

Slope-intercept Form:

* $y = mx + b$

m = slope

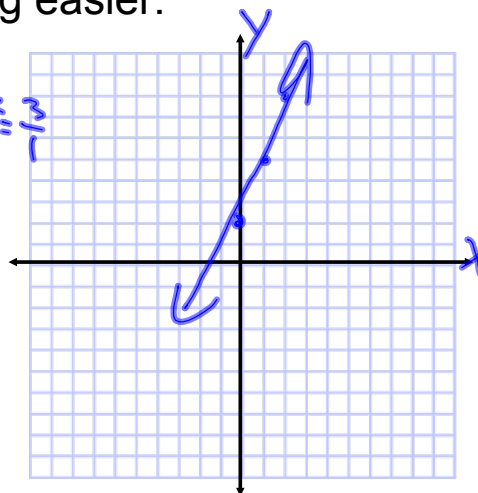
b = y-intercept (starting value, where we cross the y-axis.)

* Will make graphing easier.

* EX: $y = 3x + 2$

Slope = 3
Y-int = 2

$\frac{\text{rise}}{\text{run}} = \frac{3}{1}$

**Point-slope Form:**

* $y - y_1 = m(x - x_1)$

m = slope

Point (x_1, y_1)

* Used when you have 1 or 2 points and need to write an equation.

1. Write an equation in slope-intercept form, for a line with slope 6 and y-intercept of -3.

$$y = mx + b$$

$$y = 6x - 3$$

2. Write an equation in point-slope form for a line whose slope is $(-3/5)$ that contains $(-10, 8)$

$$(x_1, y_1)$$

$$y - y_1 = m(x - x_1)$$

$$y - 8 = -\frac{3}{5}(x - (-10))$$

$$y - 8 = -\frac{3}{5}(x + 10)$$

$$y - 8 = -\frac{3}{5}x - \frac{30}{5}$$

$$y - 8 = -\frac{3}{5}x - 6$$

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

$$x = 2$$

3. Write an equation in slope-intercept form for a line containing $(4, 9)$ and $(-2, 0)$.

$$y = mx + b$$

$$m = \frac{\Delta y}{\Delta x} = \frac{0 - 9}{-2 - 4} = \frac{-9}{-6} = \frac{3}{2}$$

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

$$y = \frac{3}{2}x + b$$

$$9 = \frac{3}{2}(4) + b$$

$$9 = 6 + b$$

$$\begin{array}{r} -6 \quad -6 \\ \hline 3 = b \end{array}$$

4. Write an equation in slope-intercept form for a line with an x-intercept of 4 and y-intercept of -3.

$y = mx + b$
 $y = mx - 3$

$m = \frac{\Delta y}{\Delta x} = \frac{-3 - 0}{0 - 4} = \frac{-3}{-4} = \frac{3}{4}$

$(4, 0)$
 $(0, -3)$

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

5. Write an equation in slope-intercept form for a line containing $(1, 7)$ and is perpendicular to the line $y = (-1/2)x + 1$.

$m = -\frac{1}{2}$
 $m_{\perp} = 2$

$y = 2x + b$
 $7 = 2(1) + b$
 $7 = 2 + b$
 $\frac{-2 \quad -2}{5 = b}$

$y = 2x + 5$

6. An apartment complex charges \$525 per month plus a \$750 security deposit.

- a. Write an equation to represent the total annual cost A for r months of rent.

$$A = 525r + 750$$

$r = 12$

- b. Compare the rental cost to a complex which charges a \$200 security deposit but \$600 per month rent. If a person expects to stay in an apartment for one year, which complex offers the better rent? Explain your answer.

$$A = 600r + 200$$

$r = 12$

$$A = 525(12) + 750$$
$$A = \$7050$$
$$A = 600(12) + 200$$
$$A = \$7400$$