Algebra: Please clear your desk except for...

1. Assignment #15
2. Graph paper and a ruler

Graph the equation to the right.

$$-2x-3y=6$$

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

$+2x \qquad +2x$

$$\frac{-3y}{-3}=\frac{2x+6}{-3}$$

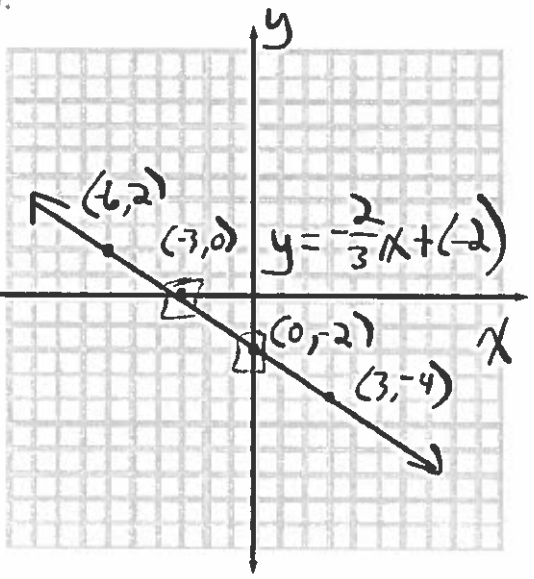
$$y=\frac{-2}{3}x+(-2)$$

Review of Graphing

1. Write as a function of x.
2. Make a table of 4 domain values.
3. Plot the solutions and completely label you graph.

Choose 4 domain values from -6 to 6.

Domain x	Range $y=\frac{-2}{3}x+(-2)$	Solutions (x,y)
-6	$y=\frac{-2}{3}(-6)+(-2)$ $y=4+(-2)=2$	(-6, 2)
-3	$y=\frac{-2}{3}(-3)+(-2)$ $y=2+(-2)=0$	(-3, 0)
0	$y=\frac{-2}{3}(0)+(-2)$ $y=-2$	(0, -2)
3	$y=\frac{-2}{3}(3)+(-2)$ $y=-2+(-2)=-4$	(3, -4)



Domain: $\{x : \text{All Real \#s}\}$

Range: $\{y : \text{All Real \#s}\}$

Graph the linear equation.

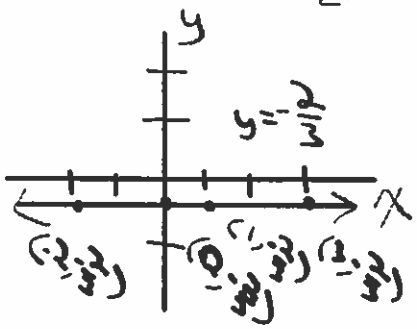
$$3 - y = 2y + 5$$

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

$+(-3) + (-2y) \quad +(-2y) + (-3)$

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

$y = -\frac{2}{3}$ {Horizontal Line}



Domain	Range	Solutions
x	$y = -\frac{2}{3}$	(x, y)
-2	$y = -\frac{2}{3}$	$(-2, -\frac{2}{3})$
0	$y = -\frac{2}{3}$	$(0, -\frac{2}{3})$
1	$y = -\frac{2}{3}$	$(1, -\frac{2}{3})$
3	$y = -\frac{2}{3}$	$(3, -\frac{2}{3})$

Domain: $\{x : \text{All real \#s}\}$

Range: $\{y = -\frac{2}{3}\}$

Graph the linear equation.

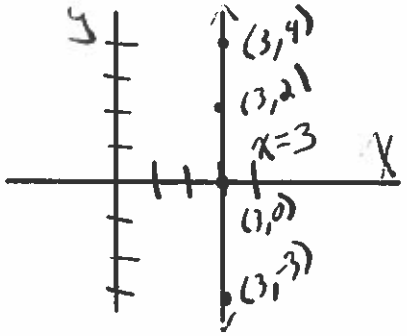
$$y - 2x = y - 6$$

$y + (-2x) = y + (-6)$

$+(-y) \qquad +(-y)$

$\frac{-2x}{-2} = \frac{-6}{-2}$ {Not a function}

$x = 3$ {Vertical line}



Domain	Range	Solutions
$x = 3$	y	(x, y)
3	-3	$(3, -3)$
3	0	$(3, 0)$
3	2	$(3, 2)$
3	4	$(3, 4)$

Domain: $\{x = 3\}$

Range: $\{y : \text{All real \#s}\}$

Graph $9x-12y=36 \rightarrow 9x+(-12y)=36$

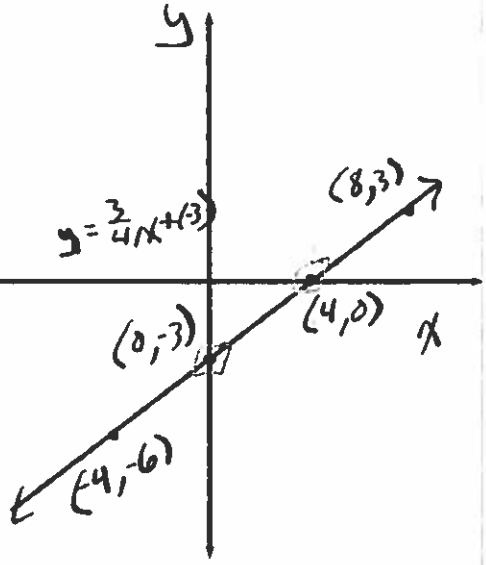
$+(-9x) \quad +(-9x)$

$-12y=-9x+36$

$-12 \quad -12$

$\rightarrow y=\frac{3}{4}x+(-3)$

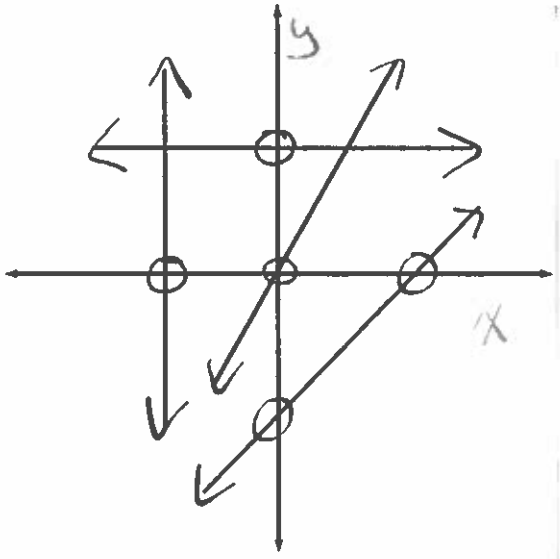
Domain x	Range $y=\frac{3}{4}x+(-3)$	Solutions (x,y)
-4	$y=\frac{3}{4}(-4)+(-3)$ $y=-3+(-3)=-6$	$(-4,-6)$
0	$y=\frac{3}{4}(0)+(-3)$ $y=0+(-3)=-3$	$(0,-3)$
4	$y=\frac{3}{4}(4)+(-3)$ $y=3+(-3)=0$	$(4,0)$
8	$y=\frac{3}{4}(8)+(-3)$ $y=6+(-3)=3$	$(8,3)$



Do all lines have intercepts?

Yes

{At least 1}



Every non-vertical and non-horizontal line must have both an x-intercept and y-intercept.

Sketch the Graph of a Linear Function using Intercepts

Process

1. Find both intercepts.
2. Plot the two points, draw the line and completely label your diagram.

Ex 1: $-2x+5y=10$

x-int: $y=0$

$-2x+5(0)=10$

$-2x=10$

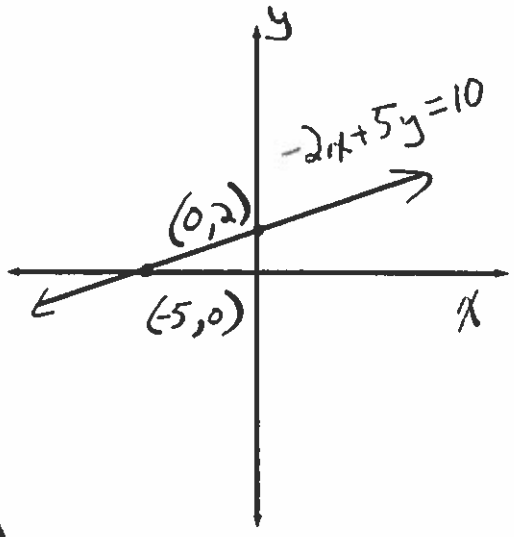
$x=-5$ $(-5,0)$

y-int: $x=0$

$-2(0)+5y=10$

$5y=10$

$y=2$ $(0,2)$



Sketch the Graph using Intercepts

Ex 2: $2x-3y=-12$

x-int: $y=0$

$2x=-12$

$x=-6$

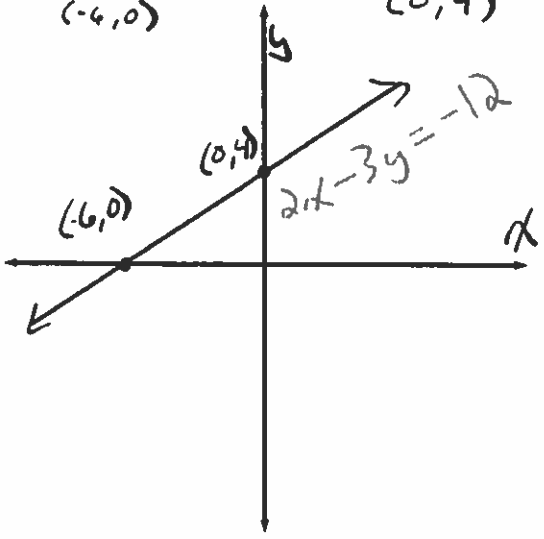
$(-6,0)$

y-int: $x=0$

$-3y=-12$

$y=4$

$(0,4)$



Ex 3: $-2x+9y=-18$

x-int: $y=0$

$-2x=-18$

$x=9$

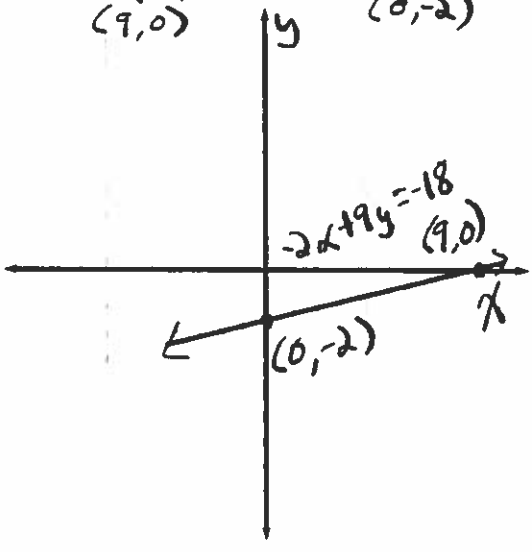
$(9,0)$

y-int: $x=0$

$9y=-18$

$y=-2$

$(0,-2)$



Assignment #16:

Part I: p. 219-220 #12-18 even, 21-22, 26-27, 30-31, 33-34

Part II: p. 229-230 #5-10 (Sketch the graph using intercepts), 38-42