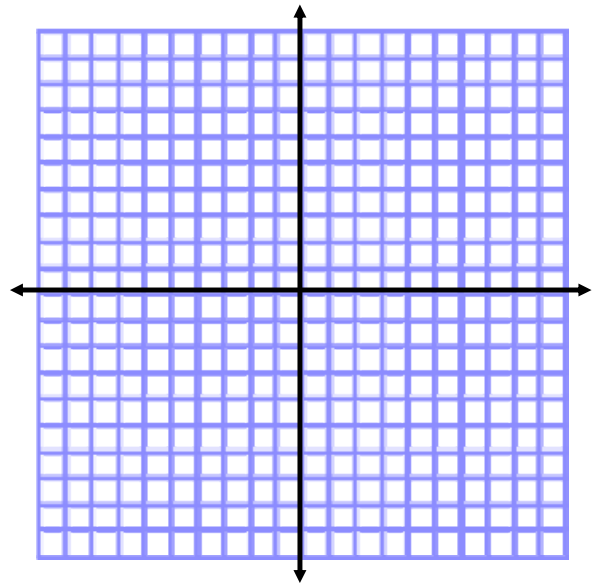


Warm-up 11/13

Graph the following functions on a coordinate plane.

1. $y = -2x + 7$

2. $15x - 5y = 20$



Warm-up 11/13

Graph the following functions on a coordinate plane.

1. $y = -2x + 7$ $m = -\frac{2}{1}$

2. $15x - 5y = 20$

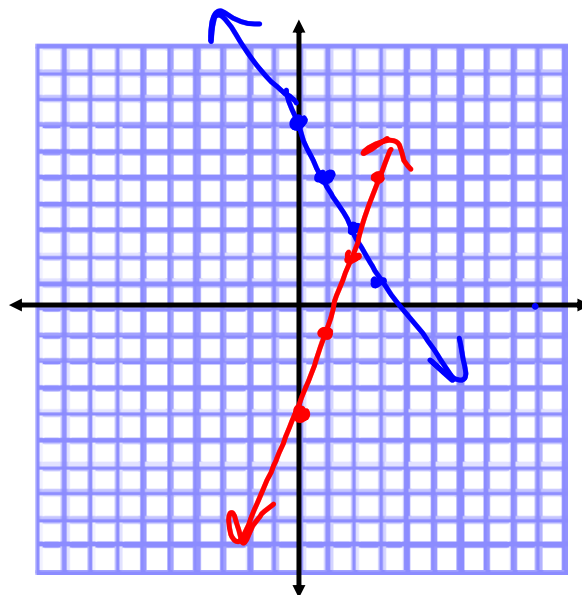
~~$-15x$~~ ~~$-15x$~~

~~$-5y$~~ = $\frac{20}{-5} - \frac{15x}{-5}$

$y = -4 + 3x$

$y = 3x - 4$

$\frac{-0 - 1x}{5 \sqrt{25}}$



5.1

Today's Goal

I can...

- solve systems of equations by graphing
- solve systems of equations by substitution



Section 5.1~ Solving Systems of Equations

System of Equations (Linear Systems)

2 linear equations that have 2 unknowns (variables) which a common solution is desired.

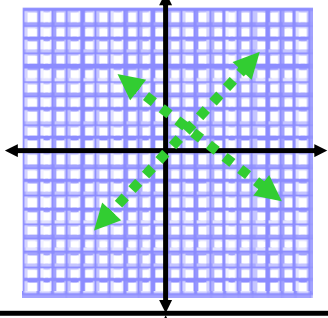
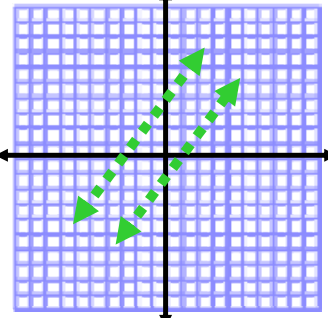
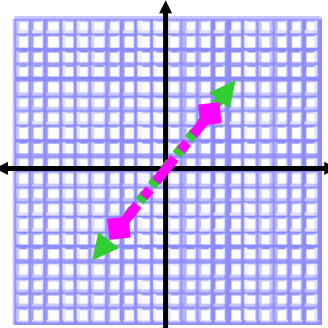
What is a solution of a linear equation?

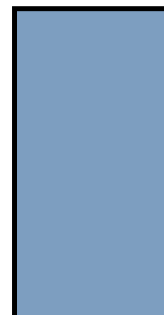
The x and y ordered pair where the lines intersect.

(x,y)

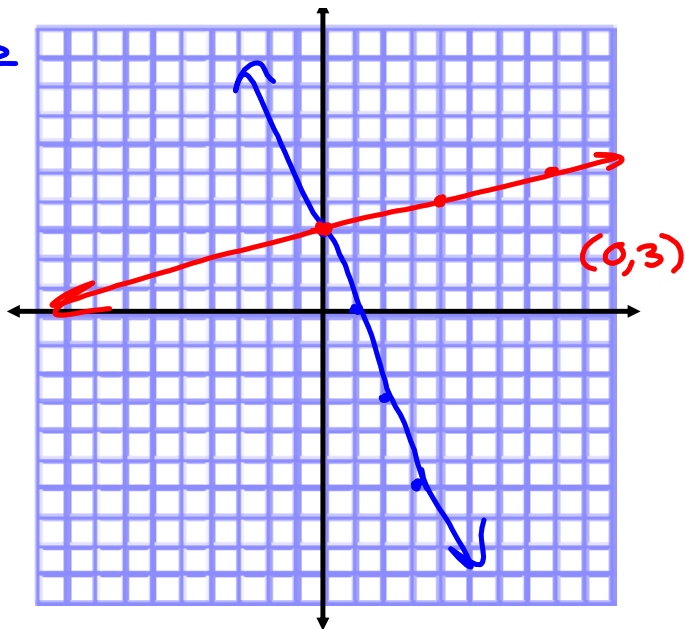


How would two lines have a common solution?

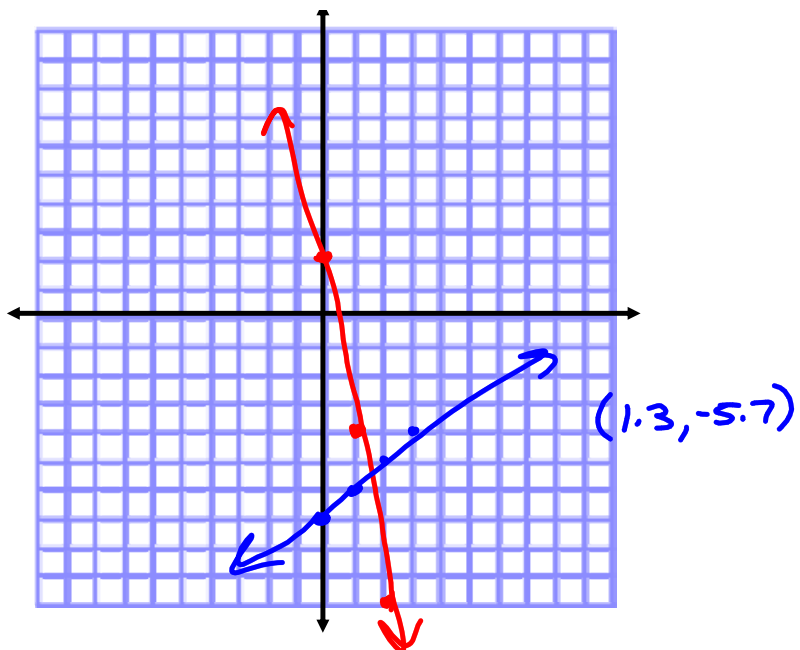
Type of lines	Picture of lines	Number of Solutions	Type of System
Intersecting		1	Consistent Independent
Parallel		0	Inconsistent
Collinear		∞	Consistent Dependent



$$\begin{aligned} & \underline{y = -3x + 3} \quad m = \frac{-3}{1} \\ & \underline{y = 1/4x + 3} \\ & y = (1/4)x + 3 \end{aligned}$$



$y = -6x + 2$
 $y = x - 7$



Write down these two equations.

$$y = 2x - 5$$

$$y = -3x + 10$$

Calculator Instructions

1. Press the **On** button
2. Press the **y=** button
3. Type the equation $y = 2x - 5$
press **2** then the **x,t,o,n** button then press **-** button then press **5**
4. Press **enter**.
5. Type the equation $y = -3x + 10$
press the **(-)** button then **3** then the **x,t,o,n** button then **+** then press **1** **0**



6. Press the Graph button
(you should see 2 intersecting lines)

7. To find the exact point of intersection, press 2nd

8. Press TRACE button

9. scroll to 5: intersection, once the number is highlighted, press enter

10. On the graph screen it says "1st Curve?" press enter

11. Now it says "2nd Curve?" press enter

12. Now it says "Guess?", move the cursor to the point of intersection AND press enter.

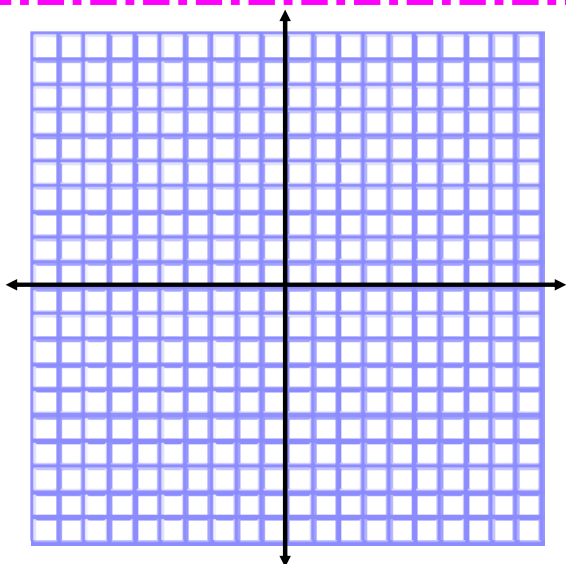
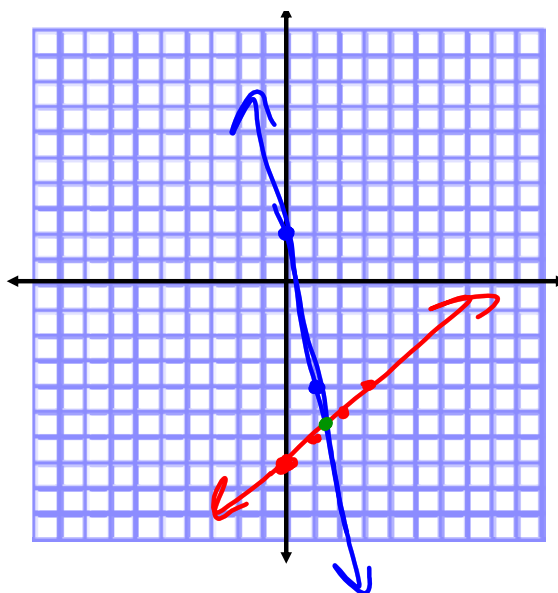
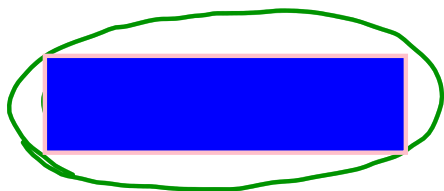


$$y = 2x - 5$$

$$y = -3x + 10$$

(3, 1)

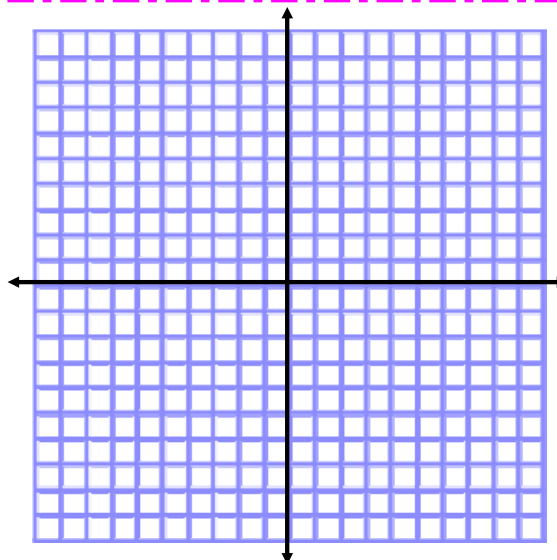
$$\begin{aligned} y &= -6x + 2 & m &= -\frac{6}{1} \\ \underline{y} &= x - 7 & m &= \frac{1}{1} \end{aligned}$$



$$\begin{aligned} 3y &= 9x - 27 \\ y &= -x + 8 \end{aligned}$$

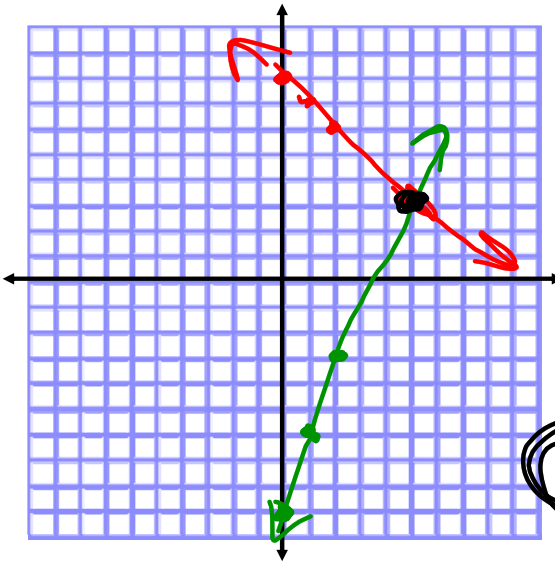
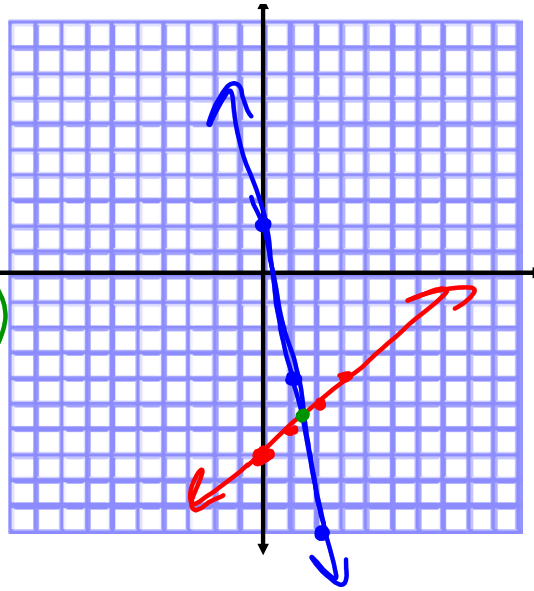


$$\begin{aligned} -x + 2y &= 8 \\ -8x - 4y &= -16 \end{aligned}$$



$$\begin{aligned} y &= -6x + 2 & m &= -\frac{6}{1} \\ y &= x - 7 & m &= \frac{1}{1} \end{aligned}$$

$(1.29, -5.71)$



$$\begin{aligned} 3y &= 9x - 27 \\ y &= -x + 8 \end{aligned}$$

$$\frac{3y}{3} = \frac{9x}{3} - \frac{27}{3}$$

$$y = 3x - 9$$

$(4.25, 3.75)$

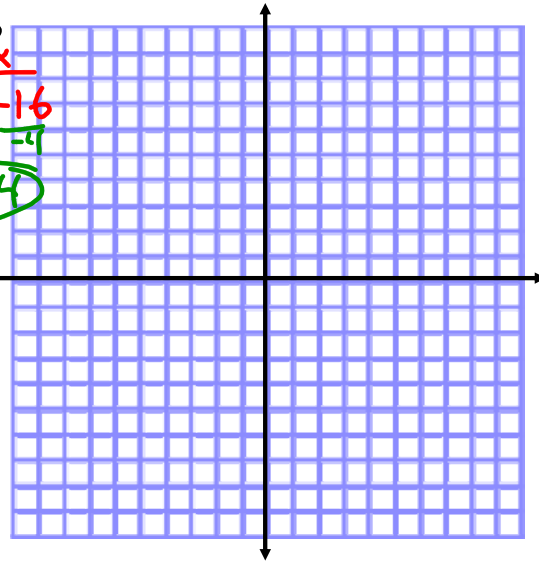


$$\begin{aligned} -x + 2y &= 8 \\ -8x - 4y &= -16 \end{aligned}$$

$$\begin{aligned} -x + 2y &= 8 \\ +x & \\ \hline 2y &= x + 8 \\ y &= \frac{1}{2}x + 4 \end{aligned}$$

$$\begin{aligned} -8x - 4y &= -16 \\ +8x & \\ \hline -4y &= 8x - 16 \\ -4 & \quad -4 \quad -4 \\ y &= -2x + 4 \end{aligned}$$

$(0, 4)$

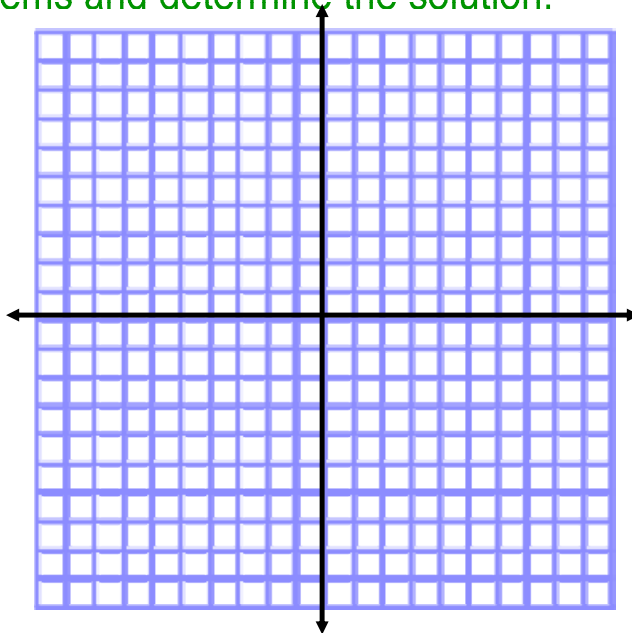


Try these!!!

Graph the following systems and determine the solution.

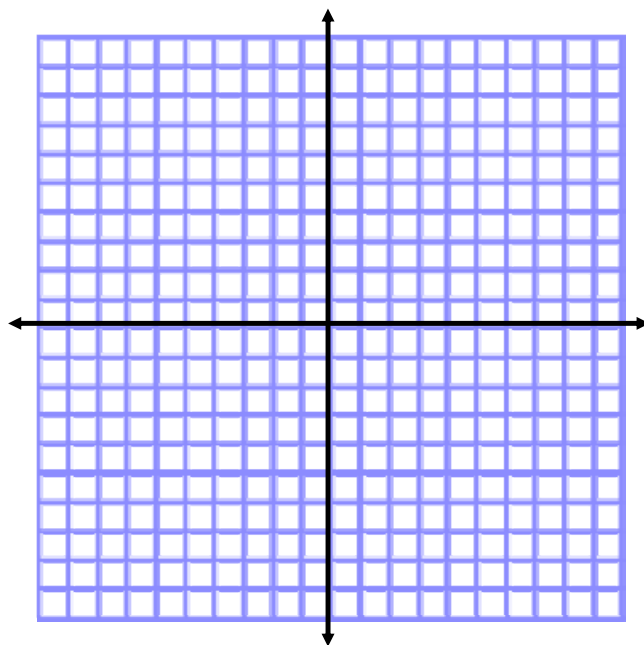
$$y = -3x + 1$$

$$y = 8x - 10$$



$$y = \frac{1}{2}x - 11$$

$$y + 12x = 4$$



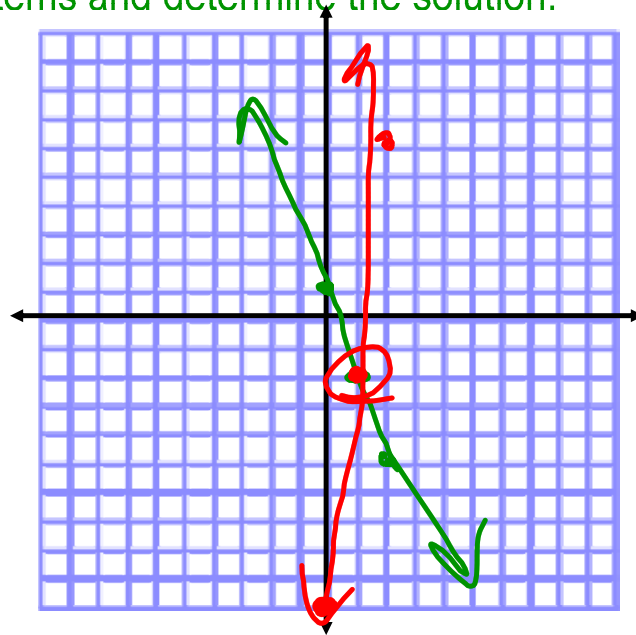
Try these!!!

Graph the following systems and determine the solution.

$$\underline{y = -3x + 1}$$

$$\underline{y = 8x - 10}$$

$$(1, -2)$$



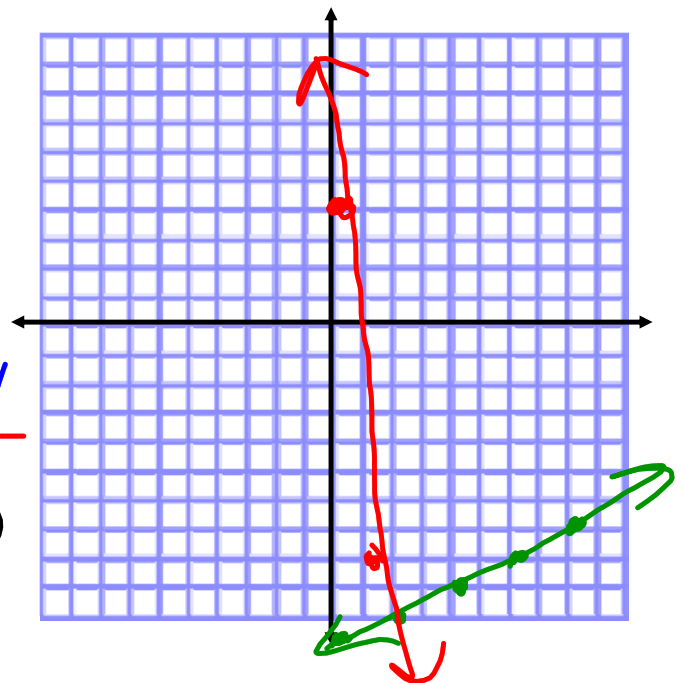
$$\underline{y = 1/2x - 11}$$

$$y + 12x = 4$$

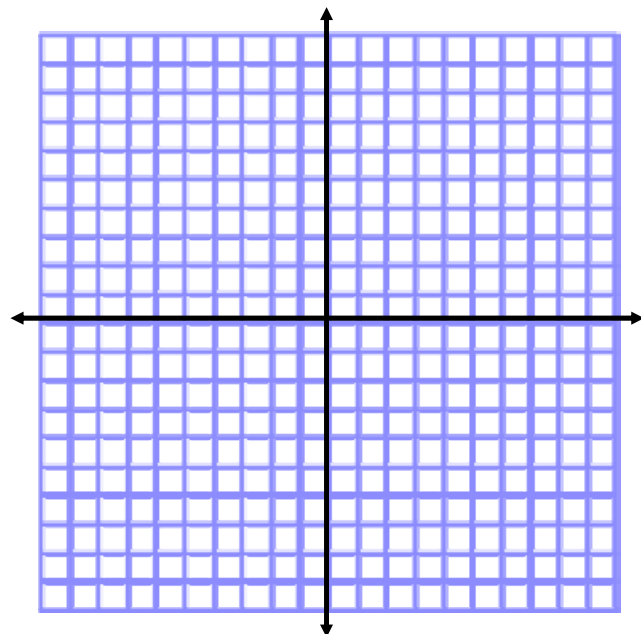
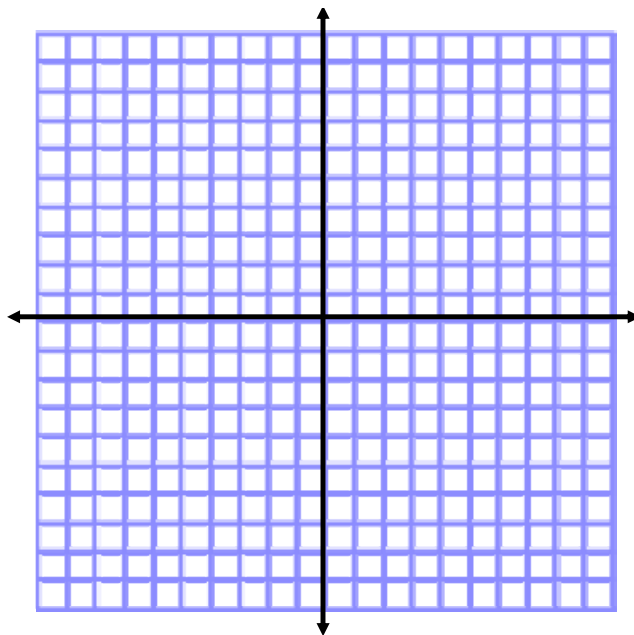
$$\underline{\quad -12x \quad -12x}$$

$$\underline{y = -12x + 4}$$

$$(1.2, -10.4)$$



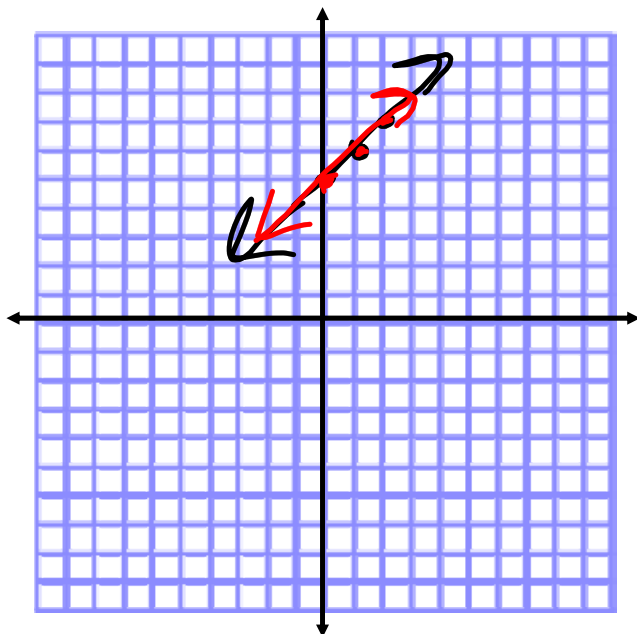
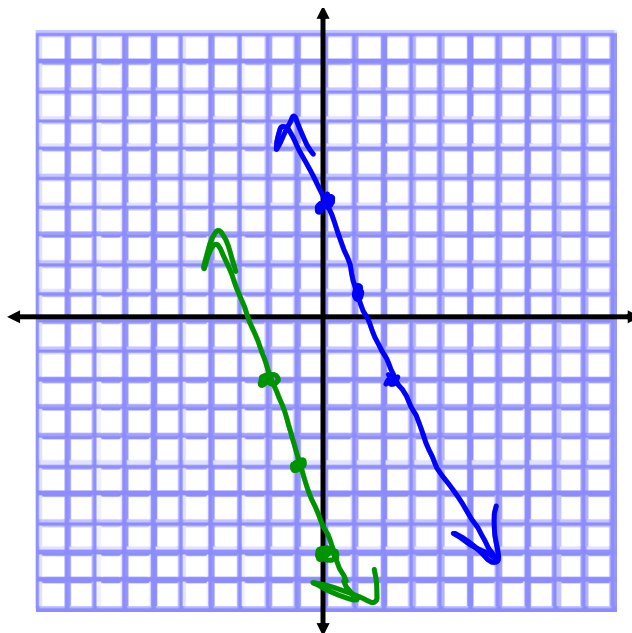
$$y = -3x + 4$$
$$y + 3x = -8$$



$$y = x + 5$$
$$3y = 3x + 15$$

$$\begin{array}{r}
 y - 3x = 4 \\
 y + 3x = -8 \\
 \hline
 -3x \quad -3x \\
 \hline
 y = -3x - 8
 \end{array}$$

no
solution



$$\begin{array}{r}
 y = x + 5 \\
 3y = 3x + 15 \\
 \hline
 y = x + 5
 \end{array}$$

∞ solutions

$$y = -2x + 1$$

$$2y - 4x = -10$$

$$y = -2x + 1$$

$$2y - 4x = -10$$

$$\begin{array}{r} +4x \quad +4x \\ \hline \end{array}$$

$$\frac{2y}{2} = \frac{4x}{2} - \frac{10}{2}$$

$$y = 2x - 5$$

$$(1.5, -2)$$

$$\begin{aligned} 3) \quad x - y &= 3 \\ 7x - y &= -3 \end{aligned}$$

$$\begin{aligned} 4) \quad 4x + y &= 2 \\ x - y &= 3 \end{aligned}$$

$$3) \begin{aligned} x - y &= 3 \\ 7x - y &= -3 \end{aligned}$$

$$y = x - 3$$

$$y = 7x + 3$$

$$(-1, -4)$$

$$4) \begin{aligned} 4x + y &= 2 \\ x - y &= 3 \end{aligned}$$

$$y = -4x + 2$$

$$y = x - 3$$

$$(1, -2)$$