

Patterns in Linear Systems



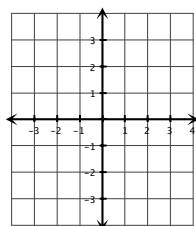
Review – Fill in the blanks to each of the sentence frames.

1) A *solution* to a *system of linear equations* is a set of values that makes each equation _____ (*true, false*).

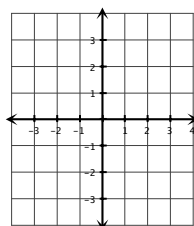
2) For a system of two linear equations whose graphs are intersecting lines, there is / are _____ (*one, none, infinitely many*) solutions.

3) We have learned that there are three different types of *solutions* that can result for a system of two linear equations. Sketch of each of the possible solutions, as described.

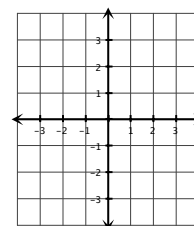
One
Solution



No
Solution



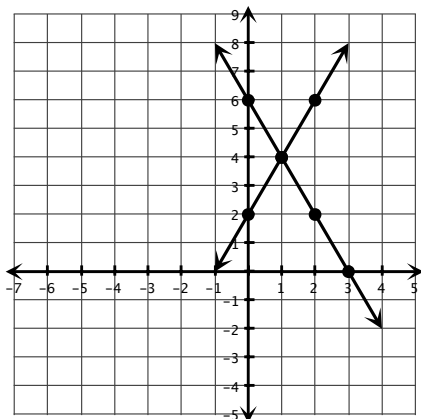
Infinitely
Many
Solutions



For problems four through nine, graph each system of equations and then verify your solution by using substitution.

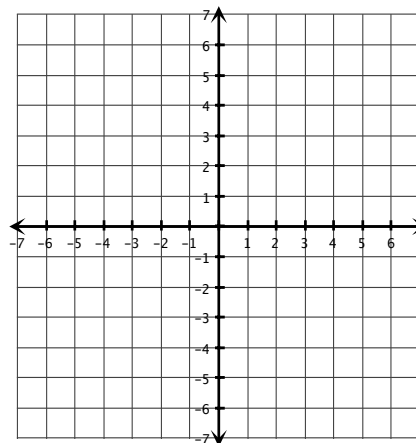
4)
$$\begin{cases} y = -2x + 6 \\ y = 2x + 2 \end{cases}$$

The *solution* is _____.



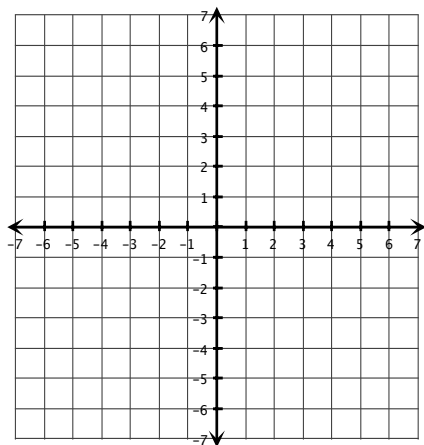
5)
$$\begin{cases} y = 6x - 5 \\ 12x - 2y = -2 \end{cases}$$

The *solution* is _____.



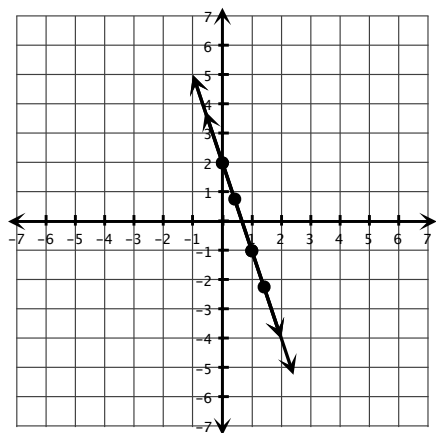
6)
$$\begin{cases} y = x - 1 \\ y = -\frac{1}{2}x + 2 \end{cases}$$

The solution is _____.



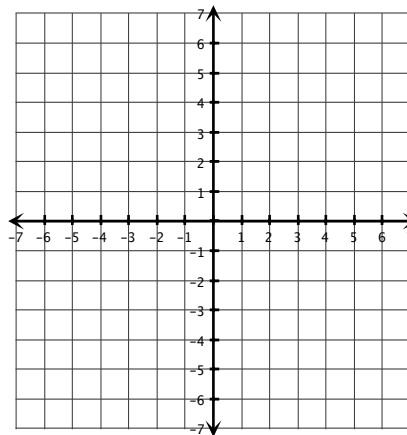
7)
$$\begin{cases} y = -3x + 2 \\ 3x + y = 2 \end{cases}$$

The solution is: _____.



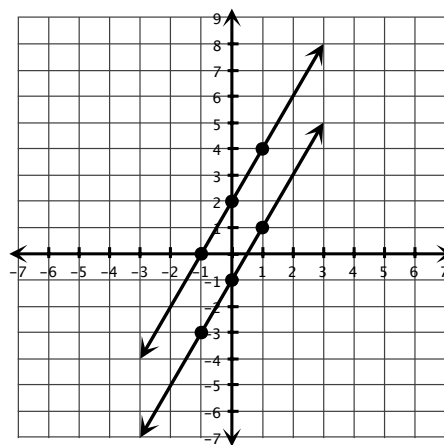
8)
$$\begin{cases} y = \frac{-1}{3}x - 1 \\ -2x - 6y = 6 \end{cases}$$

The solution is _____.



9)
$$\begin{cases} y = 2x - 1 \\ y = 2x + 2 \end{cases}$$

The solution is: _____.



Complete the table below based upon your results from problems 4-9. Use the table to answer the questions below. Number 4 has been filled in for you.

#	Type of Solution (one, none, infinitely many)	Equations in slope-intercept form	Slope for each equation	Y-intercept for each equation
4	one solution	$\begin{cases} y = -2x + 6 \\ y = 2x + 2 \end{cases}$	$m = -2; m = 2$	$b = 6; b = 2$
5				
6				
7				
8				
9				

1) Looking at each of the problems that had *one solution*, what do you notice about the slopes and y -intercepts of their equations?

The slopes are _____, but the y -intercepts may be the _____ or _____.

2) Looking at each of the problems that had *no solution*, what do you notice about the slopes and y -intercepts of their equations?

3) Looking at each of the problems that had *infinitely many solutions*, what do you notice about the slopes and y -intercepts of their equations?