6.4 → Point-Slope Form

Name: KEY

Topic: _____ Date: _____

Summary:

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

Slope-Intercept Form: $y = mx + b$

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

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

Given the slope and the y-intercept, write the equation of the line.

$m = -3$; $b = 5$

$y = -3x + 5$

$m = \frac{1}{2}$; $b = 0$

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

$m = \frac{-3}{2}$; $b = -8.4$

$y = \frac{-3}{2}x - 8.4$

$m = 0$; $b = -1$

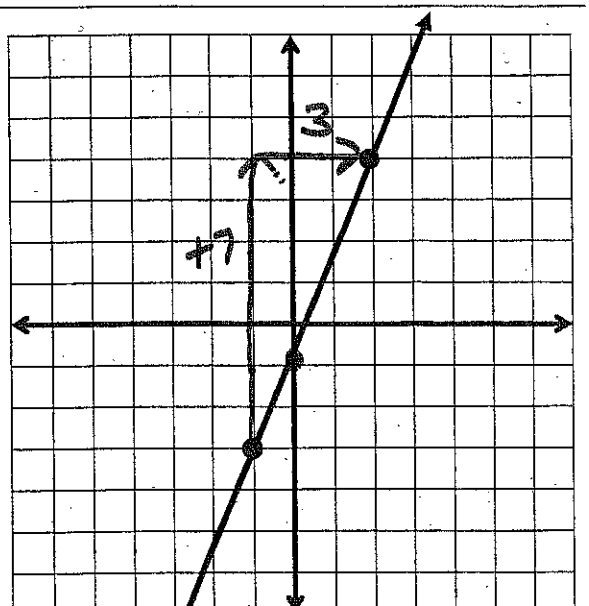
$y = -1$

Find the slope: $\frac{7}{3}$

Find the y-int: -1

Write the equation of the line:

$y = \frac{7}{3}x - 1$



6.4 NOTES

Point-Slope → $y - y_1 = m(x - x_1)$

Write an equation of the line that passes through the given point and has the given slope.

(-3, 4) with $m = \frac{2}{3}$

x_1, y_1

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

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

$+4 \quad +4$

$y = \frac{2}{3}x + 6$

(2, -4) with $m = \frac{-1}{2}$

x_1, y_1

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

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

$-4 \quad -4$

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

(-3, -3) with $m = 6$

x_1, y_1

$y + 3 = 6(x + 3)$

$y + 3 = 6x + 18$

$y = 6x + 15$

(5, 0) with $m = -\frac{5}{3}$

$y - 0 = -\frac{5}{3}(x - 5)$

$y = -\frac{5}{3}x + \frac{25}{3}$

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

Write an equation of the line that passes through the two given points.

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

$m = \frac{4+1}{3+2} = \frac{5}{5} = 1$

$y - 4 = 1(x - 3)$

$y - 4 = x - 3$

$y = x + 1$

(1, 5) and 4, 2)

$m = \frac{2-5}{4-1} = \frac{-3}{3} = -1$

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

$y - 5 = -x + 1$

$y = -x + 6$

*1st method: Point-Slope Form

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

*2nd method: use $y = mx + b$

(3, 0) and (-3, 1)

$m = \frac{1-0}{-3-3} = \frac{1}{-6}$

$y = mx + b$

$0 = -\frac{1}{6}(3) + b$

$0 = -\frac{1}{2} + b$

$b = \frac{1}{2}$

$y = mx + b$

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

(1, 4) and (-1, -4)

$m = \frac{-4-4}{-1-1} = \frac{-8}{-2} = 4$

$y = mx + b$

$4 = 4(1) + b$

$4 = 4 + b$

$b = 0$

$y = 4x$