3.1 Solving Linear Systems by Graphing

Learning Targets for today

- To be able to solve linear systems by graphing.

Vocabulary

Linear System (2 equations) – two equations that both contain "x and y".

Ex: $x+y=5$ and $2x+3y=13$

$2+3=5$ ✓

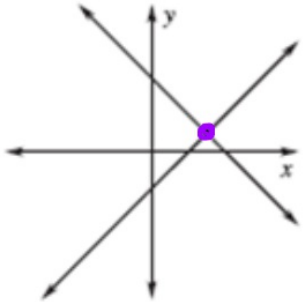
$2(2)+3(3)=13$ ✓

Solution of the system – An order pair that makes both equations in the system true!

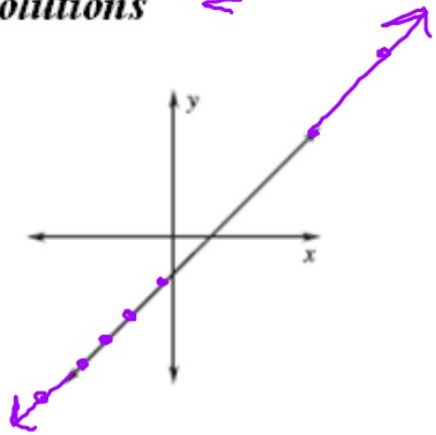
Ex: $(2,3)$ (x,y)

Three Different Types of Solutions – One Solution (x ,y), Infinitely Many solutions, or No Solutions.

Exactly one solution

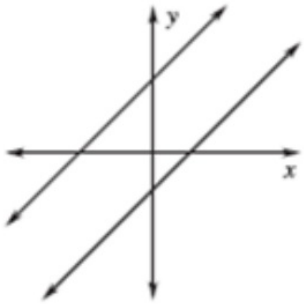


Infinitely many solutions



No Solutions

Parallel



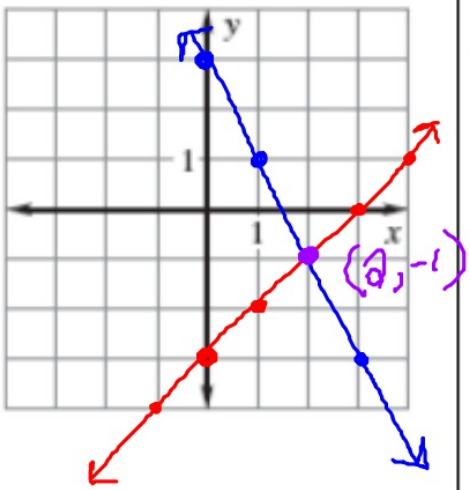
Solve by Graphing

Graph the linear system and estimate the number of solutions.

1. • $y = x - 3$
   • $y = -2x + 3$

(2, -1)

One solution



Graph the linear system and estimate the number of solutions.

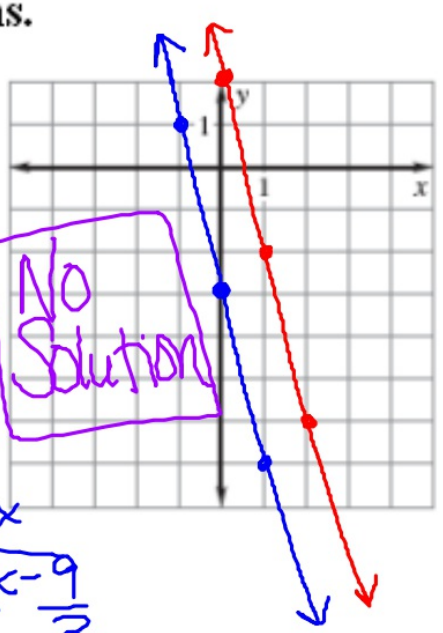
2. $4x + y = 2$
   $12x + 3y = -9$

$4x + y = 2$
$-4x \quad -4x$
$y = -4x + 2$

$12x + 3y = -9$
$-12x \quad -12x$
$\frac{3y}{3} = \frac{-12x - 9}{3}$

$y = -4x - 3$

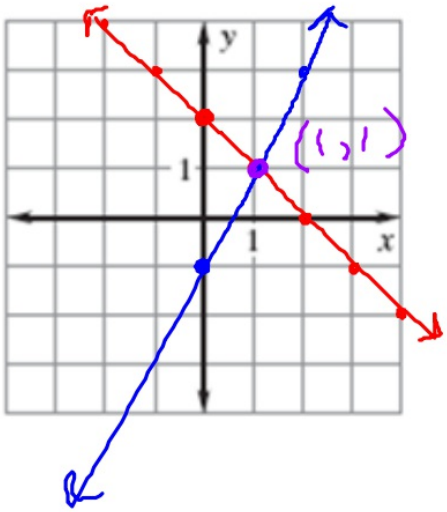
No Solution



Solve by Graphing – YOUR TURN!!

Graph the linear system and estimate the number of solutions.

1. • $y = -x + 2$
   • $y = 2x - 1$



(1, 1)

one solution

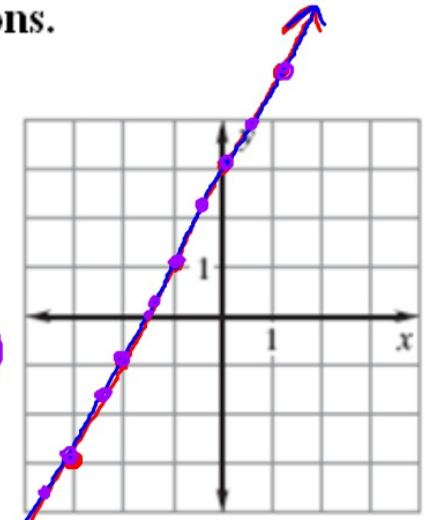
Graph the linear system and estimate the number of solutions.

2. $-2x + y = 3$
   $-6x + 3y = 9$

$-2x + y = 3$
$+2x \quad +2x$
$y = 2x + 3$

$-6x + 3y = 9$
$+6x \quad +6x$
$\frac{3y}{3} = \frac{6x}{3} + \frac{9}{3}$

$y = 2x + 3$



Many Solutions