

Intro to Calculus

Lesson for HW 5

Warm-Up

1. What has to be true about what you put into an absolute value function so that it comes out as the same thing as went in?

2. Apply the above idea to solving the following:

a. $|x| = x$

b. $|x - 4| = x - 4$

3. What is a simpler form of $\sqrt[8]{x^8}$?

4. Apply the idea above to the following:

a. $\sqrt[4]{(x-2)^4} = 8$

b. $\sqrt{x^2 + 4x + 16} = 12$

5. Re-write the following using fractional exponents. Simplify.

a. $\sqrt{\frac{\sqrt{2}}{2}}$

b. $\frac{\sqrt{2^4\sqrt{2}}}{2}$

Goals

I can:

- Find the composition of two functions.
- Create function to represent a situation involving area, perimeter, or volume.
- Use interval notation to describe the domain and range of a function (which may or may not be continuous) given its graph.
- Translate function notation into values on a graph.
- Identify expressions involving a function as distances on a graph of the function, and vice versa.
- Determine if the graph of a function is symmetric about the x-axis, y-axis, or origin.
- Find the location of points on a graph in terms of given distance from the origin.
- Determine if a function is odd or even using graphs or algebra.

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Date _____

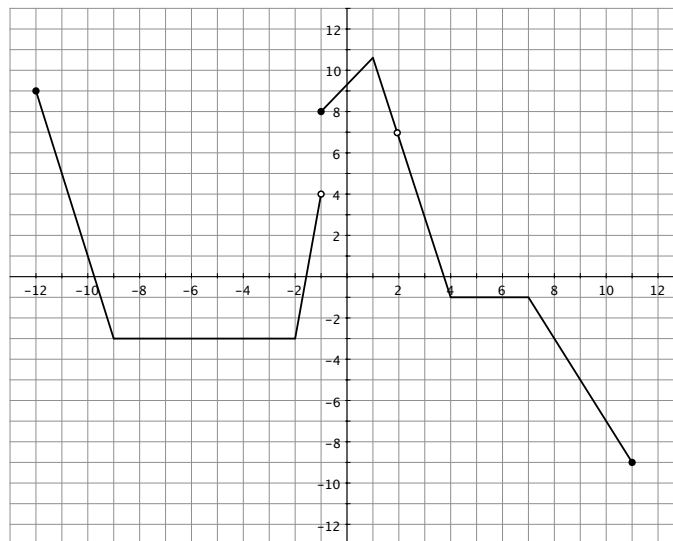
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6. Which of the following statements is true?
- a. A function can have two different x-values for a given y-value.
 - b. A function can have two different y-values for a given x-value.
7. Does the equation $(y + x)^2 - 4x = y^2$ define a function of x ?

Lesson for Homework 5

Part 1: Using a graph to evaluate functions.



1. What is the domain and range of $f(x)$?
2. Find the numerical values for the following. Approximate where necessary.
 - a. $f(1)$
 - b. $f(2)$
 - c. $f(-1)$
3. Draw a segment whose length is $f(-11)$.
4. Find the value(s) of x which make the following true. Approximate where necessary.
 - a. $f(x) = 0$
 - b. $f(x) = 2$
 - c. $f(x) = f(-x)$
 - d. $f(x) = -f(-x)$
 - e. $-f(x) = f(-x)$

Name _____

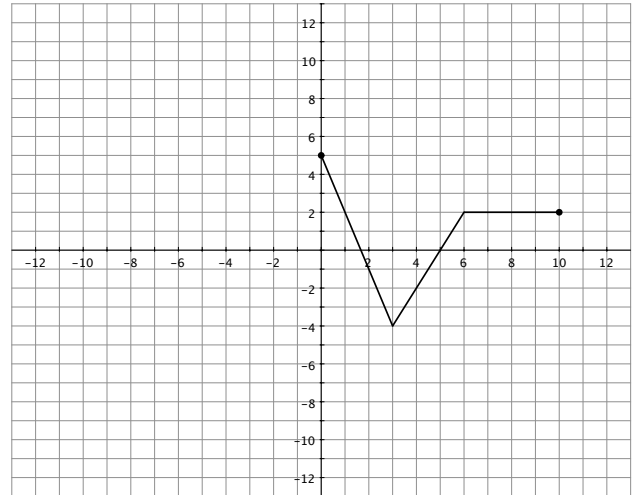
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Part 2- Symmetry of Functions Reflecting Across the y-axis

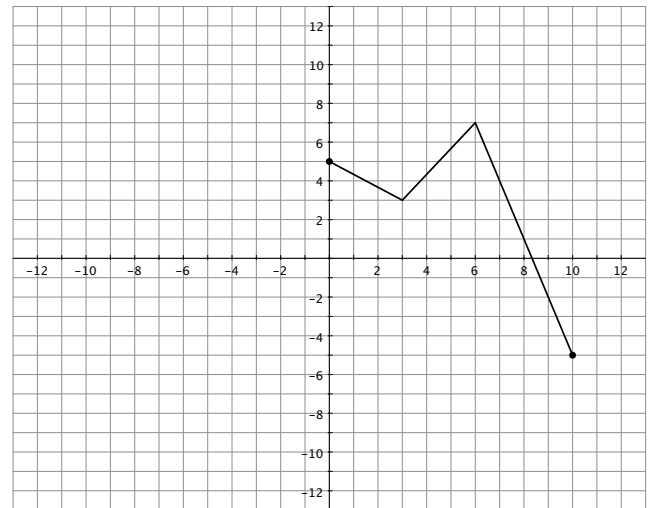
- List the locations of at least three points on the graph. Plot these points on the graph.
- Reflect the graph across the y-axis.
- Locate the points on the reflection which correspond to the three points you drew previously. What are their coordinates?
- In general, what happens to the coordinates of points as the result of reflecting a graph across the y-axis?



- Find locations on the whole graph (original and reflection) where $f(x) = f(-x)$.
- What does it mean for a function to be even?

Reflecting a reflection.

- List the locations of at least three points on the graph. Plot these points on the graph.
- Reflect the graph across the y-axis and then across the x-axis.
- Locate the points on the reflection which correspond to the three points you drew previously. What are their coordinates?
- In general, what happens to the coordinates of points as the result of reflecting a graph across the y-axis and then across the x-axis?
- Find locations on the whole graph (original and reflection) where $f(x) = -f(-x)$.
- What does it mean for a function to be odd?



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Determining symmetry from equations.

1. Algebraically what has to be true about a function if it is even? Odd?
2. Determine algebraically if the following functions are even, odd, or neither. Verify with your grapher.

a. $f(x) = 12x^4$

b. $g(x) = 3x^3 + 5$

c. $k(t) = \frac{t^6 + t^5}{t - 1}$