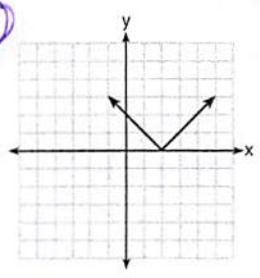
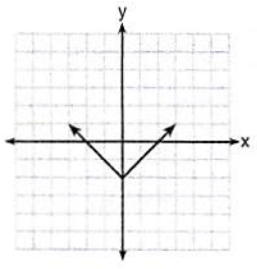
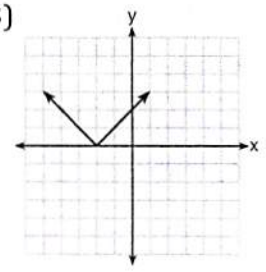
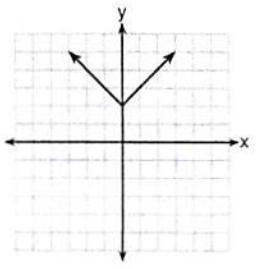
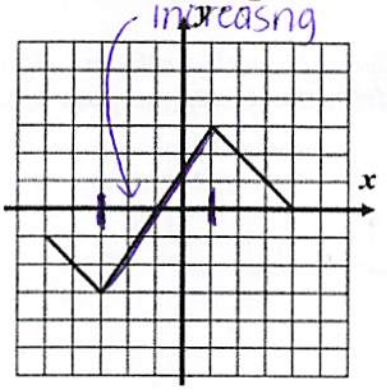
Name Answer Key **Date** _____

Algebra 1 CC Midterm Review Homework #3

Directions: *Choose the best answer. Answer ALL questions. Show ALL work in column 2.* ***If there is no mathematical work to be shown, write an explanation or definition to support your answer!***

1. A system of equations are given below. $x + 2y = 5$ $2x + y = 4$ Which system of equations does *not* have the same solution? ✓(1) $3x + 6y = 15$, $2x + y = 4$ ✓(2) $4x + 8y = 20$, $2x + y = 4$ ✓(3) $x + 2y = 5$, $6x + 3y = 12$ × (4) $x + 2y = 5$, $4x + 2y = 12$	Use elimination method or MATRIX $\begin{bmatrix} 1 & 2 & 5 \\ 2 & 1 & 4 \end{bmatrix}$ $\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 2 \end{bmatrix}$ (1, 2)
2. Which graph represents the equation $y = \|x - 2\|$? (1)  (2) 	Y= 2nd 0 enter graph (3)  (4) 
3. Consider the function given by $f(x) = 2x + 7$. Find its range over the domain interval $-2 \le x \le 3$. $3 \le y \le 13$	$f(x) = 2x + 7$ ← put in calculator + get a table x | y -2 | 3 -1 | 5 0 | 7 1 | 9 2 | 11 3 | 13 } range
4. Officials in a town use a function, C, to analyze traffic patterns. $C(n)$ represents the rate of traffic through an intersection where n is the number of observed vehicles in a specified time interval. What would be the most appropriate domain for the function? (1) {...-2, -1, 0, 1, 2, 3, ...} (2) {-2, -1, 0, 1, 2, 3} (3) $\{0, \frac{1}{2}, 1, 1\frac{1}{2}, 2, 2\frac{1}{2}\}$ (4) {0, 1, 2, 3, ...}	If n represents the number observed vehicles going through an intersection the only domain would be #4. You can not have negative vehicles or fractions of vehicles.

5. Over which interval is the function to the right ***increasing?***



(1) $-1 < x < 4$

(2) $-3 < x < 3$

(3) $-3 < x < 1$

(4) $1 < x < 4$

6. A water tank is being drained by a pump at a constant rate. The volume in the tank, V, in gallons, is given by the equation: $V(t) = -4t + 280$, where t is the time, in minutes, the pump has been on. Based on this equation, which statement is true?

(1) The tank lost 280 gallons after 4 minutes of draining.

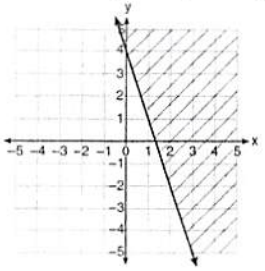
(2) The water tank started with 280 gallons and is draining at a rate of 4 gallons per minute.

(3) The water tank is being filled at a rate of 4 gallons per minute until it reaches 280 gallons.

(4) The water tank started with 280 gallons and is filling at a rate of 4 gallons per minute.

rate of change (slope) ↘ $y = mx + b$ ↙ start, beginning (y-intercept)

7. Which inequality is represented in the graph below?



(1) $y \geq -3x + 4$

(2) $y \leq -3x + 4$

(3) $y \geq -4x - 3$

(4) $y \leq -4x - 3$

solid line indicates
Symbol must be $\leq$ or $\geq$

y-intercept is 4 which rules out choice 3 and 4.

The inequality is shaded upwards indicating $\geq$

8. Which value of x is in the solution set to the system of equations below?

(1) 2

(2) 3

(3) 4

(4) 8

$$9x + 6y = 36$$

$$10x - 4y = 8$$

Use elimination method or matrix

$\begin{bmatrix} 9 & 6 & 36 \\ 10 & -4 & 8 \end{bmatrix}$ $\begin{bmatrix} 1 & 0 & 2 \\ 0 & 1 & 3 \end{bmatrix}$ (2,3)

Because it is asking for the value of x, the answer is 2

9. Create an algebraic equation for the following statement, then determine the value of the number.

3 ∘ + n 6 =

Three times the sum of a number and six is equal to twelve less than that number.

12 − n

turnaround

$3(n + 6) = n - 12$

Annotate
2 operations (∘ +) means you need parentheses.

less than is a turn around word.