5-2: Solving Linear Systems by Graphing

Objectives:

I can solve a system of linear equations by graphing

I can determine if a system has 0, 1 or infinitely many solutions

$$y = mx + b$$

slope (↑ under m)   y-int (↑ under b)

Vocab:

Solution — where lines cross

Ordered pair — (x, y)

System — Multiple lines on a graph
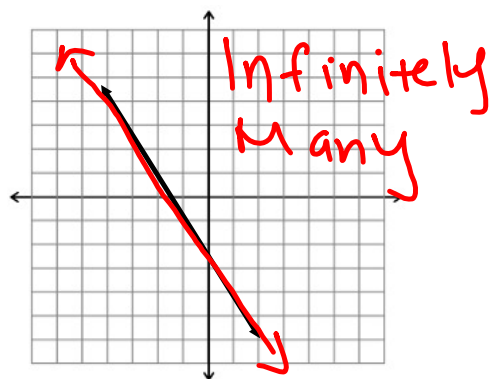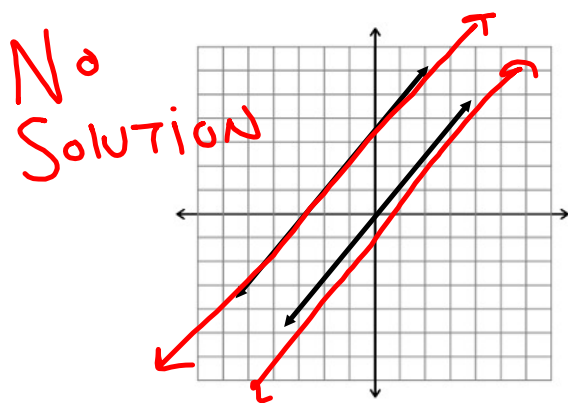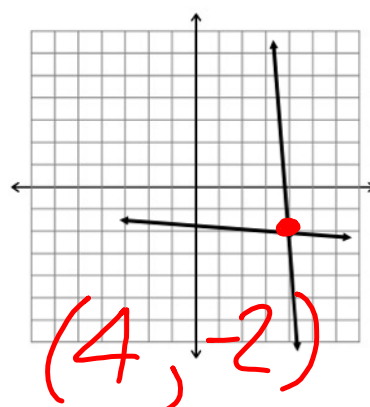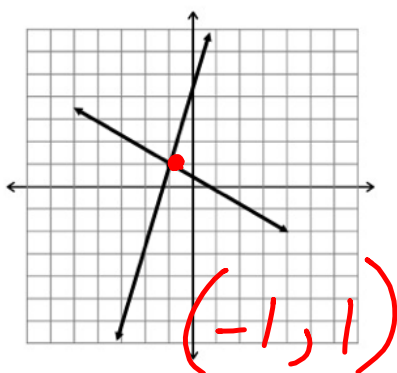
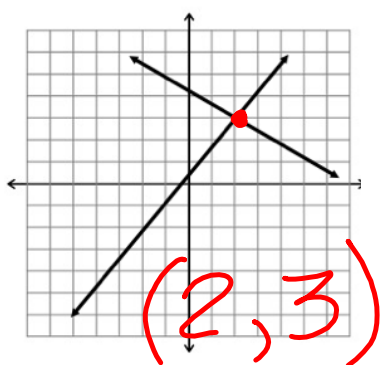No solution — parallel lines (never cross)

Infinitely many solutions — Same line (always crosses)
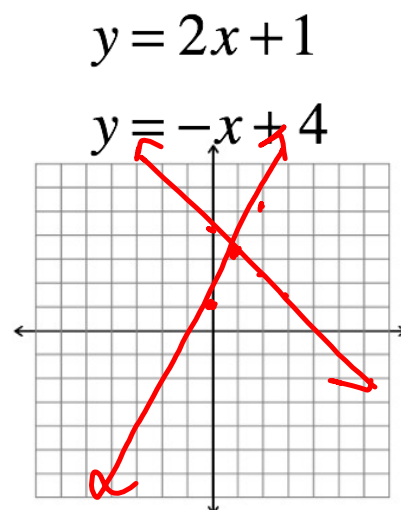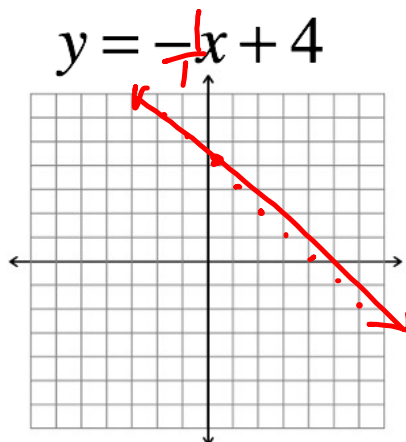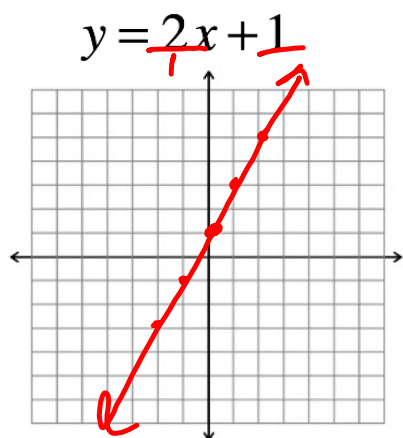
Question:

What does a solution to a system of linear equations look like on a graph? CROSS

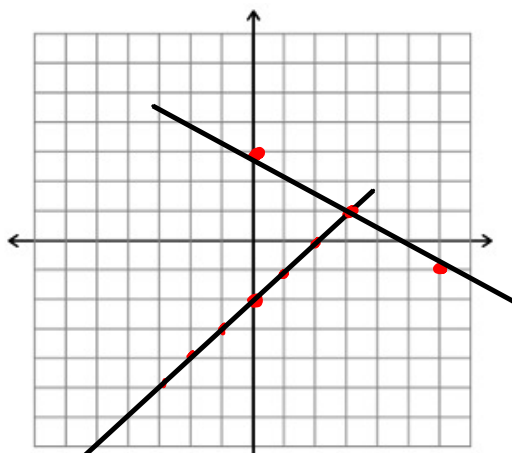How do we write the solution? (x, y)

Identify the solution

(2,3)

(-1,1)

(4,-2)

No
SOLUTION

Infinitely
Many

Graph

$y = 2x + 1$

$y = 2x + 1$

$y = -\frac{1}{1}x + 4$

$y = 2x + 1$

$y = -x + 4$

Solution: (1 , 3)

Find the solution to the system of equations

$y = \frac{1}{1}x - 2$

$y = -\frac{2}{3}x + 3$

$y = -3x + 6$

$y = x - 2$
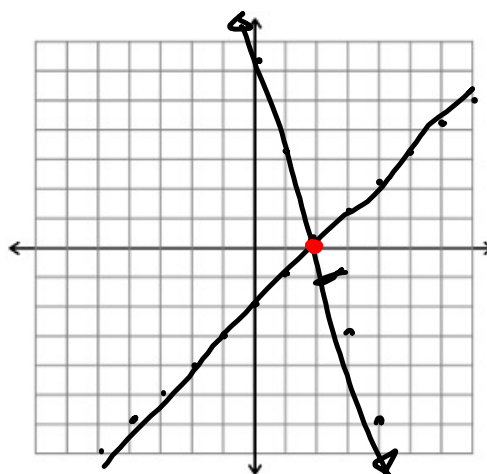
Solution: $(3, 1)$

Solution: $(2, 0)$
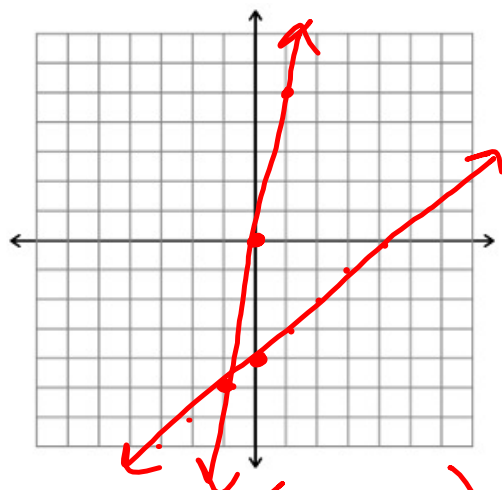
Find the solution to the system of equations

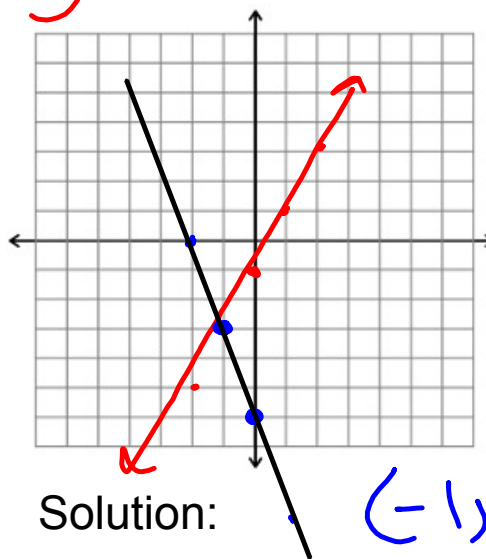$y = x - 4$

$y - 5x = 0$

$+5x \quad +5x$

$y = 5x + 0$

$y = 2x - 1$

$y + 3x = -6$

$-3x \qquad -3x$

$y = -6 - 3x$

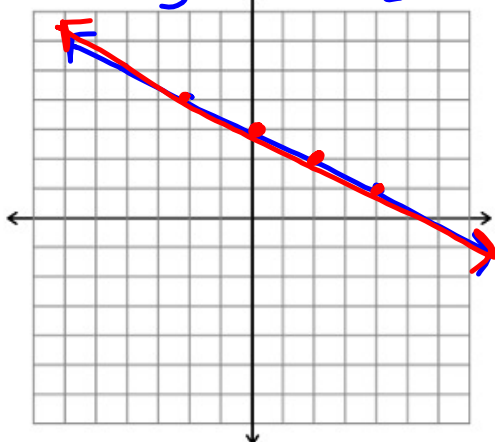$y = -3x - 6$

Solution: $(-1, -5)$

Solution: $(-1, -3)$

Find the solution to the system of equations

$y = -\dfrac{1}{2}x + 3$

$2y + x = 6 \ -x$

$-x$

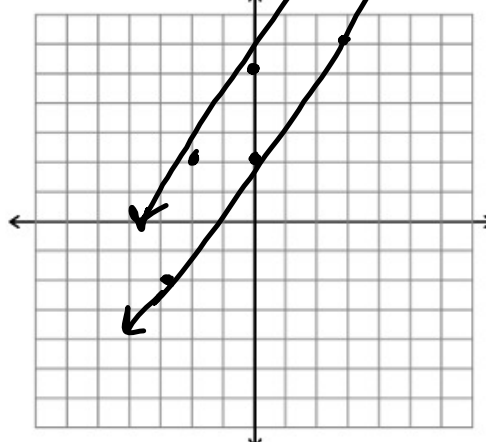$2y = \dfrac{6 - x}{2}$

$y = 3 - \dfrac{1x}{2}$

$y = \dfrac{4}{3}x + 2$

$3y + 4x = 15$

$\dfrac{3y}{3} = \dfrac{4x}{3} + \dfrac{15}{3}$

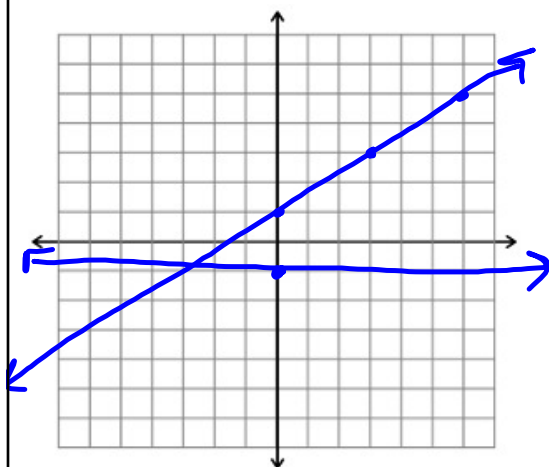$y = \dfrac{4}{3}x + 5$

Solution: **aLL SoLUTIoNS**

IMS

Solution: **N.S.**

Find the solution to the system of equations

$$y = \frac{2}{3}x + 1$$

$$y = -1$$

$$y = -\frac{1}{1}x$$

$$x = -3$$

Solution: $(-3, -1)$

Solution: $(-3, 4)$