

Hwk #8: Sec 6-4 (Point-Slope Form)

pages 307 - 308

Problems 17, 18, 24, 25, 37, 38, 58

Due tomorrow

Equations of Lines:

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

Standard Form:

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

Horizontal Lines:

Vertical Lines:

Real situations can be modeled with both
Slope-Intercept Form and Standard Form.

Point-Slope doesn't model many, if any,
real situations.

Sec 6-2: Slope-Intercept Form

$$y = mx + b$$

slope \nearrow \nwarrow Y-intercept

Find the slope and the y-intercept of each equation.

1. $y = -5 + 2x$
 Slope: 2
 y-int: -5

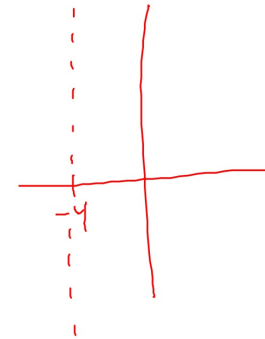
2. $y = -7x$
 Slope: -7
 y-int: 0

3. $y = 8$
 Slope: 0
 y-int: 8

4. $3x + 6y = 24$
 $\frac{6y = 24 - 3x}{6}$
 $y = 4 - \frac{1}{2}x$
 Slope: $-\frac{1}{2}$
 y-int: 4

5. $x = -4$

Slope: undefined
 y-int: NONE



Writing the equation of a line in Slope-Intercept Form:

Write the equation of the line that passes through these two points in Slope-Intercept Form

(2, 1) and (-3, 21)

Method 1:

First: Find the slope. $\frac{21-1}{-3-2} = \frac{20}{-5} = -4$

Second: Write the equation in Point-Slope Form
 $y-1 = -4(x-2)$

Third: Change Point-Slope into Slope-Intercept

$$y-1 = -4x+8 \rightarrow y = -4x+9$$

Method 2:

(2, 1) and (-3, 21)

First: Find the slope.

$$m = -4$$

Second: Replace m in $y = mx + b$ with the slope

$$y = -4x + b$$

Third: Replace y and x with the coordinates of one of the points

use (2, 1) $\rightarrow 1 = -4(2) + b$

Fourth: Solve for b.

$$1 = -8 + b \quad b = 9$$

Fifth: Rewrite $y = mx + b$ with the values of m and b you've found.

$$y = -4x + 9$$

Write the equation of the line that passes through this pair of points in Slope-Intercept Form:

$m = -\frac{7}{6}$ $(-3, 9)$ and $(9, -5)$

Slope: $-\frac{7}{6} \cdot \frac{3}{1} = -\frac{7}{2}$

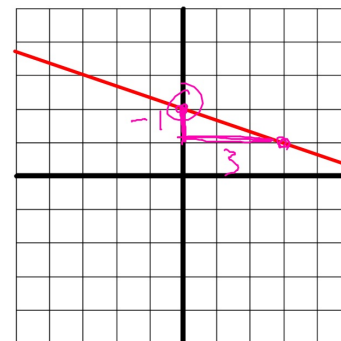
$y - 9 = -\frac{7}{6}(x + 3)$

$y - 9 = -\frac{7}{6}x - \frac{7}{2} + 9$

$y = -\frac{7}{6}x + \frac{11}{2}$

y-intercept: $-\frac{7}{2} + 9 = -\frac{7}{2} + \frac{18}{2} = \frac{11}{2}$

Write the equation of this line in Slope-Intercept Form:



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