

Questions for Thought:

What is a solution for $x + 2 = 10$?

$$\begin{array}{r} -2 \quad -2 \\ \hline x = 8 \end{array}$$

What would be a solution to $x + y = 12$?

examples: $x = 2 \quad y = 10$

$x = -2 \quad y = 14$

Lots of solutions !!

Is the point $(5, 2)$ a solution to $3x - 2y = 11$?

$$3(5) - 2(2) = 11$$

$$15 - 4 = 11$$

$$11 = 11 \text{ yes } \text{☺}$$

What would be a solution to $x + y = 12$ and $-x + y = 2$?

$$y = 7$$

$$x = 5$$

Is the point $(5, 2)$ a solution to $3x - 2y = 11$ and $-x + 6y = 7$?

$$3(5) - 2(2) = 11$$

$$15 - 4 = 11$$

$$11 = 11$$

yes

$$-5 + 6(2) = 7$$

$$-5 + 12 = 7$$

$$7 = 7$$

yes

} yes because
it works in
both equations

System of Equations:

2 or more linear equations

Solution to a System of Equations:

an ordered pair that works in all linear equations

Try on your own! Is the point a solution to the system of equations?

$y = x + 4 \quad 0 = -4 + 4 \Rightarrow 0 = 0 \Rightarrow \text{yes !}$

$y = x - 3 \quad 0 = -4 - 3 \Rightarrow 0 = -7 \Rightarrow \text{No !}$

Point $(-4, 0)$

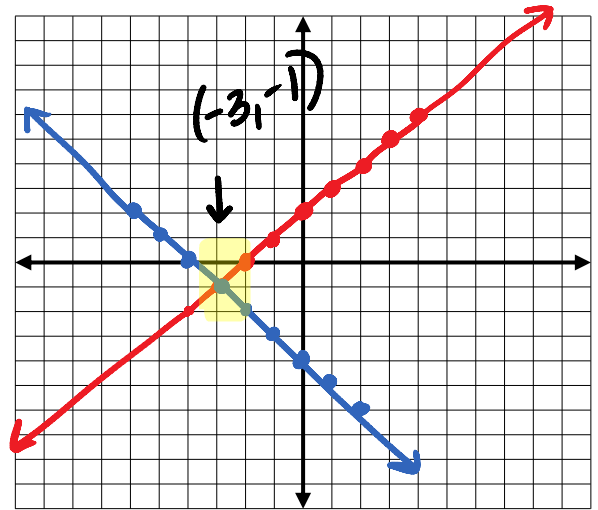
because it does not work in
both, not a solution!

Is the point a solution to the system of equations?

\star $y = x + 2$
 $-1 = -3 + 2$
 $-1 = -1$ yes
 \star $y = -x - 4$
 $-1 = -(-3) - 4$
 $-1 = 3 - 4$
 $-1 = -1$ yes

Point $(-3, -1)$

↓
 This is the point
 where the 2 lines
 cross/intersect!



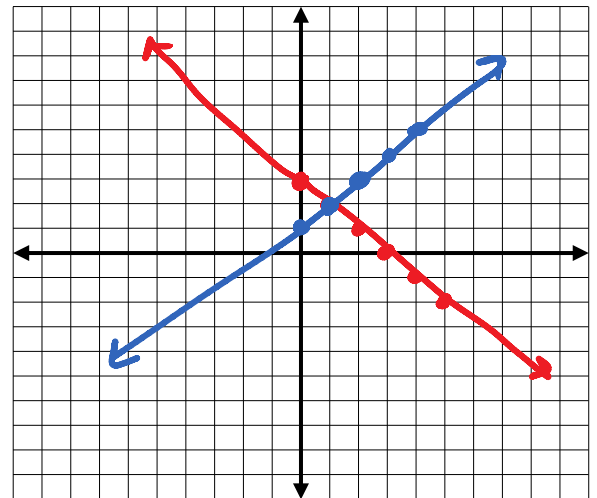
Steps to Solving a System by GRAPHING

1. Write each equation as $y =$
2. Graph both equations.
3. Find the intersection point.
4. Plug the point into BOTH equations to check.

Solve the system by graphing.

\star $y = -x + 3$ Point: $(1, 2)$
 \star $y = x + 1$

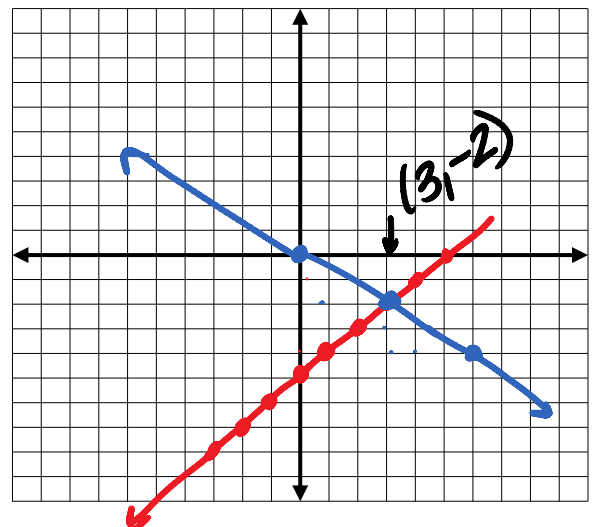
Check: $y = -x + 3$ $y = x + 1$
 $2 = -1 + 3$ $2 = 1 + 1$
 $2 = 2$ ✓ $2 = 2$ ✓



Solve the system by graphing.

\star $y = x - 5$ Point $(3, -2)$
 \star $y = -\frac{2}{3}x$

$y = x - 5$ $y = -\frac{2}{3}x$
 $-2 = 3 - 5$ $-2 = -\frac{2}{3}(3)$
 $-2 = -2$ $-2 = -2$
 (✓) (✓)



Solve the system by graphing.

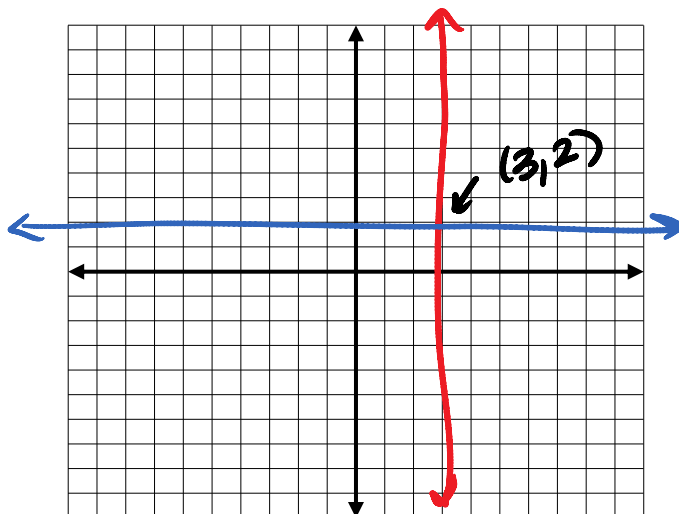
$x = 3$

Point $(3, 2)$

$y = 2$

$3 = 3$ $2 = 2$

✓



Solve the system by graphing.

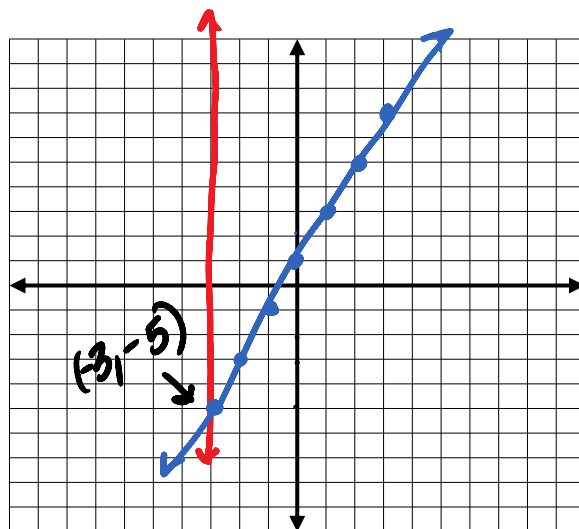
$x = -3$

Point $(-3, -5)$

$y = 2x + 1$

$x = -3$ $y = 2x + 1$

$-3 = -3$ $-5 = 2(-3) + 1$
 $-5 = -5$



Solve the system by graphing.

$x + y = 4 \Rightarrow y = 4 - x$

$2x + y = 5 \Rightarrow y = 5 - 2x$

Point $(1, 3)$

$x + y = 4$

$1 + 3 = 4$

$4 = 4$

✓

$2x + y = 5$

$2(1) + 3 = 5$

$2 + 3 = 5$

$5 = 5$

✓

