Linear Equations

Slope-Intercept Form

$$y = mx + b$$

(use with slope and y-intercept)

Point-Slope Form

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

(use with slope and a point)

Write the equation of a line with a slope of $-\frac{2}{3}$ and y-intercept of 4.

Step 1: Which form?

$$y = mx + b$$

Step 2: Plug in.

$$y = -\frac{2}{3}x + 4$$

Write the equation of a line whose slope is $\frac{3}{4}$ and contains $(-5, 8)$.

Step 1: Which form?

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

Step 2: Plug in m, x_1, y_1.

$m = 3/4 \quad x_1 = -5 \quad y_1 = 8$

$$y - 8 = \frac{3}{4}(x - -5)$$

$$y - 8 = \frac{3}{4}(x + 5)$$

If you need to get y by itself:

$$y - 8 = \frac{3}{4}(x + 5)$$

$$y - 8 = \frac{3}{4}x + \frac{15}{4}$$

$$+8 \qquad +8$$

$$y = \frac{3}{4}x + 11\frac{3}{4}$$

Write the equation of a line that contains $(-3, 2)$ and $(5, 4)$.

Perform a linear regression.

STAT; 1; put x-coordinates in L_1, put y-coordinates in L_2; 2nd; MODE

STAT; → CALC; 4; ENTER

Plug "a" and "b" into

$$y = ax + b.$$

$$y = \frac{1}{4}x + \frac{11}{4}$$