

## Today's Plan:

**Learning Target (standard):** I will evaluate and graph piecewise functions. I will determine their domain and range. I will calculate the average rate of change for functions. I will describe properties of functions.

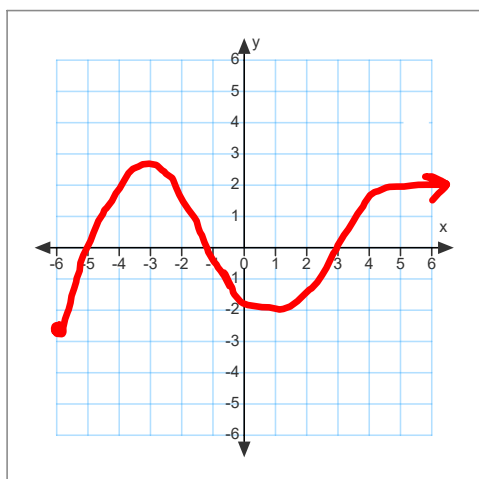
**Students will:** Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, and solve practice quiz problems.

**Teacher will:** Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide practice quiz problems.

**Assessment:** Board work, homework check and practice quiz

**Differentiation:** Students will work at the board, go over and correct homework at their seats, actively engage in practice quiz problems.

## Properties of Functions:



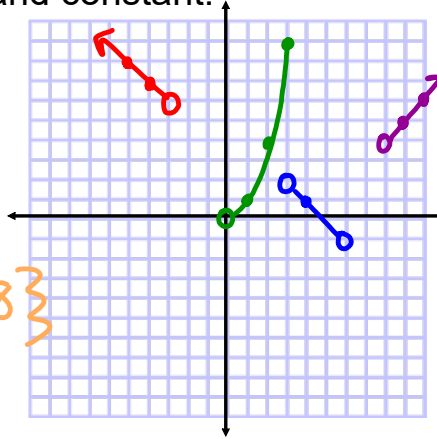
Increasing:  $(-6, -3), (1, 4)$

Constant:  $(4, \infty)$

Decreasing:  $(-3, 1)$

Graph and find domain and range. Describe where it is increasing, decreasing and constant.

$$f(x) = \begin{cases} -x+3 & x < -3 \\ x^2 & 0 < x \leq 3 \\ 5-x & 3 < x < 6 \\ x-4 & x > 8 \end{cases}$$



D:  $\{x \mid x < -3, 0 < x \leq 3, x > 8\}$

R:  $\{y \mid y > -1\}$



Increasing:  $(0, 3), (8, \infty)$

Constant: —

Decreasing:  $(-\infty, -3), (3, 6)$

Even/Odd/Neither?

$$f(x) = |x|$$

$$f(-x) = |-x|$$

$$f(-x) = |x|$$

$\therefore$  even  
 $f(-x) = f(x)$

Even/Odd/Neither?

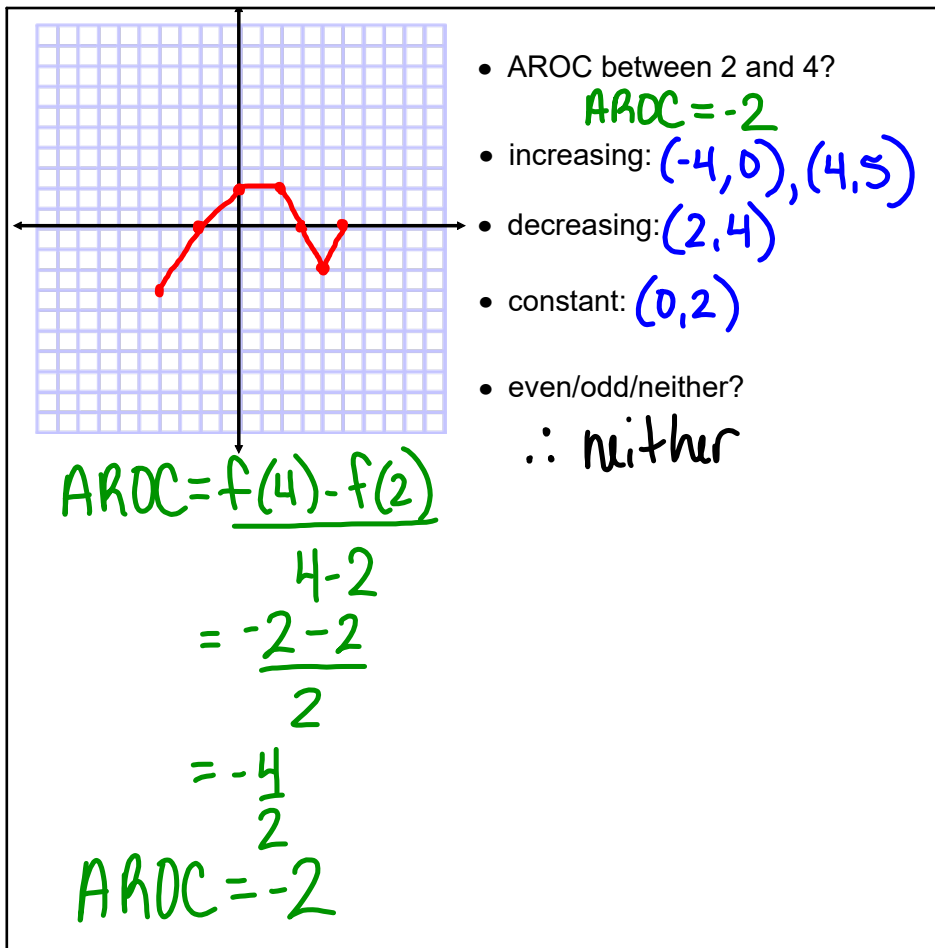
$$f(x) = 3x^3 - 4x$$

$$f(-x) = 3(-x)^3 - 4(-x)$$

$$f(-x) = -3x^3 + 4x$$

$$\therefore \text{odd}$$

$$f(-x) = -f(x)$$



$$f(x) = 2x + 5$$

$$a) f(-x) = 2(-x) + 5$$

$$f(-x) = -2x + 5$$

$$b) -f(x) = -1(2x + 5)$$

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

$$f(x) = 2x + 5$$

$$c) f(2x) = 2(2x) + 5$$

$$f(2x) = 4x + 5$$

$$d) f(x-3) = 2(x-3) + 5$$

$$= 2x - 6 + 5$$

$$f(x-3) = 2x - 1$$

$$f(x) = 2x + 5$$

$$e) f\left(\frac{1}{x}\right) = 2\left(\frac{1}{x}\right) + 5$$

$$f\left(\frac{1}{x}\right) = \frac{2}{x} + 5$$

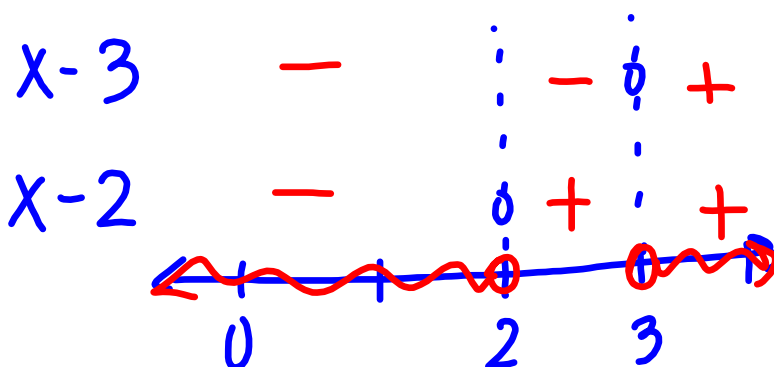
$$f) \frac{1}{f(x)} = \frac{1}{2x+5}$$

Find the domain.

$$f(x) = \frac{3-x}{\sqrt{x^2-5x+6}}$$

$$x^2 - 5x + 6 > 0$$

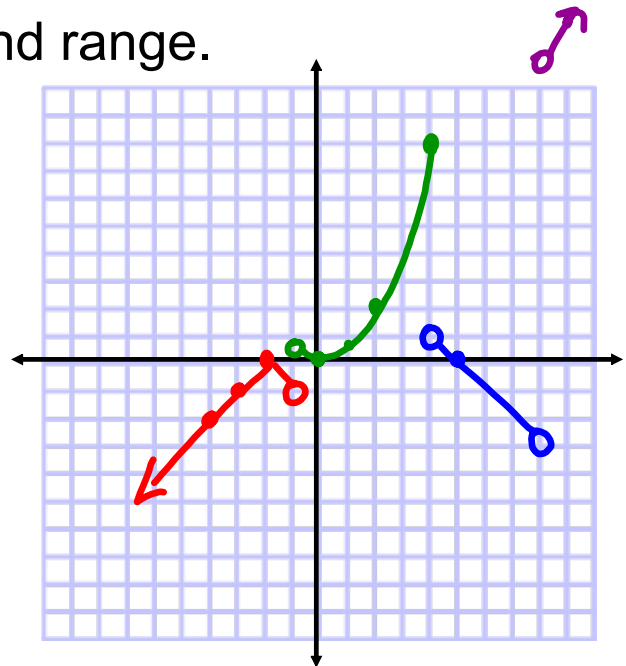
$$(x-3)(x-2) > 0$$



$$D: \{x \mid x < 2, x > 3\}$$

Graph and find domain and range.

$$f(x) = \begin{cases} -|x+2|, & x < -1 \\ \frac{1}{2}x^2, & -1 < x \leq 4 \\ 5-x, & 4 < x < 8 \\ 2x-5, & x > 8 \end{cases}$$



D:  $\{x \mid x \neq -1, 8\}$

R:  $\{y \mid y \leq 8, y > 11\}$



### Assignment:

Part One: p.116 #19,33,43,47,61

Part Two: p.134

#11,15,19,29,33,35,41,45,49,65

\* Be sure to write the problem/draw the graph and show ALL work with correct notation\*

\* Quiz Wednesday \*