

Student: Cole Lamers
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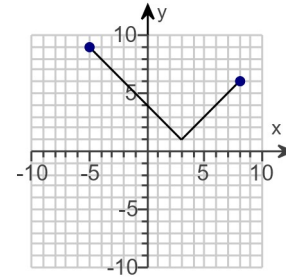
Instructor: Kelly Galarneau
Course: CA&T Internet (70263)
 Galarneau

Assignment: 2.5 Properties of Functions

1. Watch the video and then solve the problem given below.

[Click here to watch the video.](#)¹

From the graph of the function g , find the interval over which g is increasing.



The function g is increasing over the interval .

(Type your answer in interval notation.)

1: http://mediaplayer.pearsoncmg.com/assets/0Ny5_cxKZBACbZqCCQzDGrmvumK9czrj?clip=2

2.

The graph of a function is given to the right. Determine the intervals over which the function is increasing, decreasing or constant.

On what interval(s) is the function increasing? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☒ A. .
 (Type your answer in interval notation.)

☐ B. The function is never increasing.

On what interval(s) is the function decreasing? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

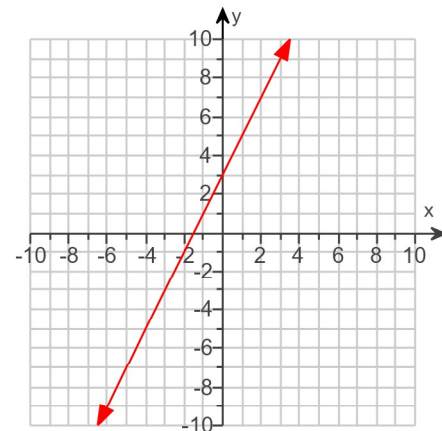
☐ A.
 (Type your answer in interval notation.)

☒ B. The function is never decreasing.

On what interval(s) is the function constant? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

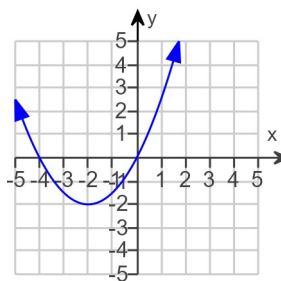
☐ A.
 (Type your answer in interval notation.)

☒ B. The function is never constant.



3. Use the graph to determine

- intervals on which the function is increasing, if any.
- intervals on which the function is decreasing, if any.



a. Use the graph to determine intervals on which the function is increasing, if any. Select the correct choice below and, if necessary, fill in the answer box within your choice.

☒ A. The interval(s) on which the function is increasing is/are $(-2, \infty)$.
(Type your answer in interval notation.)

☐ B. There is no interval on which the function is increasing.

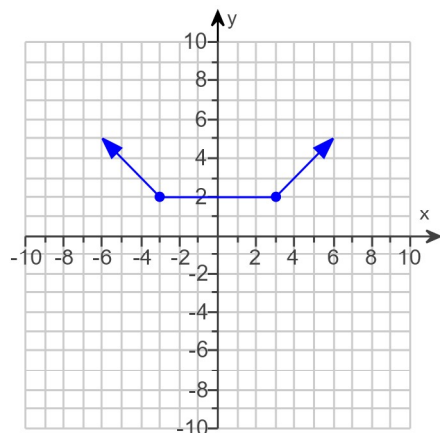
b. Use the graph to determine intervals on which the function is decreasing, if any. Select the correct choice below and, if necessary, fill in the answer box within your choice.

☒ A. The interval(s) on which the function is decreasing is/are $(-\infty, -2)$.
(Type your answer in interval notation.)

☐ B. There is no interval on which the function is decreasing.

4.

Determine the open intervals of the domain for which the function shown in the graph below is (a) increasing, (b) decreasing, and (c) constant.



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

☒ A. The function is increasing on the open interval $(3, \infty)$.
(Type your answer in interval notation.)

☐ B. The function is never increasing.

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

☒ A. The function is decreasing on the open interval $(-\infty, -3)$.
(Type your answer in interval notation.)

☐ B. The function is never decreasing.

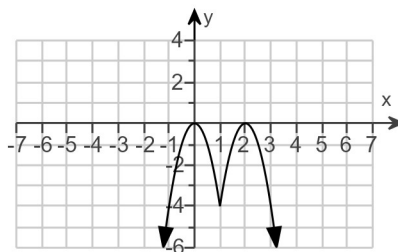
(c) Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☒ A. The function is constant on the open interval $(-3, 3)$.
(Type your answer in interval notation.)

☐ B. The function is never constant.

5. Use the graph to determine

- (a) intervals on which the function is increasing, if any.
- (b) intervals on which the function is decreasing, if any.
- (c) intervals on which the function is constant, if any.



(a) Use the graph to determine intervals on which the function is increasing, if any. Select the correct choice below and, if necessary, fill in the answer box within your choice.

- ☒ A. The function is increasing on the interval(s) $(-\infty, 0), (1, 2)$.
(Type your answer in interval notation. Use a comma to separate answers as needed.)
- ☐ B. There is no interval on which the function is increasing.

(b) Use the graph to determine intervals on which the function is decreasing, if any. Select the correct choice below and, if necessary, fill in the answer box within your choice.

- ☒ A. The function is decreasing on the interval(s) $(0, 1), (2, \infty)$.
(Type your answer in interval notation. Use a comma to separate answers as needed.)
- ☐ B. There is no interval on which the function is decreasing.

(c) Use the graph to determine intervals on which the function is constant, if any. Select the correct choice below and, if necessary, fill in the answer box within your choice.

- ☐ A. The function is constant on the interval(s) _____.
(Type your answer in interval notation. Use a comma to separate answers as needed.)
- ☒ B. There is no interval on which the function is constant.

6.

Locate relative maximum and relative minimum points on the graph shown to the right. State whether each relative extremum point is a turning point.

Where are the relative maximum points on the graph? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A.

(Type an ordered pair. Use a comma to separate answers as needed.)

☒ B. There are no relative maximum points.

Where are the relative minimum points on the graph? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A.

(Type an ordered pair. Use a comma to separate answers as needed.)

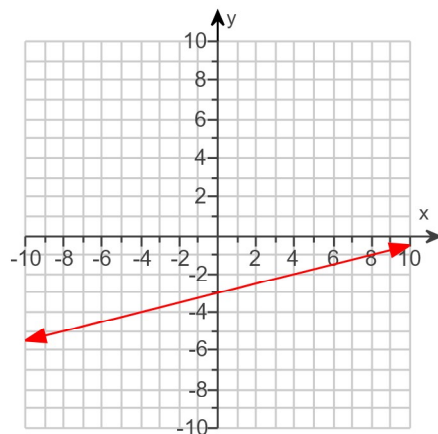
☒ B. There are no relative minimum points.

Which of the relative extremum points are turning points? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A.

(Type an ordered pair. Use a comma to separate answers as needed.)

☒ B. There are no turning points.



7.

Locate relative maximum and relative minimum points on the graph shown to the right. State whether each relative extremum point is a turning point.

Where are the relative maximum points on the graph? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A.

(Type an ordered pair. Use a comma to separate answers as needed.)



B. There are no relative maximum points.

Where are the relative minimum points on the graph? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.



A.

(Type an ordered pair. Use a comma to separate answers as needed.)



B. There are no relative minimum points.

Which of the relative extremum points are turning points? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

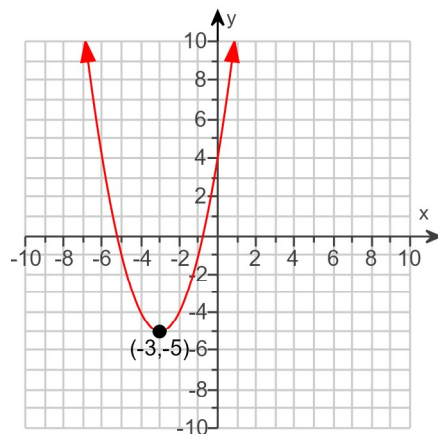


A.

(Type an ordered pair. Use a comma to separate answers as needed.)



B. There are no turning points.



8.

Locate relative maximum and relative minimum points on the graph shown to the right. State whether each relative extremum point is a turning point.

Where are the relative maximum points on the graph? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

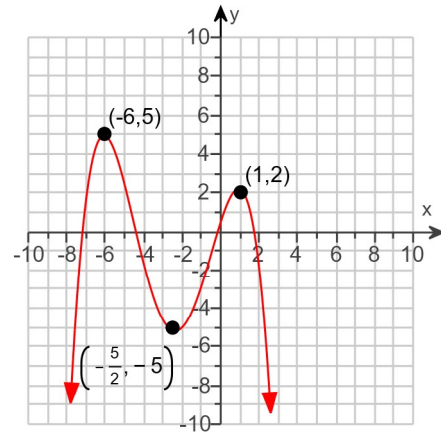
- ☒ A.
(Type an ordered pair. Use a comma to separate answers as needed.)
- ☐ B. There are no relative maximum points.

Where are the relative minimum points on the graph? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☒ A.
(Type an ordered pair. Use a comma to separate answers as needed.)
- ☐ B. There are no relative minimum points.

Which of the relative extremum points are turning points?

- ☐ A.
- ☐ B. $(-6, 5), (1, 2)$
- ☐ C. There are no turning points.
- ☒ D. $(-6, 5), (1, 2),$ and $\left(-\frac{5}{2}, -5\right)$



9. Complete the following statement.

A function f is even if _____.

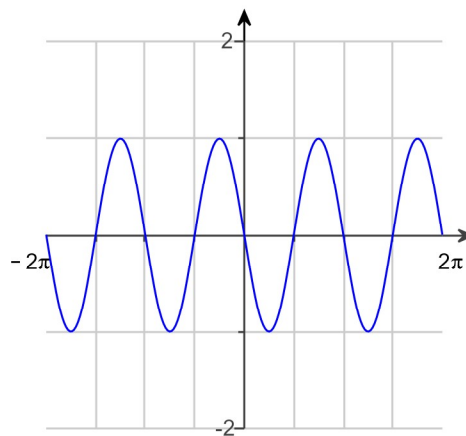
A function f is even if $f(-x) = f(x)$ for all x in the domain of f .

10.

Determine visually whether the function is even, odd, or neither even nor odd.

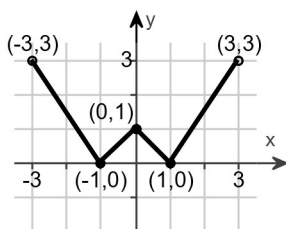
Is the function odd, even, or neither?

- ☒ A. Odd
☐ B. Even
☐ C. Neither



11.

Using the given graph of the function f , find whether the function is even, odd, or neither.



Determine whether the function is even, odd, or neither.

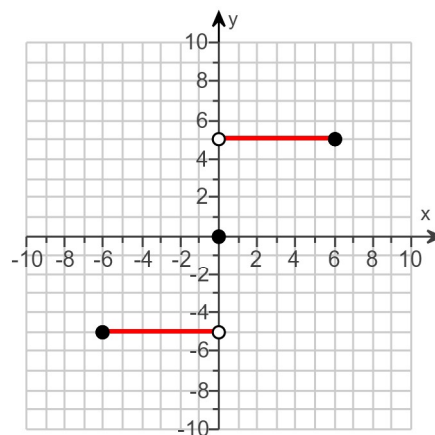
- ☒ Even
☐ Odd
☐ Neither

12.

The graph of a function is given to the right. State whether the function is odd, even, or neither.

Choose the correct answer below.

- ☒ A. The function is odd.
☐ B. The function is neither odd nor even.
☐ C. The function is even.



13. Determine algebraically whether the following function is even, odd, or neither.

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

Which of the following is correct for the given function?

- ☐ A. The function $f(x)$ is an odd function.
☐ B. The function $f(x)$ is neither even nor odd.
☒ C. The function $f(x)$ is an even function.

14. Determine if the function is even, odd, or neither.

$$f(x) = x^5 + x^3$$

The function f is:

- ☒ **A.** odd
☐ **B.** neither
☐ **C.** even

15. Determine if the function is even, odd, or neither.

$$f(x) = 3x + 5$$

Choose the correct answer below.

- ☐ **A.** Odd
☐ **B.** Even
☒ **C.** Neither

16. Determine whether the function is even, odd, or neither even nor odd.

$$f(x) = \frac{1}{x^{10}}$$

Is the function even, odd, or neither?

- ☒ **A.** Even
☐ **B.** Odd
☐ **C.** Neither even nor odd

17. Determine algebraically whether the given function is even, odd, or neither.

$$h(x) = \frac{2x^3}{8x^2 - 9}$$

- ☐ Even
☒ Odd
☐ Neither

18. Determine algebraically whether the given function is even, odd, or neither.

$$f(x) = \frac{x}{x^9 - 5x^7}$$

Which of the following is correct for the given function?

- ☒ **A.** The function $f(x)$ is an even function.
☐ **B.** The function $f(x)$ is neither even nor odd.
☐ **C.** The function $f(x)$ is an odd function.

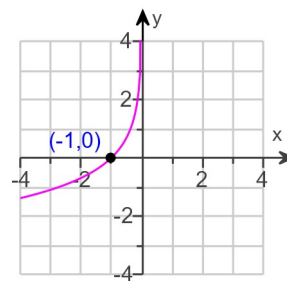
19. Determine algebraically whether the given function is odd, even, or neither.

$$f(x) = \frac{x^2 - 3x}{5x^4 + 2}$$

Choose the correct answer below.

- ☒ **A.** The function is neither odd nor even.
- ☐ **B.** The function is even.
- ☐ **C.** The function is odd.
-

20. The graph of a function is given to the right. Use the graph to find each of the following.
- a.** The domain and the range of the function; **b.** The intercepts, if any; **c.** The intervals on which the function is increasing, is decreasing, or is constant; **d.** Whether the function is even, odd, or neither.



a. What is the domain of the function?

$(-\infty, 0)$ (Type your answer in interval notation.)

What is the range of the function?

$(-\infty, \infty)$ (Type your answer in interval notation.)

b. Determine the x- and y-intercept(s) of the function, if any. Select the correct choice below and, if necessary, fill in the answer box(es) within your choice.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

- ☐ **A.** The x-intercepts of the function are _____. The y-intercepts of the function are _____.
- ☐ **B.** The function has no x-intercepts. The y-intercepts of the function are _____.
- ☒ **C.** The function has no y-intercepts. The x-intercepts of the function are -1 .
- ☐ **D.** The function has no x- or y-intercepts.

c. Identify the interval(s) on which the function is increasing, if any. Select the correct choice below and, if necessary, fill in the answer box(es) within your choice.

- ☐ **A.** The function is increasing on _____. The function is decreasing on _____.
(Type your answer in interval notation.)
- ☒ **B.** The function is never decreasing. The function is increasing on $(-\infty, 0)$.
(Type your answer in interval notation.)
- ☐ **C.** The function is never increasing. The function is decreasing on _____.
(Type your answer in interval notation.)
- ☐ **D.** The function is never increasing nor decreasing.

Identify the interval(s) on which the function is constant, if any. Select the correct choice below and, if necessary, fill in the answer box within your choice.

- ☐ **A.** _____ (Type your answer in interval notation.)
- ☒ **B.** There is no solution.

d. Is the function even, odd, or neither?

- ☐ Even
- ☐ Odd
- ☒ Neither

21. Let $g(x) = 3x^2 - 8$. Find the average rate of change of the function as x changes from -8 to 3 .

The average rate of the function g as x changes from -8 to 3 is .

(Simplify your answer.)

22. A computer notebook manufacturer has a daily fixed cost of \$11,000 and a marginal cost of \$200 per notebook.
- Find the daily cost $C(x)$ of manufacturing x notebooks per day.
 - Find the cost of producing 50 notebooks per day.
 - Find the average cost of a computer notebook assuming that 50 notebooks are manufactured each day.
 - How many notebooks should be manufactured each day so that the average cost per notebook is \$310?

a. The cost function is $C(x) =$.

(Do not factor.)

b. $C(50) = \$$

c. The average cost of a notebook is \$.

d. The manufacturer should produce notebooks.