

## Lesson 2.3: Graphing Lines

Slope-Intercept Form:  $y=mx+b$  ← y-intercept  
                                    ↓  
                                    slope

Standard Form:  $ax+by=c$

Find the x- and y-intercepts.

$$* \quad x - y = 3$$

x-intercepts:

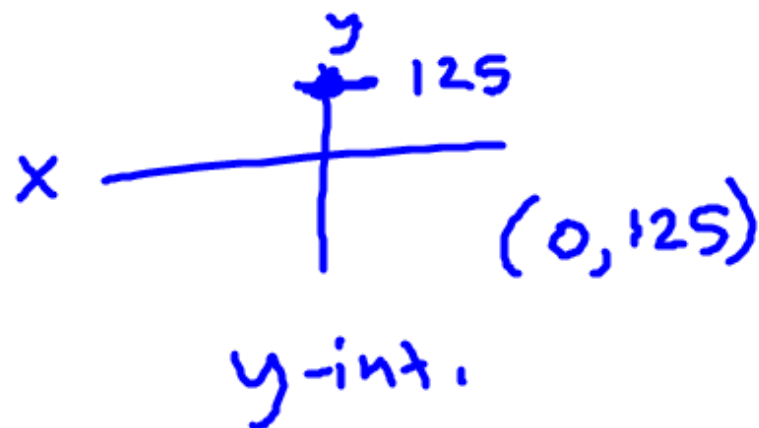
- $y = 0$  (always)

y-intercepts

- $x = 0$  (always)



x-intercept



y-int.

$$* \quad x - y = 3$$

x-int. (y=0)

$$x - (0) = 3$$

$$x = 3$$

$$\boxed{(3, 0)}$$

x      y

y-int. (x=0)

$$(0) - y = 3$$

$$\frac{-y}{-1} = \frac{3}{-1}$$

$$y = -3$$

$$\boxed{(0, -3)}$$

x      y

Find the x- and y-  
intercepts.

$$* -2x + 3y = -9$$

X-int.  $y=0$

$$-2x + 3(0) = -9$$

$$\frac{-2x}{-2} = \frac{-9}{-2}$$

$$x = 4.5$$

$$\boxed{(4.5, 0)}$$

x                  y

y-int.  $x=0$

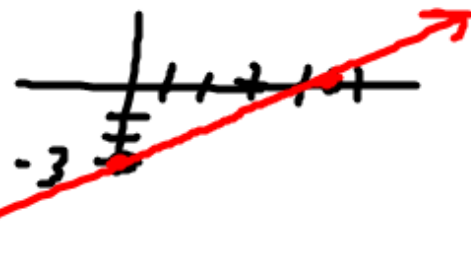
$$-2(0) + 3y = -9$$

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

$$y = -3$$

$$\boxed{(0, -3)}$$

x                  y



Find the x- and y-intercepts.

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

x-int

$$0 = \frac{1}{2}x - 3$$

$$2(3) = \left(\frac{1}{2}x\right) \cdot 2$$

$$6 = x$$

$$(6, 0)$$

y-int.

$$y = \frac{1}{2}(0) - 3$$

$$y = -3$$

$$(0, -3)$$

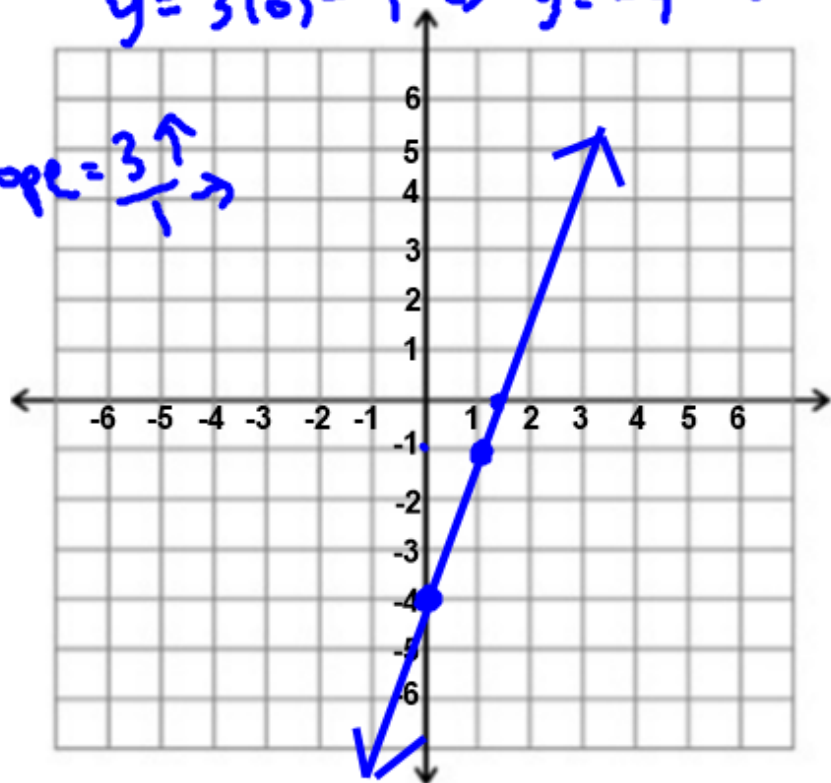
Graph.

slope - intercept

12.  $y = 3x - 4$

$y = 3(0) - 4 \Rightarrow y = -4$   $\leftarrow$  y-int.

slope =  $\frac{3}{1}$



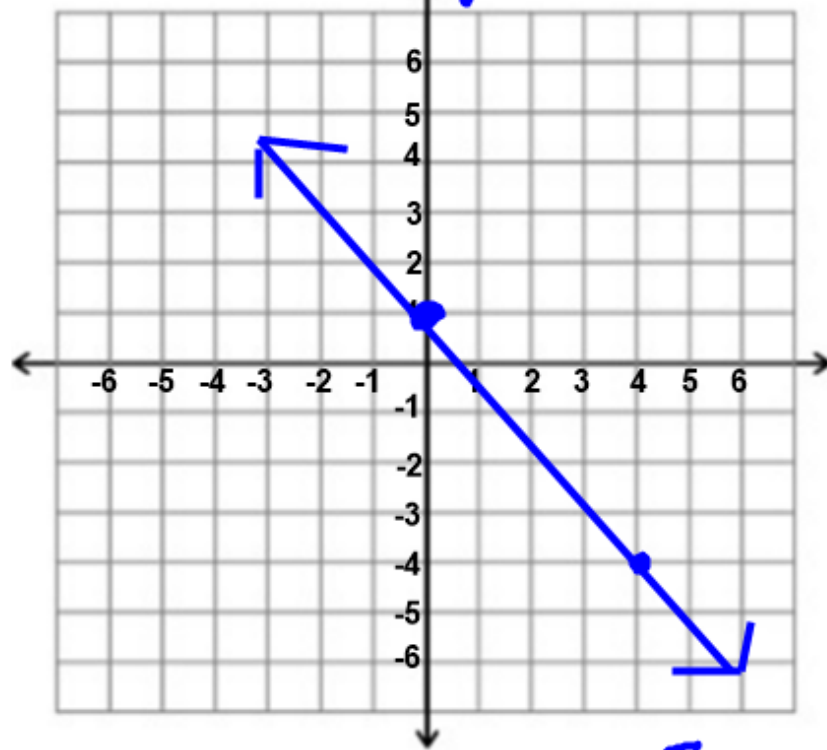
x-int:

$$0 = 3x - 4$$
$$4 = 3x$$

$$x = \frac{4}{3}$$
$$x = 1\frac{1}{3}$$

16.  $y = -\frac{5}{4}x + 1$

slope  $\leftarrow$  y-int.



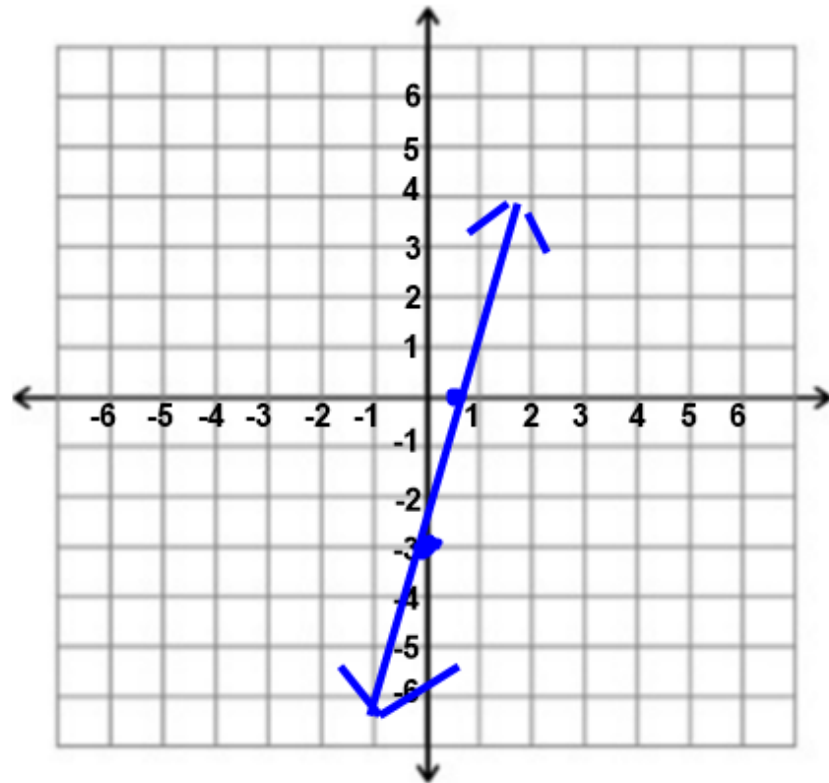
slope =  $-\frac{5}{4}$

rise  $\downarrow 5$

run  $\rightarrow 4$

Graph.

$$5x - y = 3$$



<u>x-int:</u>	<u>y-int:</u>
$5x - (0) = 3$	$5(0) - y = 3$
$\frac{5x}{5} = \frac{3}{5}$	$-y = 3$
$x = 0.6$	$\frac{-y}{-1} = \frac{3}{-1}$
$(0.6, 0)$	$y = -3$
	$(0, -3)$

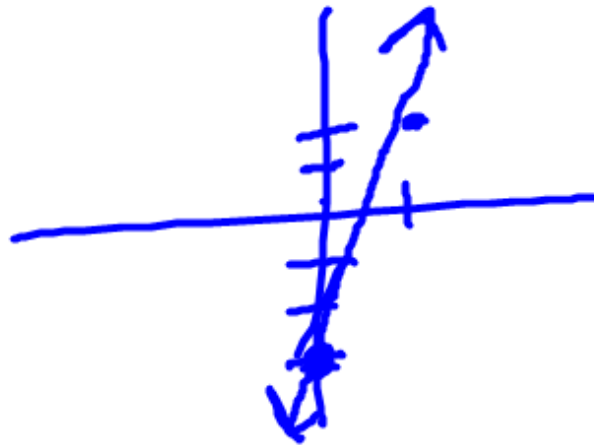


$$5x - y = 3$$

$-5x$                        $-5x$

$$\frac{-y}{-1} = \frac{-5x + 3}{-1}$$

$$y = (5)x(-3)$$

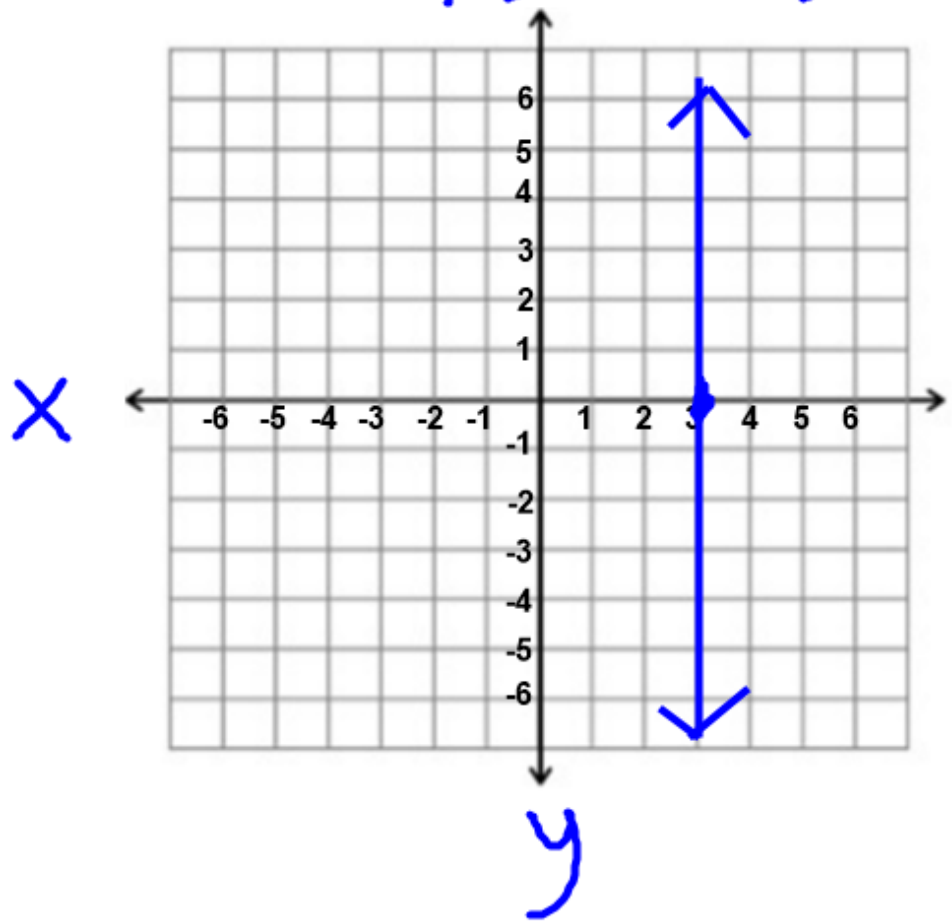


Graph.

$$44. \quad -3 + x = 0$$

+3                      +3

$$\rightarrow \quad x = 3$$



Graph.

49.  $-4x = 8y + 12$

$$-4x = 8(0) + 12$$

$$\frac{-4x}{-4} = \frac{12}{-4}$$

$$x = -3$$

$$(-3, 0)$$

y-int:

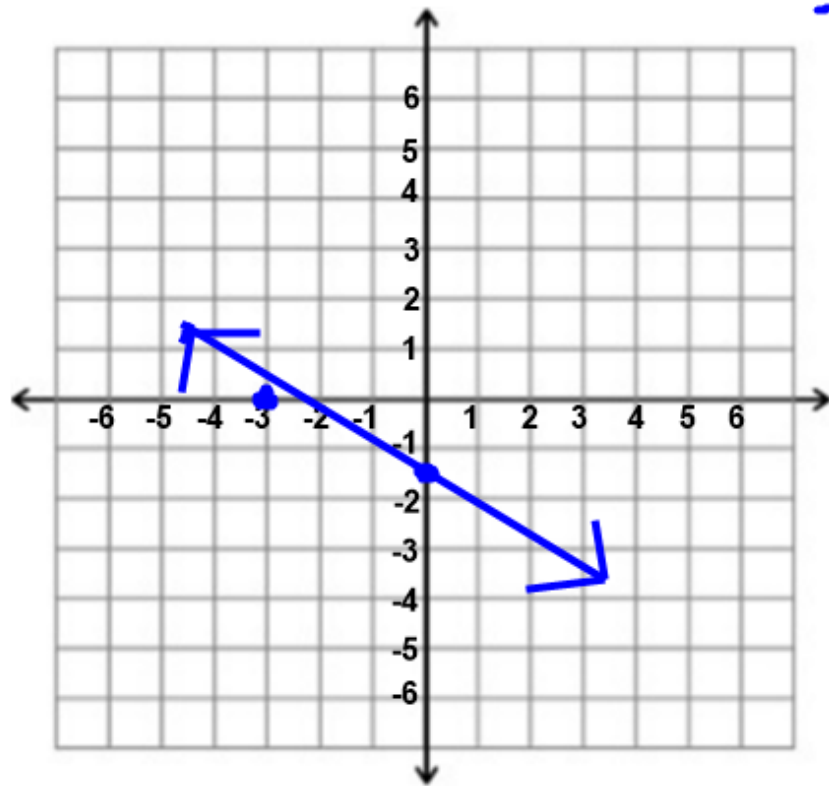
$$-4(0) = 8y + 12$$

$$0 = 8y + 12$$

$$\frac{-12}{8} = \frac{8y}{8}$$

$$y = -1.5$$

$$(0, -1.5)$$



$$y = mx + b$$

$$-4x = 8y + 12$$

-12                      -12

$$\frac{8y}{8} = -\frac{4x}{8} - \frac{12}{8}$$

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

↓                      ↗  
Slope                      y-int.

