

### Written Assignment #3 – Fall 2020

30 points

Written Assignment #3 is due by 11:59 PM EST on Sunday, 11/29 (the end of Week 14). Assignments will be accepted up to 24 hours late with a 20% late point deduction applied. Any assignment submitted past 24 hours late won't be accepted. To submit the assignment, print this handout and complete the problems by hand. (If you don't have access to a printer, you can write your solutions on a separate sheet of paper.) Then either scan or take pictures of each page of the completed assignment and upload the files using the submission link in the Week 13 Assignments – Written Assignment #3 folder. (Be sure to click on the **Submit** button after uploading the files.)

All algebraic work (by hand) must be shown when stated in order to receive credit.

1. Use the graph to answer parts a. – d.

a. What is the function's Domain? [1 point]

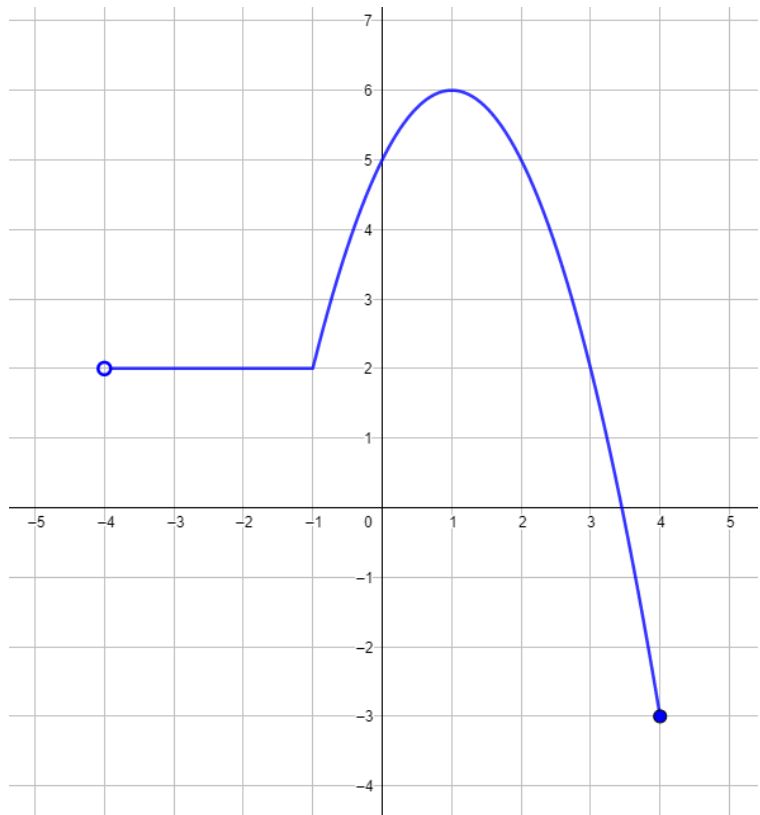
Domain =

b. What is the function's Range? [1 point]

Range =

c. Find  $f(2)$ . [1 point]

$f(2) =$



d. [1 point each]

Determine the open intervals where the function is increasing, decreasing, or constant (if any).

Increasing:

Decreasing:

Constant:

2. Solve using the square root property. Simplify any radical if possible.

**(All algebraic work must be shown to receive credit.)** [2 points]

$$4(x + 3)^2 = 40$$

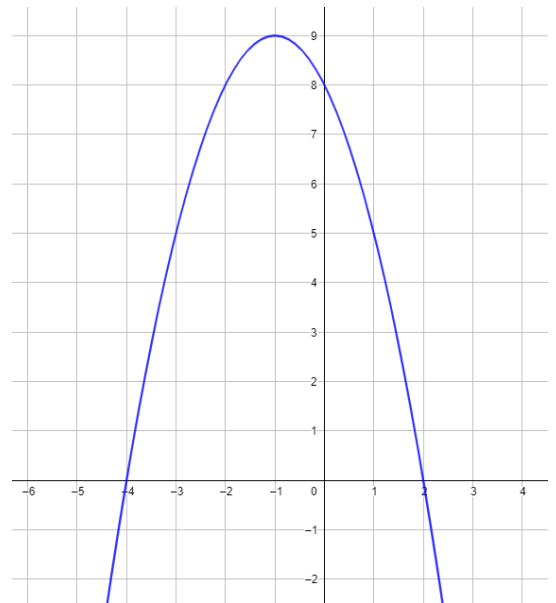
3. Using the quadratic function given below and its graph, answer parts a. – e.

$$f(x) = -(x + 1)^2 + 9$$

a. What is the Range of the function? [1 point]

b. What are the coordinates of the vertex? [1 point]

c. What is the equation for the axis of symmetry? [1 point]



d.

Find the  $x$ -intercepts using the equation of the function. **(All algebraic work must be shown to receive credit.)** [2 points]

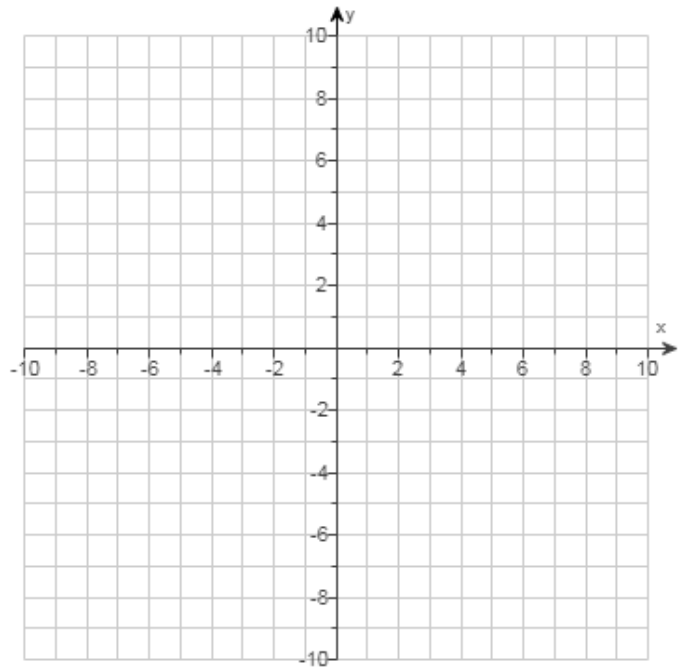
e. Is this a one-to-one function? Explain your answer. [1 point]

4.

Graph the system of linear inequalities. [4 points]

$$2x + y \leq 4$$

$$3x - 5y > 15$$



5. Perform the row operation on the given matrix and then write the new matrix. [2 points]

$$\left[ \begin{array}{ccc|c} 1 & 1 & -2 & 3 \\ 0 & 1 & 2 & -5 \\ 2 & 3 & -1 & 4 \end{array} \right] \quad -2R_1 + R_3 \rightarrow R_3$$

6. Rewrite the given matrix as a system of equations and then solve the system. [3 points]

**(All algebraic work must be shown to receive credit.)**

$$\left[ \begin{array}{ccc|c} 2 & 1 & -5 & 11 \\ 0 & 3 & 1 & 7 \\ 0 & 0 & 4 & -8 \end{array} \right]$$

7.

Solve the system of equations by either reducing it to a  $2 \times 2$  system (Section 5.2) or using matrices (Section 6.1). (It's your choice on which method you would like to use, but **all algebraic work must be shown to receive credit.**) [5 points]

$$\begin{aligned}x + y - z &= 6 \\2x + y + 3z &= 4 \\x - y + z &= -2\end{aligned}$$

8. If  $f(x) = 4x + 3$  and  $g(x) = -5x + 1$ , find  $(f \circ g)(2)$ . [2 points]  
(Show work to receive credit.)