Equation of a Line

Standard Form: $Ax + By = C$

Graph by - Table

Intercepts

Slope-Intercept: $y = mx + b$

Graph by - y-int & Slope

Point-Slope: $y - y_1 = m(x - x_1)$

$\boxed{\text{slope}}$

any coordinates on the line

m = slope

point = (x_1, y_1)

$(-1, 5)$ slope of -3

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

$y - 5 = -3(x - (-1))$

$\boxed{y - 5 = -3(x + 1)}$

$(2, -4)$ $(1, 3)$

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

$y - (-4) = m(x - 2)$

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

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{3 - (-4)}{1 - 2} = \frac{7}{-1} = -7$

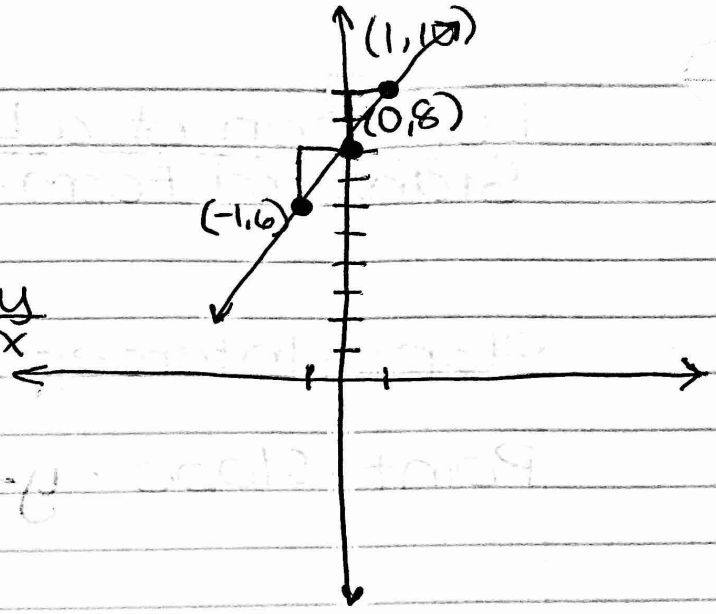
$\boxed{y + 4 = -7(x - 2)}$

$y - y_1 = m(x - 1)$

$y - 6 = 2(x + 1)$

y_1 x_1

$(-1, 6)$ slope $= \frac{2}{1} \frac{\Delta y}{\Delta x}$



Converting

$y + 2 = -3(x - 1)$ to standard form $Ax + By = C$

$y + 2 = -3x + 3$

$-2 \qquad -2$

$y = -3x + 1$

$+3x \quad +3x$

$\boxed{3x + y = 1}$

all variables to left side
all #'s/constants to right

$y - 2 = \frac{1}{2}(x + 5)$ to slope-intercept form $y = mx + b$

$y - 2 = \frac{1}{2}x + 5/2$

$+2 \qquad +2$

$y = \frac{1}{2}x + \frac{5}{2} + \frac{2 \cdot 2}{1 \cdot 2}$

$y = \frac{1}{2}x + \frac{5}{2} + \frac{4}{2}$

$y = \frac{1}{2}x + \frac{9}{2}$