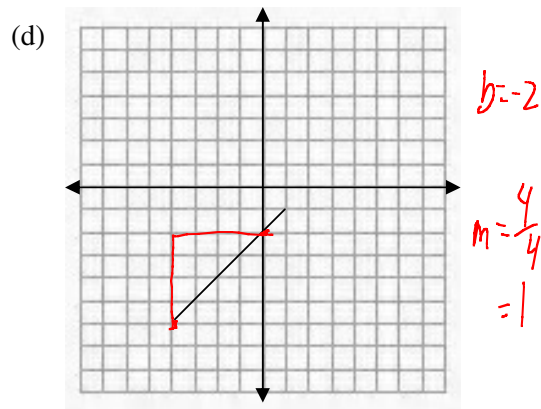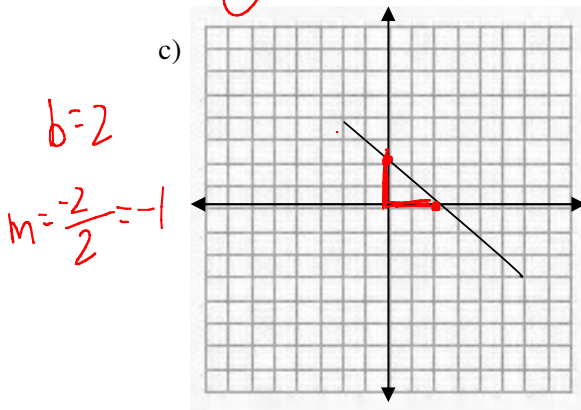## Lesson 3: Review of Graphing Lines

All lines can be written in the form y = mx + b where m = _Slope_ (or the steepness of the line) and b = _y-intercept_ (where it crosses the y axis). Recall, that slope is defined as rise over run.

Example 1: State the slope and y-intercept of the following lines.

a) y = -3x + 7   (b) y = ½x – 13
     $\widehat{m}$ b   m   b

c)   (d)

$b = 2$

$m = \dfrac{-2}{2} = -1$

$b = -2$

$m = \dfrac{4}{4}$

$= 1$
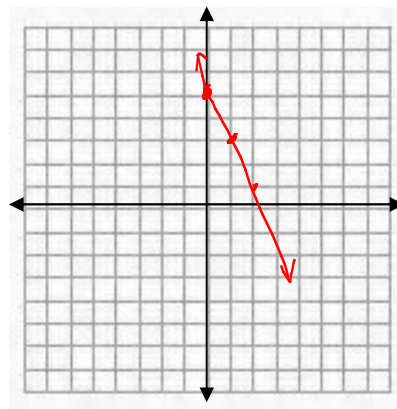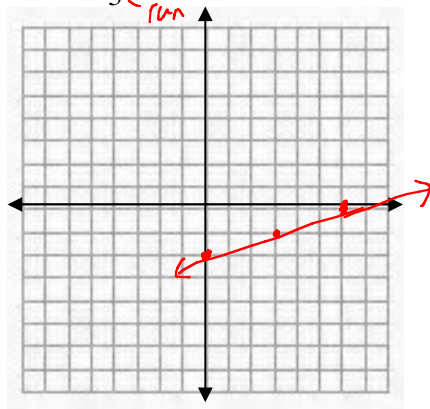
To graph lines of this form the following steps must be followed:

Step 1: Plot the y-intercept on the y axis
Step 2: From the y-intercept plot the slope (ie. rise over run)
Step 3: Repeat step 2 to determine another point on the line

Example 2: Graph the following lines on the grid provided.

a) $y = \dfrac{1}{3}x - 2$ (1 – rise, 3 – run)

(b) $y = -2x + 5$ ($\dfrac{-2}{1}$)

If the equation of a line is not given in y = mx + b form we must rearrange the equation into this form prior to graphing.

Example 3: State the slope and y-intercept of the following lines.

a) 3x + 4y = 12

$$-3x \qquad -3x$$

$$\frac{4y}{4} = \frac{-3x}{4} + \frac{12}{4}$$

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

$$\underset{m}{} \qquad \underset{b}{}$$

(b) -2x – 5y = 25

$$+2x \qquad +2x$$

$$\frac{-5y}{-5} = \frac{-2x}{-5} + \frac{25}{-5}$$

$$y = \frac{-2x}{5} - 5$$

$$\underset{m}{} \qquad \underset{b}{}$$
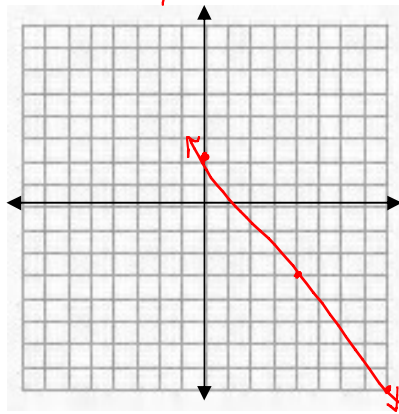
Example 4: Graph the following lines.

a) 5x + 4y – 8 = 0

$$4y = -5x + 8$$

$$y = -\frac{5}{4}x + 2$$

(b) -3x -2y = 10

$$-2y = 3x + 10$$

$$y = \frac{-3x}{2} - 5$$