necessary, fill in the answer box to complete your choice.

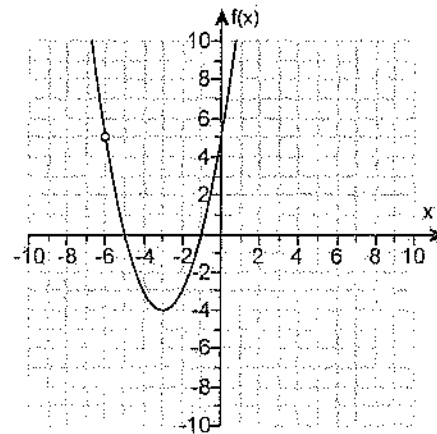
☐ A. $\lim_{x \rightarrow -3} f(x) =$ _____

☐ B. The limit does not exist.

(b) Select the correct choice below, and if necessary, fill in the answer box to complete your choice.

☐ A. $\lim_{x \rightarrow -6} f(x) =$ _____

☐ B. The limit does not exist.



2. Use the graph to the right to determine the value of the indicated limits.

(a) $\lim_{x \rightarrow 2^-} g(x)$

(b) $\lim_{x \rightarrow 0} g(x)$

(a) Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

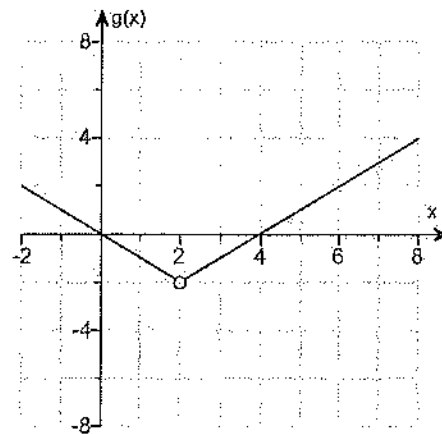
☐ A. $\lim_{x \rightarrow 2} g(x) =$ _____

☐ B. The limit does not exist.

(b) Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. $\lim_{x \rightarrow 0} g(x) =$ _____

☐ B. The limit does not exist.



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3. Use the given graph to determine the value of the indicated limits.

(a) $\lim_{x \rightarrow -7} f(x)$

$x \rightarrow -7$

(b) $\lim_{x \rightarrow -6} f(x)$

$x \rightarrow -6$

(a) Select the correct choice below, and if necessary, fill in the answer box to complete your choice.

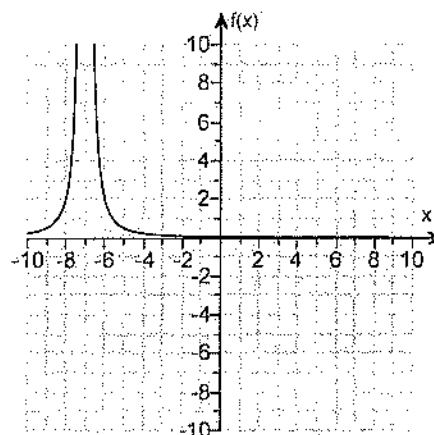
☐ A. $\lim_{x \rightarrow -7} f(x) =$ _____

☐ B. The limit does not exist.

(b) Select the correct choice below, and if necessary, fill in the answer box to complete your choice.

☐ A. $\lim_{x \rightarrow -6} f(x) =$ _____

☐ B. The limit does not exist.



4. Use a calculator to estimate the limit.

$$\lim_{x \rightarrow -4} \frac{x^3 + 4x^2 - 2x - 8}{x + 4}$$

Select the correct choice below and fill in any answer boxes in your choice.

☐ A. $\lim_{x \rightarrow -4} \frac{x^3 + 4x^2 - 2x - 8}{x + 4} =$ _____

☐ B. The limit does not exist.

5. Let $\lim_{x \rightarrow 4} f(x) = 25$ and $\lim_{x \rightarrow 4} g(x) = 13$. Use the limit rules to find the following limit.

$$\lim_{x \rightarrow 4} [f(x) - g(x)]$$

$$\lim_{x \rightarrow 4} [f(x) - g(x)] =$$

(Simplify your answer.)

6. Let $\lim_{x \rightarrow 4} f(x) = 36$. Use the limit rules to find the following limit.

$$\lim_{x \rightarrow 4} \sqrt{f(x)}$$

$$\lim_{x \rightarrow 4} \sqrt{f(x)} =$$

(Simplify your answer.)

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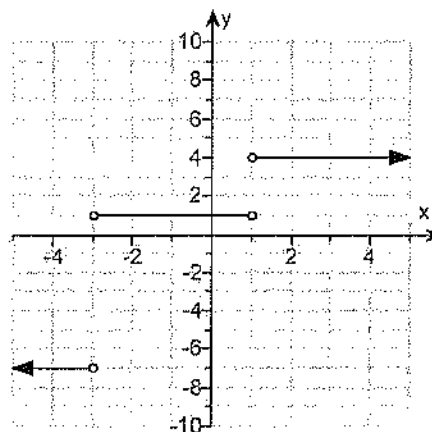
Assignment: 11.2

1. The graph of the function f is shown. Use it to compute the given limit.

$$\lim_{x \rightarrow 1^-} f(x)$$

$$\lim_{x \rightarrow 1^-} f(x) = \underline{\hspace{2cm}}$$

(Type an integer or a simplified fraction.)

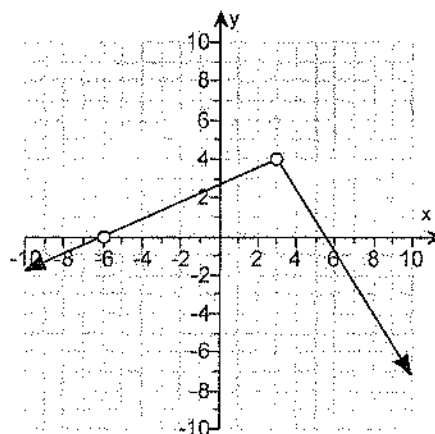


2. The graph of the function f is shown. Use it to compute the given limit.

$$\lim_{x \rightarrow 3^-} f(x)$$

$$\lim_{x \rightarrow 3^-} f(x) = \underline{\hspace{2cm}}$$

(Type an integer or a simplified fraction.)



3. Find the given limit.

$$\lim_{x \rightarrow 2^+} \sqrt{x^2 - 4}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. $\lim_{x \rightarrow 2^+} \sqrt{x^2 - 4} = \underline{\hspace{2cm}}$

☐ B. The limit does not exist.

4. Find the given limit.

$$\lim_{x \rightarrow 1^+} (5x^4 - 9x^2 + 5)$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. $\lim_{x \rightarrow 1^+} (5x^4 - 9x^2 + 5) = \underline{\hspace{2cm}}$ (Simplify your answer.)

☐ B. The limit does not exist.

5. Find the given limit.

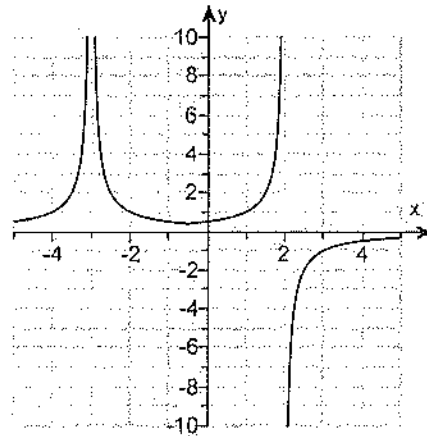
$$\lim_{x \rightarrow -5^+} \frac{\sqrt{x+5} + 5}{x^2 - 5}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. $\lim_{x \rightarrow -5^+} \frac{\sqrt{x+5} + 5}{x^2 - 5} = \underline{\hspace{2cm}}$ (Type an integer or a simplified fraction.)
- ☐ B. The limit does not exist.

6. For the function f whose graph is shown, find the following limits.

- (a) $\lim_{x \rightarrow -3} f(x)$
- (b) $\lim_{x \rightarrow 2^+} f(x)$
- (c) $\lim_{x \rightarrow 2^-} f(x)$



(a) Choose the best answer below for the two-sided limit.

- ☐ A. $\lim_{x \rightarrow -3} f(x) = 0$
- ☐ B. $\lim_{x \rightarrow -3} f(x) = -\infty$
- ☐ C. $\lim_{x \rightarrow -3} f(x) = \infty$
- ☐ D. The limit does not exist.

(b) Choose the best answer below for the right-hand limit.

- ☐ A. $\lim_{x \rightarrow 2^+} f(x) = 0$
- ☐ B. $\lim_{x \rightarrow 2^+} f(x) = \infty$
- ☐ C. $\lim_{x \rightarrow 2^+} f(x) = -\infty$
- ☐ D. The limit does not exist.

(c) Choose the best answer below for the left-hand limit.

- ☐ A. $\lim_{x \rightarrow 2^-} f(x) = 0$
- ☐ B. $\lim_{x \rightarrow 2^-} f(x) = \infty$
- ☐ C. $\lim_{x \rightarrow 2^-} f(x) = -\infty$
- ☐ D. The limit does not exist.

7. Find the limit.

$$\lim_{x \rightarrow -6^-} \frac{-6x}{x+6}$$

$$\lim_{x \rightarrow -6^-} \frac{-6x}{x+6} = \underline{\hspace{2cm}}$$

8. Use the graph of the function f to find the following limits.

$$\lim_{x \rightarrow \infty} f(x) \text{ and } \lim_{x \rightarrow -\infty} f(x)$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

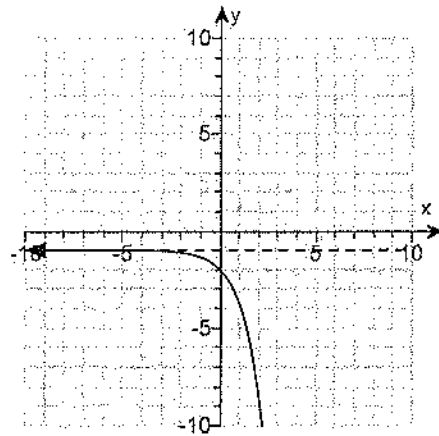
☐ A. $\lim_{x \rightarrow \infty} f(x) = \underline{\hspace{2cm}}$

☐ B. The limit does not exist.

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. $\lim_{x \rightarrow -\infty} f(x) = \underline{\hspace{2cm}}$

☐ B. The limit does not exist.



9. Use the given graph of the function f to find $\lim_{x \rightarrow \infty} f(x)$ and $\lim_{x \rightarrow -\infty} f(x)$.

$$\lim_{x \rightarrow \infty} f(x) \text{ and } \lim_{x \rightarrow -\infty} f(x)$$

Select the correct choice below and fill in the answer box within your choice.

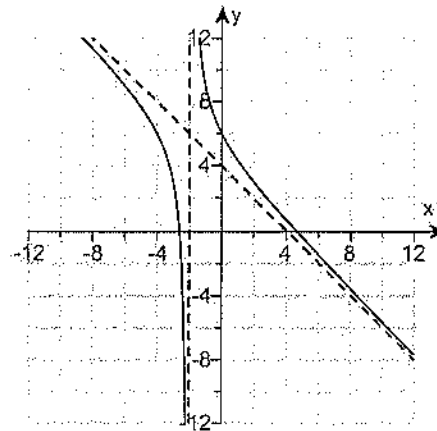
☐ A. $\lim_{x \rightarrow \infty} f(x) = \underline{\hspace{2cm}}$

☐ B. The limit does not exist.

Select the correct choice below and fill in the answer box within your choice.

☐ A. $\lim_{x \rightarrow -\infty} f(x) = \underline{\hspace{2cm}}$

☐ B. The limit does not exist.



10. Use a calculator to estimate the given limit.

$$\lim_{x \rightarrow -\infty} \frac{x^{1/3} - x^{5/3}}{x^3}$$

What is the limit? Select the correct choice below and, if necessary fill in the answer box to complete your choice.

- ☐ A. $\lim_{x \rightarrow -\infty} \frac{x^{1/3} - x^{5/3}}{x^3} = \underline{\hspace{2cm}}$
- ☐ B. The limit does not exist.

11. Use the properties of limits to find the given limit.

$$\lim_{x \rightarrow \infty} \frac{11x^2 - 3x + 8}{3x^2 + 6x - 35}$$

$$\lim_{x \rightarrow \infty} \frac{11x^2 - 3x + 8}{3x^2 + 6x - 35} = \underline{\hspace{2cm}} \quad (\text{Type an integer or a simplified fraction.})$$

12. Use the limit rules to determine the limit.

$$\lim_{x \rightarrow \infty} \frac{3x^3 + 7x - 2}{5x^4 - 7x^3 - 6}$$

$$\lim_{x \rightarrow \infty} \frac{3x^3 + 7x - 2}{5x^4 - 7x^3 - 6} = \underline{\hspace{2cm}}$$

(Simplify your answer.)

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Assignment: 11.3

1. Find the average rate of change for the given function.

$f(x) = x^2 + 9x$ between $x = 0$ and $x = 9$

The average rate of change is _____. (Simplify your answer.)

2. Find the average rate of change for the following function.

$f(x) = 4x^3 - 3x^2 + 1$ between $x = -3$ and $x = 2$

The average rate of change for $f(x)$ over the interval -3 to 2 is _____.
(Type an integer or a simplified fraction.)

3. Find the average rate of change for the following function.

$f(x) = 7\sqrt{x}$ between $x = 9$ and $x = 25$

The average rate of change for $f(x)$ over the interval 9 to 25 is _____.
(Type an integer or a simplified fraction.)

4. Find the average rate of change of the function over the given interval.

$y = \sqrt{5x + 1}$; between $x = 0$ and $x = 3$

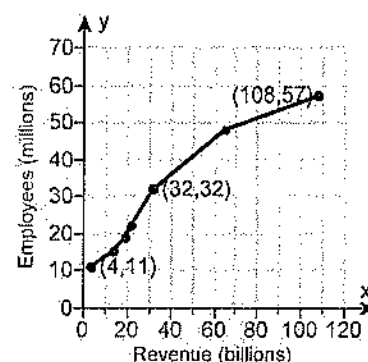
The average rate of change of y between $x = 0$ and $x = 3$ is _____.
(Simplify your answer. Type an integer or a simplified fraction.)

5. Find the average rate of change for the function.

$f(x) = \frac{1}{x-3}$ between $x = -3$ and $x = 0$

The average rate of change is _____.
(Type an integer or a simplified fraction.)

6. The figure to the right shows the number of full-time employees of a company (in millions) as a function of the revenue generated by the company (in billions). Find and interpret the average rate of change of employees with respect to revenue for the following changes in revenue.



- (a) \$4 billion to \$32 billion
 (b) \$32 billion to \$108 billion
 (c) \$4 billion to \$108 billion

(a) The average rate of change of employees with respect to revenue for the changes from \$4 billion to \$32 billion is about _____ employees/billion dollars.

(Round to the nearest thousands as needed.)

(b) The average rate of change of employees with respect to revenue for the changes from \$32 billion to \$108 billion is about _____ employees/billion dollars.

(Round to the nearest thousands as needed.)

(c) The average rate of change of employees with respect to revenue for the changes from \$4 billion to \$108 billion is about _____ employees/billion dollars.

(Round to the nearest thousands as needed.)

7. Consider the function $f(x) = 5x^2 - 5x - 1$ and complete parts (a) through (c).

(a) Find $f(a + h)$;

(b) Find $\frac{f(a + h) - f(a)}{h}$;

(c) Find the instantaneous rate of change of f when $a = 5$.

(a) $f(a + h) =$ _____

(Simplify your answer. Do not factor.)

(b) $\frac{f(a + h) - f(a)}{h} =$ _____

(Simplify your answer. Do not factor.)

(c) The instantaneous rate of change of f when $a = 5$ is _____.

(Simplify your answer.)

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Assignment: 11.4

- ✓ 1. Find $f'(x)$ for the following function. Then find $f'(5)$, $f'(0)$, and $f'(-6)$.

$$f(x) = 2x - 1$$

$$f'(x) = \underline{\hspace{2cm}} \text{ (Simplify your answer.)}$$

$$f'(5) = \underline{\hspace{2cm}} \text{ (Simplify your answer.)}$$

$$f'(0) = \underline{\hspace{2cm}} \text{ (Simplify your answer.)}$$

$$f'(-6) = \underline{\hspace{2cm}} \text{ (Simplify your answer.)}$$

- ✓ 2. Find $f'(x)$ for the following function. Then find $f'(7)$, $f'(0)$, and $f'(-8)$.

$$f(x) = -3x^2 - 5x$$

$$f'(x) = \underline{\hspace{2cm}}$$

Select the correct choice below and fill in the answer box within your choice, if needed.

- ☐ A. $f'(7) = \underline{\hspace{2cm}}$
(Simplify your answer, if needed.)
- ☐ B. The answer is not a real number.
- ☐ C. The answer is undefined.

Select the correct choice below and fill in the answer box within your choice, if needed.

- ☐ A. $f'(0) = \underline{\hspace{2cm}}$
(Simplify your answer.)
- ☐ B. The answer is not a real number.
- ☐ C. The answer is undefined.

Select the correct choice below and fill in the answer box within your choice, if needed.

- ☐ A. $f'(-8) = \underline{\hspace{2cm}}$
(Simplify your answer.)
- ☐ B. The answer is not a real number.
- ☐ C. The answer is undefined.

3. Find $f'(x)$ for the given function. Then find $f'(4)$, $f'(0)$, and $f'(-4)$.

$$f(x) = 11\sqrt{x}$$

$$f'(x) = \underline{\hspace{2cm}}$$

Find $f'(4)$. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. $f'(4) = \underline{\hspace{2cm}}$
☐ B. The answer is undefined.

Find $f'(0)$. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. $f'(0) = \underline{\hspace{2cm}}$
☐ B. The answer is undefined.

Find $f'(-4)$. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. $f'(-4) = \underline{\hspace{2cm}}$
☐ B. The answer is undefined.

4. Use the fact that the derivative of the function $g(x) = \sqrt{x}$ is $g'(x) = \frac{1}{2\sqrt{x}}$ to find the equation of the tangent line to the graph of $g(x)$ at the point $x = 100$.

The equation of the tangent line is $y = \underline{\hspace{2cm}}$.
(Simplify your answer.)

5. Use the fact that the derivative of the function $f(x) = \frac{4}{x}$ is $f'(x) = \frac{-4}{x^2}$ to find the equation of the tangent line to the graph of $f(x)$ at the point $x = -7$.

The equation of the tangent line to the graph of $f(x)$ at the point $x = -7$ is $\underline{\hspace{2cm}}$.

6. For the given function, (a) find the slope of the tangent line to the graph at the given point;
(b) find the equation of the tangent line.

$$h(x) = \frac{7}{x} \text{ at } x = 5$$

(a) The slope of the tangent line at $x = 5$ is $\underline{\hspace{2cm}}$.

(b) The equation of the tangent line is $\underline{\hspace{2cm}}$.

7. For the given function, (a) find the slope of the tangent line to the graph at the given point;
(b) find the equation of the tangent line.

$$g(x) = 6\sqrt{x} \text{ at } x = 1$$

(a) The slope of the tangent line at $x = 1$ is $\underline{\hspace{2cm}}$.

(b) The equation of the tangent line is $\underline{\hspace{2cm}}$.

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Assignment: 11.5

1. Find the derivative of the function.

$$y = x^3 - 5x^2 + 7x + 6$$

$$y' =$$

2. Find the derivative of the function.

$$g(x) = x^4 + 6x^3 - 7x - 6$$

$$g'(x) =$$

3. Find the derivative of the function.

$$f(x) = 10x^{1.5} - 6x^{0.8}$$

$$f'(x) =$$

4. Find the derivative of the function.

$$y = 3x^{-3} - 2x^{-1}$$

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

5. Find the derivative of the function.

$$y = 10x^2 - 7x - 9x^{-2}$$

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

6. Find the derivative of the following function.

$$r = \frac{1}{2s} - \frac{5}{4s^3}$$

$$\frac{dr}{ds} =$$

(Simplify your answer.)

7. Find the derivative of the following function.

$$y = 7x^{-\frac{5}{2}} + 6x^{-\frac{1}{2}} + x^6 - 8$$

$$y' =$$

8. Find the derivative of the function.

$$y = \frac{-12}{2\sqrt{x}}$$

$$\frac{dy}{dx} = \underline{\hspace{2cm}}$$

9.

Find $f'(-2)$ if $f(x) = \frac{x^4}{3} - 5x$.

$f'(-2) = \underline{\hspace{2cm}}$ (Simplify your answer. Type an integer or a fraction.)

10. Find the slope and the equation of the tangent line to the graph of the function at the given value of x .

The slope of the tangent line is $\underline{\hspace{2cm}}$.
(Simplify your answer.)

$f(x) = x^4 - 10x^2 + 9$; $x = -2$

The equation of the tangent line is $y = \underline{\hspace{2cm}}$.

11. The profit in dollars from the sale of x expensive watches is $P(x) = 0.04x^2 - 3x + 6x^{0.5} - 4000$.

Find the marginal profit when (a) $x = 500$, (b) $x = 1000$, (c) $x = 6000$, and (d) $x = 12,000$.

(a) When $x = 500$, the marginal profit is \$ $\underline{\hspace{2cm}}$. (Round to the nearest integer as needed.)

(b) When $x = 1000$, the marginal profit is \$ $\underline{\hspace{2cm}}$. (Round to the nearest integer as needed.)

(c) When $x = 6000$, the marginal profit is \$ $\underline{\hspace{2cm}}$. (Round to the nearest integer as needed.)

(d) When $x = 12,000$, the marginal profit is \$ $\underline{\hspace{2cm}}$. (Round to the nearest integer as needed.)

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Assignment: 11.6

1. Use the product rule to find the derivative of the given function.

✓ $y = (5x^3 + 2)(4x - 3)$

$y' =$ _____

- ✓ 2. Differentiate the function.

$$y = (5x^4 - x + 1)(-x^5 + 9)$$

$y' =$ _____

- ✓ 3. Use the product rule to find the derivative of the given function.

$$y = (6x^3 + 7x^2)^2$$

$y' =$ _____

- ✓ 4. Find the derivative of the function.

$$y = \frac{7x - 6}{6x + 1}$$

✓ The derivative is $y' =$ _____

5. Use the quotient rule to find the derivative of the given function.

$$y = \frac{x^2 - 5x + 4}{x + 8}$$

$y' =$ _____

6. Use the quotient rule to find the derivative of the following.

$$y = \frac{2x + 5}{\sqrt{x}}$$

Choose the correct answer below.

☐ A. $\frac{(2\sqrt{x})}{(2x+5)^2}$

☐ B. $\frac{(x+5)\left(\frac{1}{2\sqrt{x}}\right) - (\sqrt{x})}{x}$

☐ C. $\frac{2x-5}{2x\sqrt{x}}$

☐ D. $\frac{4\sqrt{x}-2}{x}$

7. Use the quotient rule to find the derivative of the following.

$$y = \frac{(4x^2 + 8)(3x + 1)}{8x - 3}$$

$$\frac{dy}{dx} = \underline{\hspace{2cm}}$$

8. A hotdog vendor must pay a monthly fee to operate a food cart in the city park. The cost in dollars of selling x hundred hotdogs in a month can be approximated by $C(x) = 150 + 90x$. Complete parts (a) through (d) below.

- (a) Find the average-cost function.

The average-cost function is $\bar{C}(x) = \underline{\hspace{2cm}}$.

- (b) Find and interpret the average cost at sales levels of 1000 hotdogs and 5500 hotdogs.

The average cost at sales levels of 1000 hotdogs is \$ /100 hotdogs.
(Round to the nearest cent as needed.)

The average cost at sales levels of 5500 hotdogs is \$ /100 hotdogs.
(Round to the nearest cent as needed.)

Interpret these results, choose the correct answer below. Take the sales level of 1000 hotdogs as an example. Select the correct choice below and fill in the answer box to complete your choice.

- ☐ A. At a sales level of 1000 hotdogs, if an additional 100 hotdogs are sold, the average cost increases by approximately \$ per 100 hotdogs.
- ☐ B. At a sales level of 1000 hotdogs, the average cost is \$ per 100 hotdogs.

- (c) Find the marginal average-cost function.

The marginal average-cost function is $\bar{C}'(x) = \underline{\hspace{2cm}}$.

- (d) Find and interpret the marginal average cost at sales levels of 1000 hotdogs and 5500 hotdogs.

The marginal average cost at sales levels of 1000 hotdogs is \$ / (100 hotdogs)².
(Round to the nearest cent as needed.)

The marginal average cost at sales levels of 5500 hotdogs is \$ / (100 hotdogs)².
(Round to the nearest cent as needed.)

Interpret these results, choose the correct answer below. Take the sales level of 1000 hotdogs as an example. Select the correct choice below and fill in the answer box to complete your choice.

- ☐ A. At a sales level of 1000 hotdogs, if an additional 100 hotdogs are sold, the average cost decreases by approximately \$ per 100 hotdogs.
- ☐ B. At a sales level of 1000 hotdogs, the average cost is \$ per 100 hotdogs.

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Assignment: 11.7

1. Let $f(x) = 2x^2 - 2x$ and $g(x) = -4x - 1$.

Find $f[g(-1)]$.

$f[g(-1)] =$ _____

2. Let $f(x) = 2x^2 - 2x$ and $g(x) = -5x - 1$.

Find $g[f(3)]$.

$g[f(3)] =$ _____

3. Find $f[g(x)]$ and $g[f(x)]$ for the given functions.

$f(x) = -x^3 + 3$, $g(x) = 2x + 4$

$f[g(x)] =$ _____ (Simplify your answer. Do not factor.)

$g[f(x)] =$ _____ (Simplify your answer. Do not factor.)

4. Differentiate the function using one or more of the differentiation rules.

$y = (2x + 3)^6$

$y' =$ _____

5. Find the derivative of the function.

$y = -5(7x^2 + 7)^{-6}$

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

(Type an expression using x as the variable.)

6. Find the derivative of the function.

$y = -5(-5x^2 + 2x)^{\frac{5}{2}}$

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

7. Find the derivative.

$f(x) = 8\sqrt{8x^2 + 5}$

$f'(x) =$ _____

8. Find the derivative of the function $y = (x + 1)^3(x + 4)^5$.

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

9. Use the product or quotient rule or the generalized power rule to find the derivative of the function.

$y = (4x + 2)^5 \sqrt{x}$

$y' =$ _____

10. Find the indicated derivative.

$\frac{d}{dt} \left(\frac{(2t - 5)^5}{t + 3} \right)$

$\frac{d}{dt} \left(\frac{(2t - 5)^5}{t + 3} \right) =$ _____

11. Find the indicated derivative.

$y = \frac{t^2 + 9}{(7t - 2)^8}$

$\frac{d}{dt} \left(\frac{t^2 + 9}{(7t - 2)^8} \right) =$ _____

- 12.

Suppose the demand for a certain brand of a product is given by $D(p) = \frac{-p^2}{189} + 250$, where p is the price in dollars. If the price, in terms of the cost c , is expressed as $p(c) = 3c - 6$, find the demand function in terms of the cost.

$D(c) =$ _____

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Assignment: 11.8

1. Find the derivative of y with respect to x if $y = e^{-16x}$.

The derivative of y with respect to x if $y = e^{-16x}$ is _____.

2. Find the derivative of the given function.

$$y = 8e^{2x}$$

$y' =$ _____
(Type an exact answer.)

3. Differentiate the following function.

$$y = e^{x^4}$$

$$y' = \frac{d}{dx}(e^{x^4}) =$$

4. Find the derivative of the function.

$$y = 3e^{4x^2 - 4}$$

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

5. Find the derivative.

$$y = \ln \sqrt{x+3}$$

$$y' =$$

6. Find the derivative of the function $f(x) = \ln[(2x-3)(4x^2-3)]$.

$$f'(x) =$$

7. Find derivative of the following function.

$$y = \frac{e^{2x} + e^{-2x}}{x}$$

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

8. Find the derivative of y with respect to x for $y = 5^x$.

The derivative of y with respect to x for $y = 5^x$ is _____.

9. Find the derivative.

$y = \log(2x)$

$y' =$ _____

10.

Find the equation of the tangent line to the graph of $f(x) = \frac{-9e^{9x}}{8x-3}$ at $(0,3)$.

The equation of the tangent line is $y =$ _____.

(Simplify your answer. Type your answer in slope-intercept form.)

11. The gross national income (GNI) of a certain country (in billions of U.S. dollars) can be approximated by

$f(t) = 1033e^{0.155t}$, where $t=0$ corresponds to the year 2000.

(a) Find $f'(t)$.

At what rate was the GNI changing in 2000?

(b)

(c) Repeat part (b) for 2013.

(a) $f'(t) =$ _____.

(b) In 2000, the GNI was changing at a rate of about \$ _____ billion per year.

(Round to the nearest integer as needed.)

(c) In 2013, the GNI was changing at a rate of about \$ _____ billion per year.

(Round to the nearest integer as needed.)

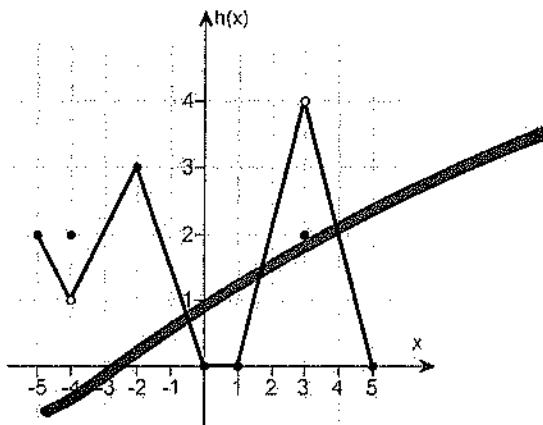
Student: Maria Saenz
Date: 07/16/19

Instructor: Sumithra Iyer
Course: 1325 Summer 2-2019

Assignment: 11.9

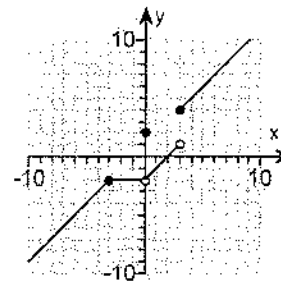
1. Find all points of discontinuity whose graph is shown below.

Choose the correct points of discontinuity.



- ☐ A. $x = -4, 3$
☐ B. $x = -2, 2$
☐ C. $x = -3, 4$
☐ D. There are no discontinuities.

2. Find all values $x = a$ where the function is discontinuous.



$f(x)$ is discontinuous at $x =$ _____.
(Use a comma to separate answers as needed.)

3. Determine if the function $f(x) = \frac{4}{x-5}$ is continuous at the values $x = 5$ and $x = 7$.

Is the function continuous at $x = 5$?

- ☐ No
 ☐ Yes

Is the function continuous at $x = 7$?

- ☐ No
 ☐ Yes

4. Is the function continuous at the given values of x ?

$$h(x) = \frac{1}{x(x-8)}; x=8, x=-2, x=0$$

Is the function continuous at $x=8$?

☐ No

☐ Yes

Is the function continuous at $x=-2$?

☐ Yes

☐ No

Is the function continuous at $x=0$?

☐ Yes

☐ No

5. Determine if the function $y = \frac{x+5}{x^2-7x+10}$ is continuous at the values $x=0$, $x=2$, and $x=5$.

Is the function continuous at $x=0$?

☐ No

☐ Yes

Is the function continuous at $x=2$?

☐ A. No

☐ B. Yes

Is the function continuous at $x=5$?

☐ A. No

☐ B. Yes

6. Is the given function continuous at the given values of x ?



$$f(x) = \begin{cases} x-6 & \text{if } x \leq 7 \\ 6-x & \text{if } x > 7 \end{cases}; x=6, x=7$$

Is the function continuous at $x=6$? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. Yes, the point is defined, $\lim_{x \rightarrow 6} f(x)$ exists, and $\lim_{x \rightarrow 6} f(x) = \underline{\hspace{2cm}}$. (Simplify your answer.)

☐ B. No, the function is not continuous at $x=6$.

Is the function continuous at $x=7$? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. Yes, the point is defined, $\lim_{x \rightarrow 7} f(x)$ exists, and $\lim_{x \rightarrow 7} f(x) = \underline{\hspace{2cm}}$. (Simplify your answer.)

☐ B. No, the function is not continuous at $x=7$.

7. Find all x-values where the function is discontinuous.

$$f(x) = \frac{|x+4|}{x+4}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

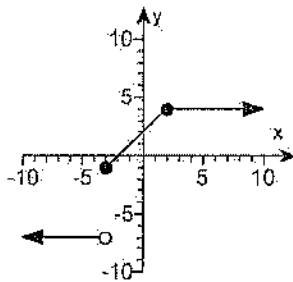
- ☐ A. The function f is discontinuous at $x =$ _____.
(Use a comma to separate answers as needed.)
- ☐ B. The function f is continuous for all x-values.

8. Graph the given function, and find all values of x where the function is discontinuous.

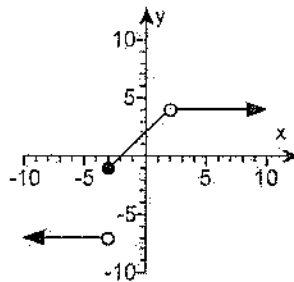
$$f(x) = \begin{cases} -7 & x < -3 \\ x+2 & -3 \leq x \leq 2 \\ 4 & x > 2 \end{cases}$$

Choose the correct graph of the function.

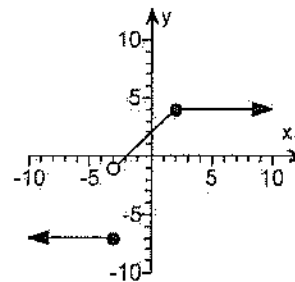
☐ A.



☐ B.



☐ C.



Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The value(s) of x where the function is discontinuous is/are _____.
(Use a comma to separate answers as needed.)
- ☐ B. There is no value of x where the function is discontinuous.