5.1 – Introduction to the Cartesian Plane

Class Notes – Solve the following equations.

Set 1 $1 = x + 3$	$2 = x + 3$	$3 = x + 3$	$4 = x + 3$
Set 2 $5 = x + 3$	$6 = x + 3$	$7 = x + 3$	$8 = x + 3$

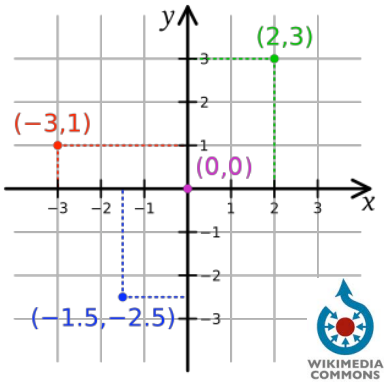
$$\begin{cases} 1 = x + 3, & x = -2 \\ 2 = x + 3, & x = -1 \\ 3 = x + 3, & x = 0 \\ 4 = x + 3, & x = 1 \\ 5 = x + 3, & x = 2 \\ 6 = x + 3, & x = 3 \\ 7 = x + 3, & x = 4 \\ 8 = x + 3, & x = 5 \end{cases}$$

- We can use an equation containing two variables (we usually use x and y) to efficiently represent all possible variations of an equation.
- We can visually represent all possible x-values and the corresponding y-values. In order to do so, we must use the Cartesian Plane.

The Cartesian Plane

The Cartesian Plane, or the coordinate plane, is a two-dimensional method of assigning a point to two corresponding values. The plane consists of two axes. Typically the axes are labeled x and y. Points are organized inside of parenthesis by stating the x-coordinate first, then the y-coordinate separated by a comma.

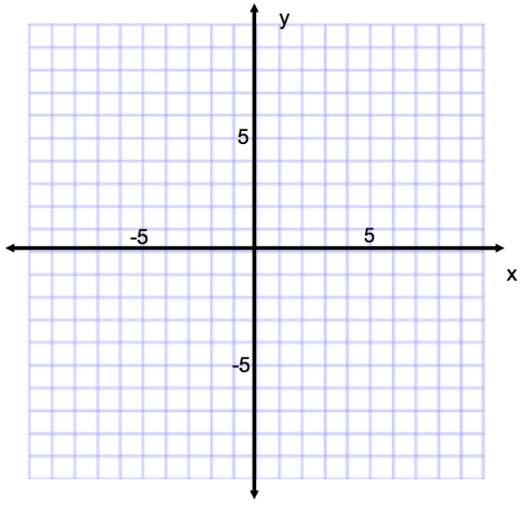
Points can be randomly picked (see Class Activity #1) or can be determined by using an equation (see Class Activity #2).



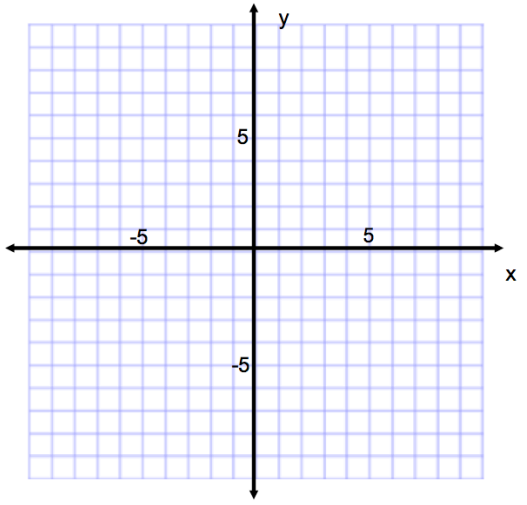
Class Activity #1

Plot each set of random points in the Cartesian Plane.

(3,4) , (-5,2) , (-6,-3) , (8,-7) , (0,7) , (-4,0)



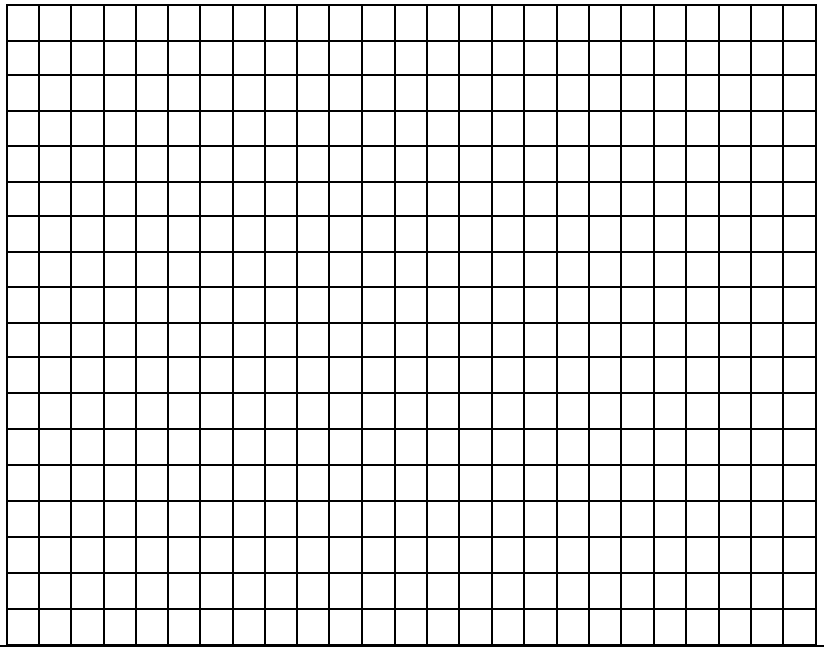
(1,6) , (-2,4) , (-8,-3) , (9,-2) , (0,-3) , (2,0)



Class Activity #2 – Use the work completed in Set 1 and Set 2 to fill in the table below. Then use the table to plot points that represent solutions for the equation $y = x + 3$.

$y = x + 3$

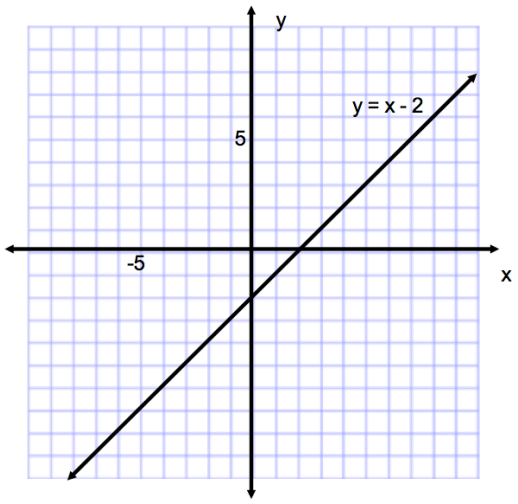
x	Left Side (y)
	1
-1	
0	
	4
2	
	6
	7
5	



In this activity we used the equation $y = x + 3$ to determine points to plot.
What shape do these points form?

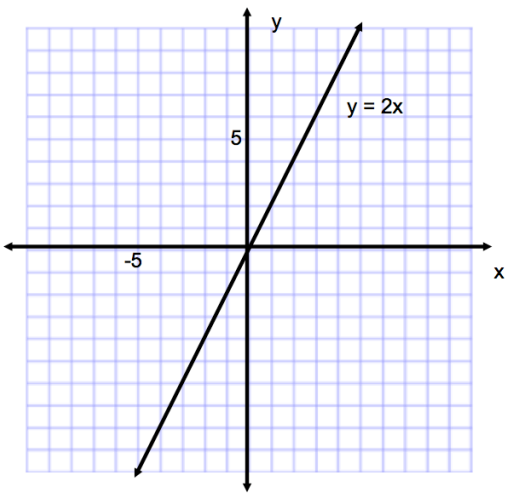
Class Notes – Use each graph to state three coordinates that are solutions for the equation that it represents. Also, state three coordinates that are not solutions for the equation.

Set 1



Solutions

Not Solutions



Solutions

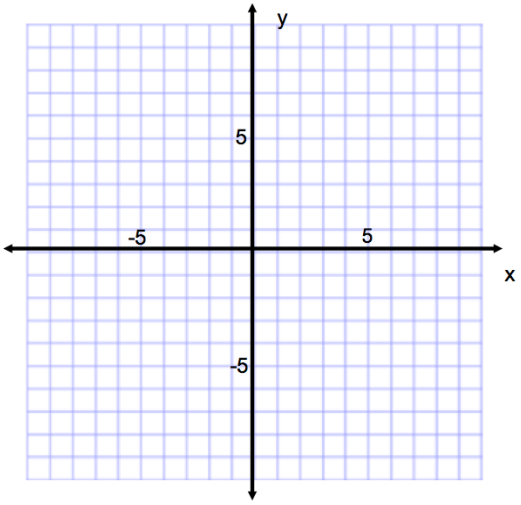
Not Solutions

Review

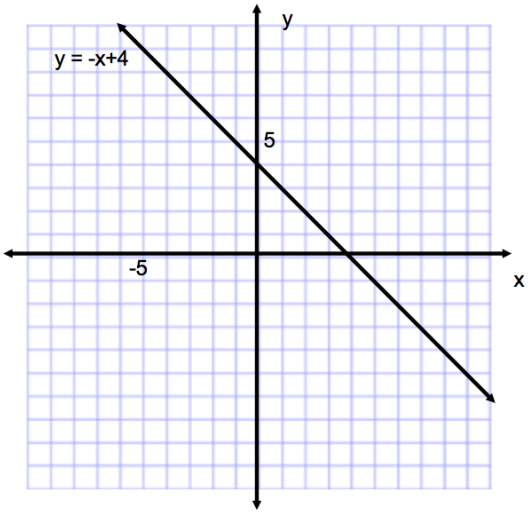
R#1

Plot the points

(5,6) , (-3,4) , (-4,-1) , (10,-5) , (2,9) , (-2,2)



State three points that are solutions of the equation represent by the graph.

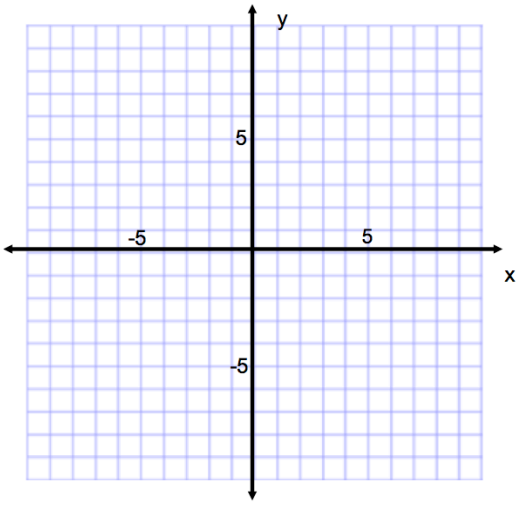


State three points that are not solutions of the equation represent by the graph.

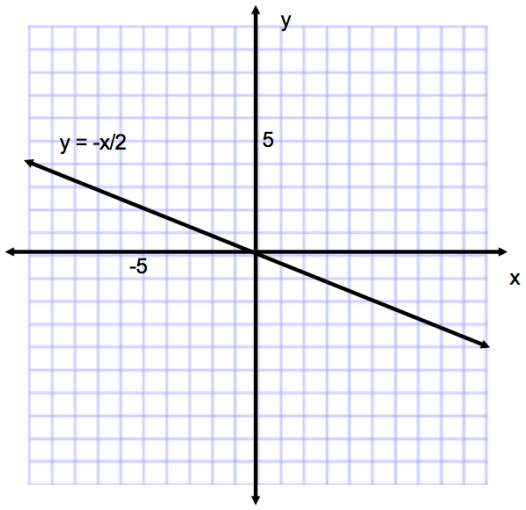
R#2

Plot the point

(-2,3) , (-5,1) , (-10,-5), (7,-1) , (-3,0) , (1,6)



State three points that are solutions of the equation represent by the graph.

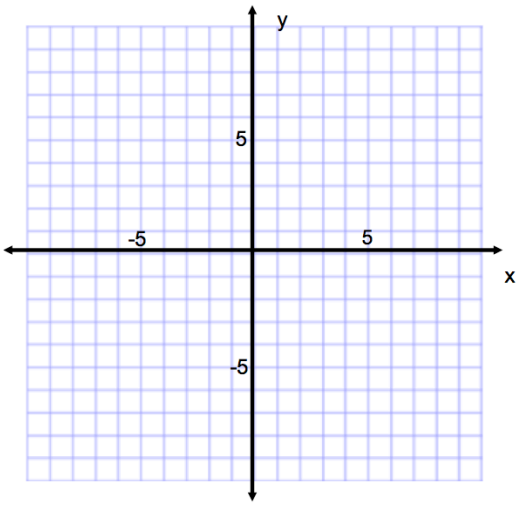


State three points that are not solutions of the equation represent by the graph.

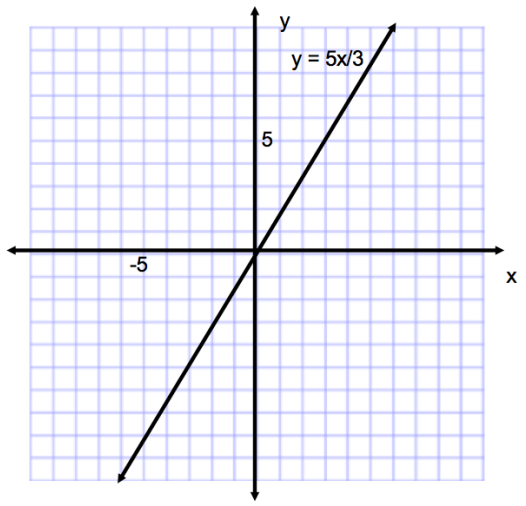
R#3

Plot the points

(1,2) , (-7,0) , (-8,-1) , (6,-9) , (-2,5) , (-6,2)



State three points that are solutions of the equation represent by the graph.



State three points that are not solutions of the equation represent by the graph.