

Name _____

Graphing Linear Functions (Continued)

Linear Functions can be written in the following form:

$$y = mx + b$$

The m represents the slope

The b represents the y-intercept

For example:

State the slope and the y-intercept of the following:

1. $y = -2x + 5$
 $m = -2$

2. $y = -4x + 6$
 $m = -4$

3. $-2x + y = 15$
 $b = 6$

REWRITE THIS ONE! (Remember literal equations.)

$$\begin{array}{r} -2x + y = 15 \\ +2x \quad -2x \\ \hline y = 2x + 15 \end{array} \quad \begin{array}{l} m = 2 \\ b = 15 \end{array}$$

Try some!

Rewrite the following in $y = mx + b$ form and state the y intercept and slope.

1. $x + y = 3$ $m = -1$
$$\begin{array}{r} x + y = 3 \\ -x \quad -x \\ \hline y = -x + 3 \end{array} \quad \begin{array}{l} b = 3 \end{array}$$

2. $x + y = -15$ $m = -1$
$$\begin{array}{r} x + y = -15 \\ -x \quad -x \\ \hline y = -x - 15 \end{array} \quad \begin{array}{l} b = -15 \end{array}$$

3. $-2x + y = 1$ $m = 2$
$$\begin{array}{r} -2x + y = 1 \\ +2x \quad +2x \\ \hline y = 2x + 1 \end{array} \quad \begin{array}{l} b = 1 \end{array}$$

4. $y + 8x = 1$ $m = -8$
$$\begin{array}{r} y + 8x = 1 \\ -8x \quad -8x \\ \hline y = -8x + 1 \end{array} \quad \begin{array}{l} b = 1 \end{array}$$

5. $\frac{1}{4}x = 3 + y$ $m = \frac{1}{4}$
$$\begin{array}{r} \frac{1}{4}x = 3 + y \\ -3 \quad -3 \\ \hline \frac{1}{4}x - 3 = y \end{array} \quad \begin{array}{l} b = -3 \end{array}$$

6. $y - \frac{1}{2}x = 1$ $m = \frac{1}{2}$
$$\begin{array}{r} y - \frac{1}{2}x = 1 \\ +\frac{1}{2}x \quad +\frac{1}{2}x \\ \hline y = \frac{1}{2}x + 1 \end{array} \quad \begin{array}{l} b = 1 \end{array}$$

7. $y - \frac{x}{3} = -1$ $m = \frac{1}{3}$
$$\begin{array}{r} y - \frac{x}{3} = -1 \\ +\frac{x}{3} \quad +\frac{x}{3} \\ \hline y = \frac{x}{3} - 1 \end{array} \quad \begin{array}{l} b = -1 \end{array}$$

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

8. $-18x - 18y = 18$ $m = -1$
$$\begin{array}{r} -18x - 18y = 18 \\ +18x \quad +18x \\ \hline -18y = 18x + 18 \end{array} \quad \begin{array}{l} b = -1 \end{array}$$

9. $3 - y = 2x$ $m = -2$
$$\begin{array}{r} 3 - y = 2x \\ -3 \quad -3 \\ \hline -y = 2x - 3 \end{array} \quad \begin{array}{l} b = 3 \end{array}$$

10. $2y = \frac{6x + 1}{2}$ $m = 3$
$$\begin{array}{r} 2y = \frac{6x + 1}{2} \\ \hline y = 3x + \frac{1}{2} \end{array} \quad \begin{array}{l} b = \frac{1}{2} \end{array}$$

11. $2y = 8 - x$ $m = -\frac{1}{2}$
$$\begin{array}{r} 2y = 8 - x \\ \hline y = 4 - \frac{x}{2} \end{array} \quad \begin{array}{l} b = 4 \end{array}$$

12. $3y - 2x = 9$ $m = \frac{2}{3}$
$$\begin{array}{r} 3y - 2x = 9 \\ +2x \quad +2x \\ \hline 3y = 2x + 9 \end{array} \quad \begin{array}{l} b = 3 \end{array}$$

13. $y = x + 2$ $m = 1$
$$y = x + 2 \quad \begin{array}{l} b = 2 \end{array}$$

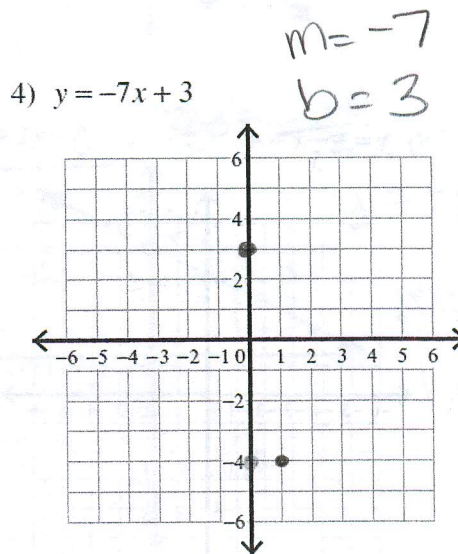
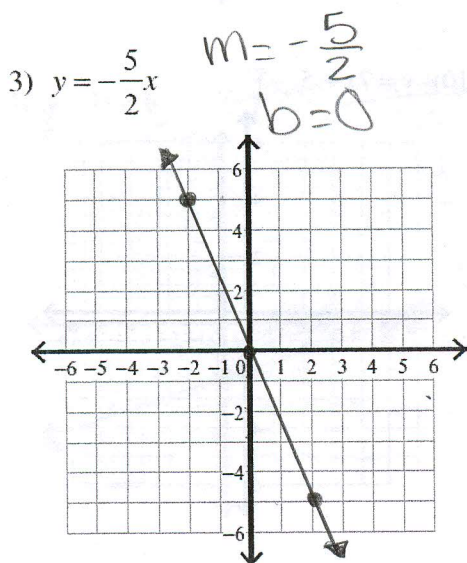
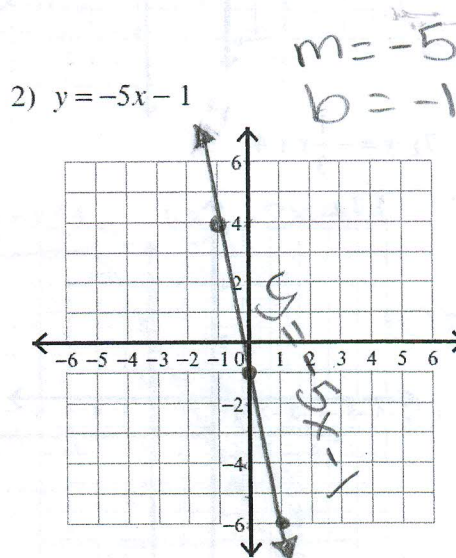
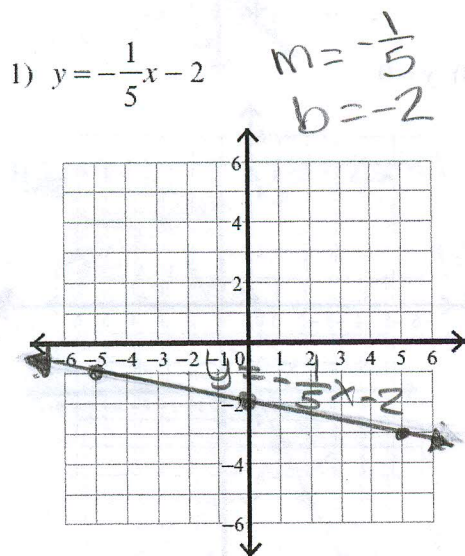
Graphing Using Slope and Y-Intercept

Using the slope and y-intercept equation, $y = mx + b$

$m =$ Slope

$b =$ y-intercept

- Put a point at the y-intercept.
- Use the slope to find the next 3 points on the line.
- Connect the dots with a straight line
- Put arrows on the ends of the line.
- LABEL the line

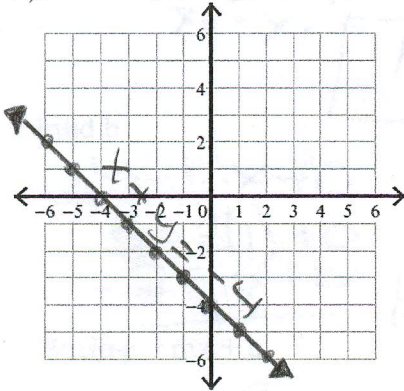


homework

Problem Set 4

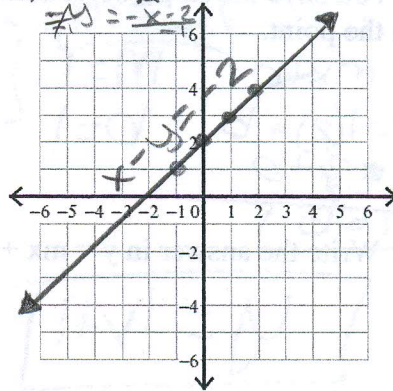
Graphing Using Slope and Y-Intercept (You will have to rearrange the Equation first!)

1) $x + y = -4$ $y = -x - 4$



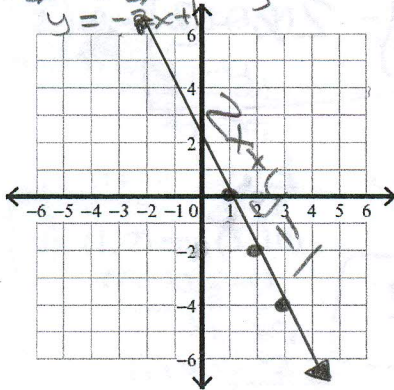
$m = -1$
 $b = -4$

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



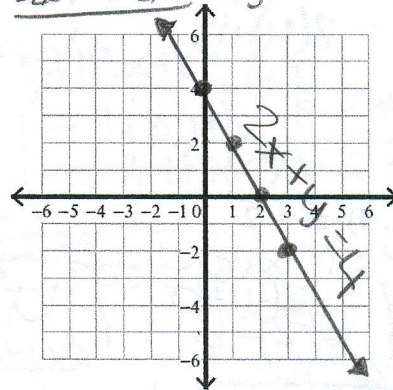
$m = 1$
 $b = 2$

3) $2x + y = 1$ $y = -2x + 1$



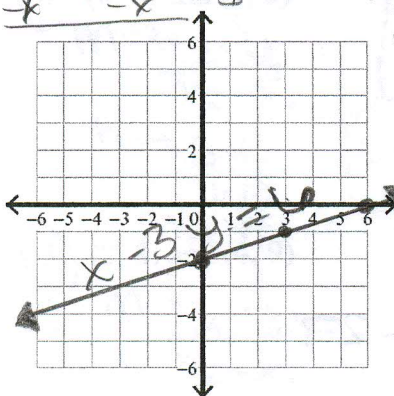
$m = -2$
 $b = 1$

4) $2x + y = 4$ $y = -2x + 4$



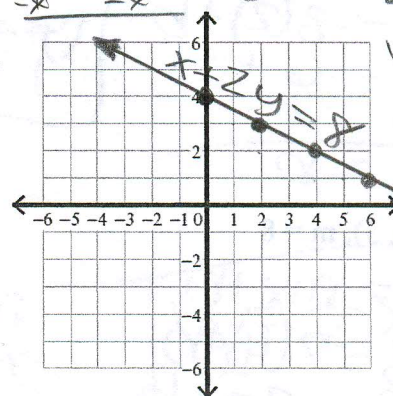
$m = -2$
 $b = 4$

5) $x - 3y = 6$ $y = \frac{1}{3}x - 2$



$m = \frac{1}{3}$
 $b = -2$

6) $x + 2y = 8$ $y = -\frac{1}{2}x + 4$



$m = -\frac{1}{2}$
 $b = 4$

Write the Equation of a Line Given Slope and a Point

Write the equation of the line that has the slope m and passes through the point named.

1. $(2, 3); m = 1$

Step 1 You have the slope, so you need to find the y-intercept. Use $y = mx + b$. and plug in the point.

$$y = mx + b$$

$$m = 1$$

$$y = x + 1$$

$$3 = 1(2) + b$$

$$b = 1$$

$$3 = 2 + b$$

$$\frac{3}{-2} = \frac{2}{-2} + b$$

$$1 = b$$

Step 2: Write the answer in $y = mx + b$ form!

$$y = 1x + 1$$

2. $(4, 6); m = 2$

$$y = mx + b$$

$$m = 2$$

$$y = 2x - 2$$

$$6 = 2(4) + b$$

$$b = -2$$

$$6 = 8 + b$$

$$\frac{6}{-8} = \frac{8}{-8} + b$$

$$-2 = b$$

3. $(-1, 4); m = -2$

$$y = mx + b$$

$$y = -2x + 2$$

$$4 = -2(-1) + b$$

$$4 = 2 + b$$

$$\frac{4}{-2} = \frac{2}{-2} + b$$

$$2 = b$$

4. $(2, 5); m = -3$

$$y = mx + b$$

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

$$y = -3x + 11$$

$$5 = -6 + b$$

$$\frac{5}{+6} = \frac{-6}{+6} + b$$

$$11 = b$$

5. $(4, 3); m = 8$

$$y = mx + b$$

$$y = 8x - 29$$

$$3 = 8(4) + b$$

$$3 = 32 + b$$

$$\frac{3}{-32} = \frac{32}{-32} + b$$

$$-29 = b$$

