Note Title 2/5/2015

Bonus Pts for Test Corrections:
See guidelines on 5:30 Class Notes.

3.2 #67 $y = \frac{3}{4}x + 1$ Graph the equation.

x	$y = \frac{3}{4}x + 1$	
4	$\frac{3}{4}(4) + 1 = 3 + 1 = 4$	$(4, 4)$
0	$\frac{3}{4}(0) + 1 = 0 + 1 = 1$	$(0, 1)$
8	$\frac{3}{4}(8) + 1 = 6 + 1 = 7$	$(8, 7)$
-4	$\frac{3}{4}(-4) + 1 = -3 + 1 = -2$	$(-4, -2)$
-8	$\frac{3}{4}(-8) + 1 = -6 + 1 = -5$	$(-8, -5)$

Then plot.

3.2 #13 What is it asking?

$y = 4x$

x	y
0	-2
-3	12

$\Rightarrow$

x	y
0	0
$-\frac{1}{2}$	-2
-3	12

$x = 0$: $y = 4x$, $y = 4(0)$, $y = 0$

$y = -2$: $y = 4x$, $-2 = 4x$, $\frac{-2}{4} = \frac{4x}{4}$, $-\frac{1}{2} = x$ etc

 # 3.2 49 $2x + y = 3$

$(-1, \quad)$
$(0, \quad)$
$(1, \quad)$

$\Rightarrow$

$(-1, 5)$
$(0, 3)$
$(1, 1)$

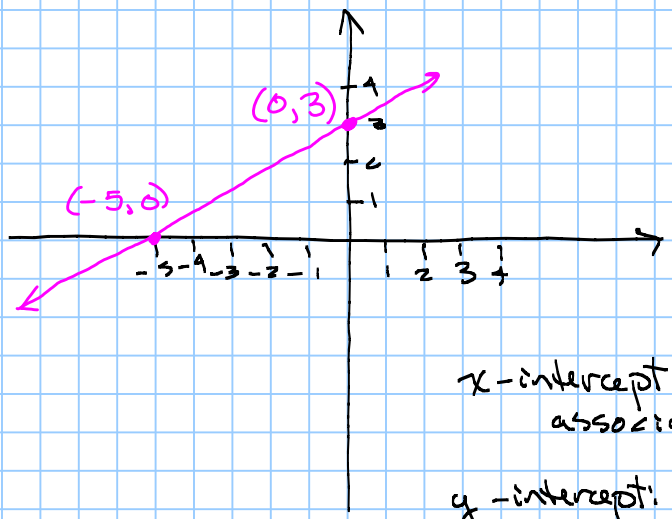
Then graph it.

$x = -1$: $2x + y = 3$, $2(-1) + y = 3$, $-2 + y = 3$, $y = 5$

3.3: Graphing Lines Using Intercepts

x-intercept: x-coordinate of the point where the graph intersects the x-axis.

y-intercept: y-coordinate of the point where the graph intersects the y-axis.



x-intercept: -5
associated point: (-5, 0)

y-intercept: 3
associated point: (0, 3)

* To find the x-intercept, set $y=0$ and solve for x.
* To find the y-intercept, set $x=0$ and solve for y.

Ex: Graph the line using intercepts

$$6x - 3y = -12$$

Find the x-intercept: set $y=0$:

$y=0$

$$6x - 3(0) = -12$$
$$6x - 0 = -12$$
$$6x = -12$$
$$\frac{6x}{6} = \frac{-12}{6}$$
$$x = -2$$

x-intercept: -2

associated ordered pair: (-2, 0)

Find the y-intercept: Set $x=0$

$x=0$

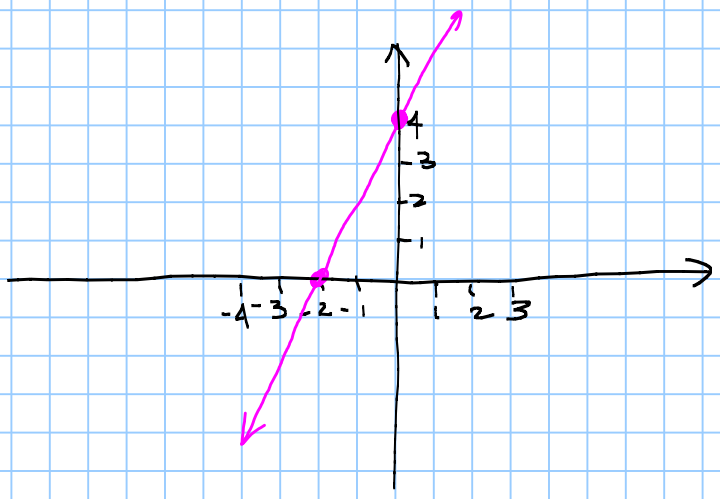
$$6x - 3y = -12$$
$$6(0) - 3y = -12$$
$$0 - 3y = -12$$
$$-3y = -12$$
$$\frac{-3y}{-3} = \frac{-12}{-3}$$
$$y = 4$$

y-intercept: 4

associated ordered pair: (0, 4)

Graph on next page

Graph for previous example:



Example: Find the intercepts. Graph the equation.

$3y = -2x$

(0, 0)

Find y-intercept: set $x=0$.

(0, 0)

$x=0$ | $3y = -2(0)$

$3y = 0$

$\frac{3y}{3} = \frac{0}{3}$

$y = 0$. So the y-intercept is 0.

Find x-intercept: Set $y=0$

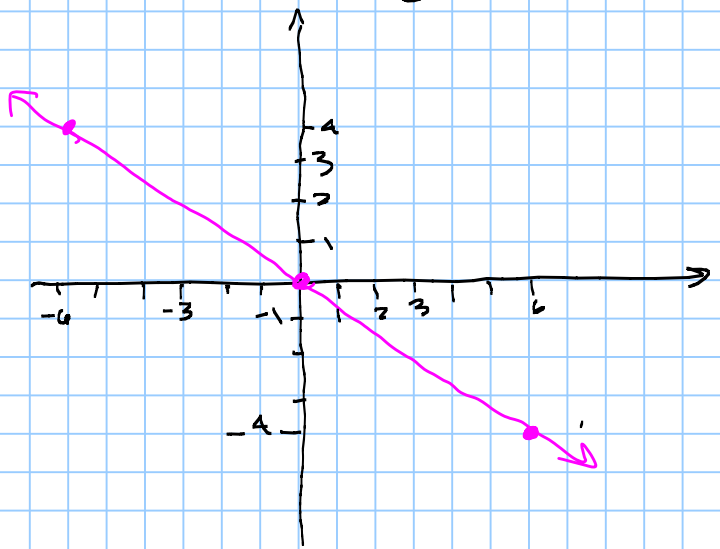
$y=0$ | $3y = -2x$

$3(0) = -2x$

$0 = -2x$

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

$0 = x$ So the x-intercept is 0.



Need another point:

$3y = -2x$

$x = 6$ | $3y = -2(6)$

$3y = -12$

$y = -4$ (6, -4)

$y = 4$ | $3y = -2x$

$3(4) = -2x$

$12 = -2x \Rightarrow -6 = x$

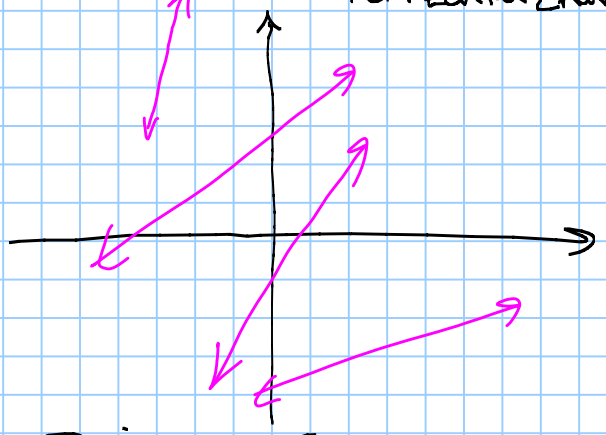
(-6, 4)

3.4: Graphing linear equations using slope

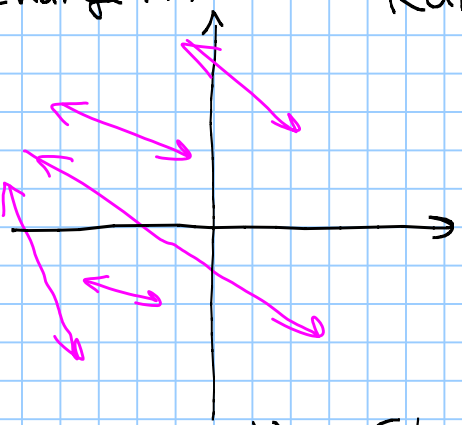
Slope: measures the "steepness" of a line.

Definition: Slope $= m = \frac{y_2 - y_1}{x_2 - x_1}$, where (x_1, y_1) and (x_2, y_2) are points on the line.

$$\text{Slope} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{\text{change in } y}{\text{change in } x} = \frac{\text{RISE}}{\text{RUN}}$$



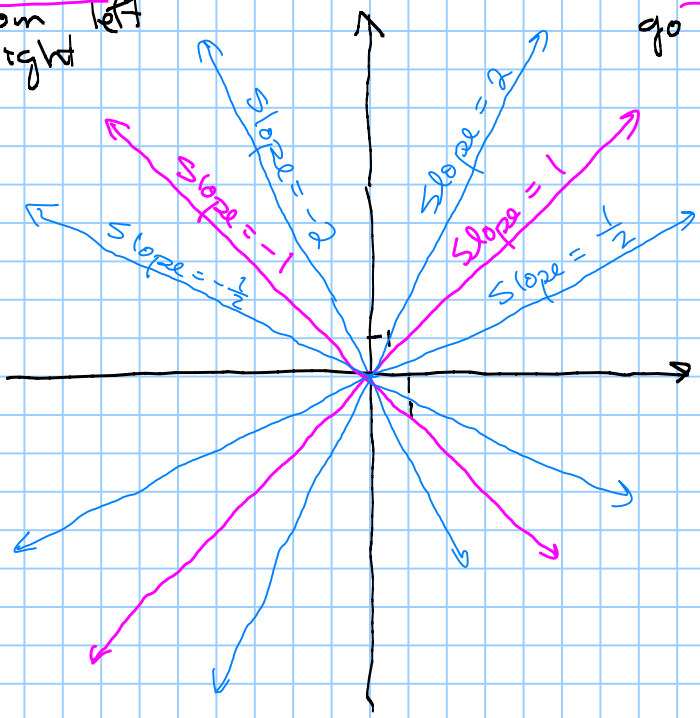
Positive Slopes go "uphill" from left to right



Negative Slopes go "downhill" from left to right

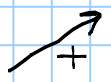
Note:

$-2 < -1$



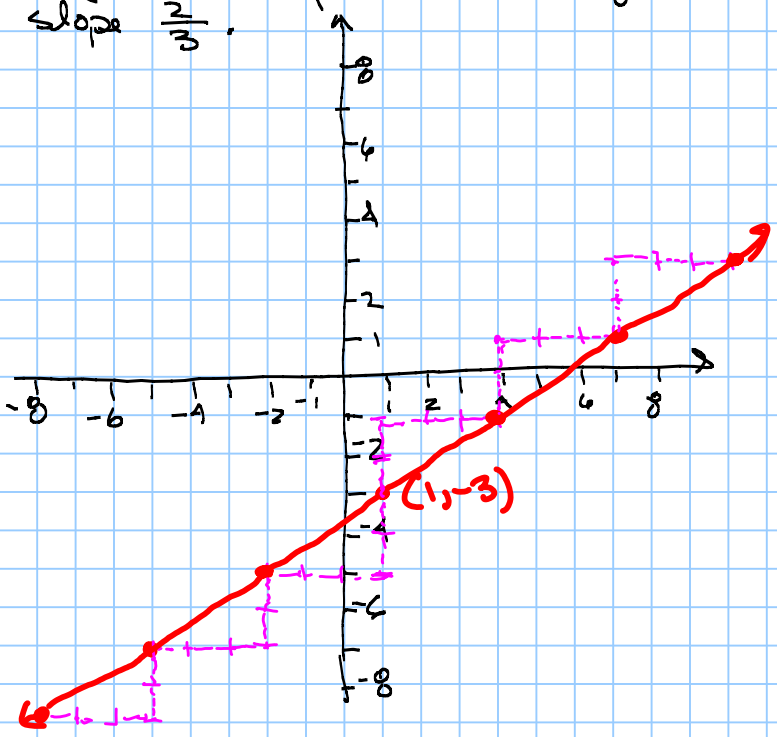
Example: Graph the line that passes through $(1,-3)$ and has slope $\frac{2}{3}$.

Slope: $m = +\frac{2}{3}$



$m = +\frac{2}{3} = \frac{\text{rise}}{\text{run}}$

Vertical change = 2
horizontal change = 3



Example: Graph the line that has slope -3 and passes through $(-1,2)$.

Slope = $m = -3 = -\frac{3}{1}$

Rise = vertical change = 3

Run = horizontal change = 1