Starter

$y = mx + b$

Write the slope-intercept & standard form equation from this line $Ax + By = C$

$(0, 3)$ & $(-2, 6)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6-3}{-2-0} = \frac{3}{-2} = \boxed{-\frac{3}{2}}$$

$$\boxed{m = -\frac{3}{2}}$$

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

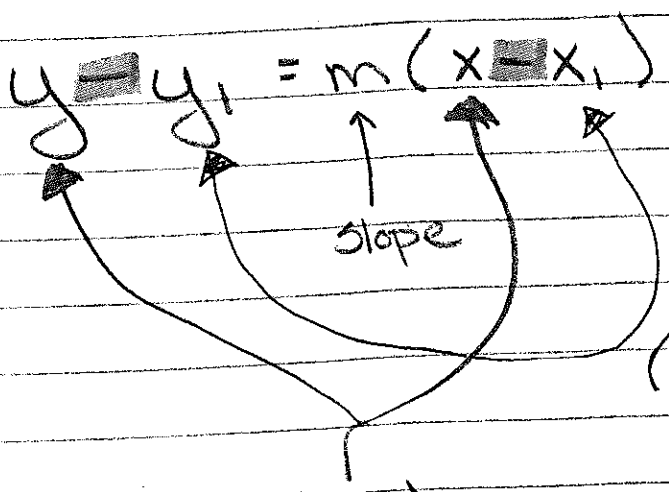
$+\frac{3}{2}x$

Standard form $2\left(\frac{3}{2}x + y = 3\right)$

$3x + 2y = 6$

6-4 Point-Slope Form (linear equation)

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



(x_1, y_1) actual point given to us

(x, y) the ordered pair we can find by evaluating numbers

① Graph using point-slope form

$y - 5 = \frac{1}{2}(x - 2)$ $\quad m = \frac{1}{2}\left(\frac{\text{rise}}{\text{run}}\right)$

point = (2, 5)

don't solve into $y = mx + b$ use the slope + point with the equation

$y - 6 = 4(x + 1)$ $\quad m = 4$

point = (-1, 6)

$y - 6 = 4[x - (-1)]$

$y + 3 = -2(x + 2)$ $m = -2$

point = $(-2, -3)$

$y - (-3) = -2[x - (-2)]$

$y - 5 = -\frac{1}{4}(x + 3)$ $m = -\frac{1}{4}$

point = $(-3, 5)$

$y - 5 = -\frac{1}{4}[x - (-3)]$

(2) Write an equation

$m = -3$ & the line goes through $(-1, 7)$

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

$y - 7 = -3(x + 1)$

$m = \frac{1}{5}$ & the line goes through $(-8, -4)$

$y + 4 = \frac{1}{5}(x + 8)$

the line goes through (3, 6) & (5, -2)

$m = \frac{-2-6}{5-3} = \frac{-8}{2} = -4$ slope

$y - y_1 = m(x - x_1)$ you can choose either point

$y - 6 = -4(x - 3)$ $y + 2 = -4(x - 5)$

$y - 6 = -4x + 12$ $y + 2 = -4x + 20$

$+6 \quad +6$ $-2 \quad -2$

$y = -4x + 18$ $y = -4x + 18$

SAME line

line that goes through (-1, -5) and (6, 7)

slope formula $= \frac{7-(-5)}{6-(-1)} = \frac{7+5}{6+1} = \frac{12}{7}$

$y - 7 = \frac{12}{7}(x - 6)$ point slope

$y - 7 = \frac{12}{7}(x - 6)$ point slope

$y - 7 = \frac{12}{7}x - \frac{72}{7}$

$y - 7 = \frac{12}{7}x - 10\frac{2}{7}$

$\times 7 \qquad + 7$

$y = \frac{12}{7}x - 3\frac{2}{7}$ slope-intercept

$7\left(y = \frac{12}{7}x - \frac{23}{7}\right)$

$7y = 12x - 23$

$-12x \quad -12x$

$-12x + 7y = -23$

standard form

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#19-21 also change into Standard Form