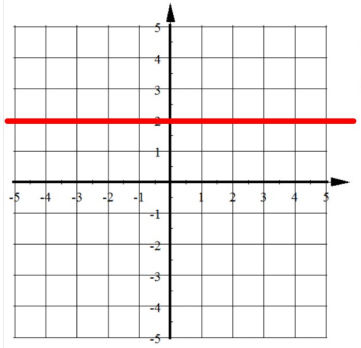
Which kind of line is shown below? Horizontal



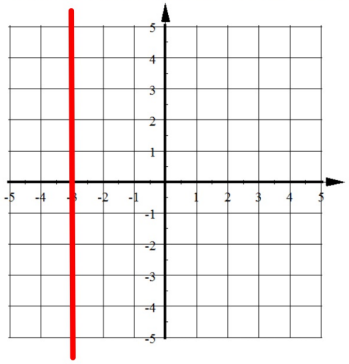
What is true about the coordinates of every point on this line?

They all have the same y-coordinate

What is the slope of this line?

Slope = 0

Which kind of line is shown below? Vertical



What is true about the coordinates of every point on this line?

They all have the same x-coordinate

What is the slope of this line?

Slope = undefined

Given a line passes through each pair of Is each line horizontal, vertical, or neither?

1. (-7, 8) and (8, 1) Neither

Neither x nor y coordinates are the same

2. (3, 6) and (3, -6) Vertical

x-coordinates are the same

3. (-11, 23) and (-11, 7) Vertical

x-coordinates are the same

4. ( ) and ( )

Horizontal

The points must have the same y-coordinates.

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

rewrite this equation by mulitplying both sides by $x_2 - x_1$

$(x_2 - x_1) \cdot m = \frac{y_2 - y_1}{x_2 - x_1} \cdot (x_2 - x_1)$ → $y_2 - y_1 = m(x_2 - x_1)$

You have just created the

Point-Slope Form for the equation of a Line.

Point - Slope Form of a Linear Equation:

Definiton **Point-Slope Form of a Linear Equation**

The **point-slope form** of the equation of a nonvertical line that passes throught the point (x_1, y_1) with slope m is

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

Equations for a Line

- **Slope-Intercept Form** $y = mx + b$
- **Standard Form** $Ax + By = C$
- **Point-Slope Form** $y - y_1 = m(x - x_1)$

Sec 6-4 Point-Slope Form for the equation of a line.

A line has a slope of m and passes through the point (x_1 , y_1)

The equation of this line in Point-Slope Form is:

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

The y-coord of any point on the line

Slope of the line

The x-coord from the same point as the y-coord

A line has a slope of 5 and passes through the point (-1, 4)

Write the equation of this line in Point-Slope Form.

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

4 5 -1

$$y - 4 = 5(x- -1)$$

$$y - 4 = 5(x+1)$$

A line passes through the following two points:
(3, -10) and (-1, -1)

$m = \frac{-1+10}{-1-3} = \frac{9}{-4}$

Write the equation of this line in Point-Slope Form.

First: Find the slope $m = \frac{9}{-4}$

Using (3, -10) $y+10 = \frac{9}{-4}(x-3)$

Using (-1,-1) $y+1 = \frac{9}{-4}(x+1)$

A line passes through the following two points:
(0, 7) and (-2,0)

$m = \frac{7-0}{0-(-2)} = \frac{7}{2}$

Write the equation of this line in Point-Slope Form.

Use (0,7) $y-7 = \frac{7}{2}(x)$

Use (-2,0) $y = \frac{7}{2}(x+2)$

A line passes through the following two points:
(-5, 8) and (2, 8)

$m = \frac{8-8}{2-(-5)} = 0$

Write the equation of this line in Point-Slope Form.

$y-8 = 0(\quad)$

$y-8 = 0$

or

$y = 8$

A line passes through the following two points:
(6,-1) and (6, 3)

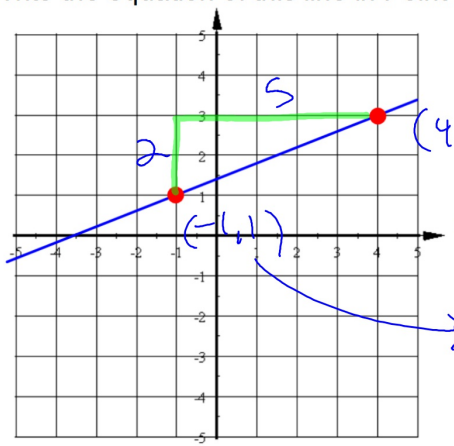
$m = \frac{}{6-6} = \frac{}{0} =$ undefined

Write the equation of this line in Point-Slope Form.

You can't write the equation of this line in Point-Slope Form because the slope is Undefined.

EQ is: $x = 6$

Write the equation of this line in Point-Slope Form



$m = \frac{2}{5}$

$(4, 3)$

$y - 3 = \frac{2}{5}(x - 4)$

$(-1, 1)$

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

Use this equation: $y - 9 = 4(x + 11)$

What is the slope of this line?

$m = 4$

What point was used to write this equation?

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

$y - 9 = 4(x + 11)$

$(-11, 9)$

Use this equation: $y + 11 = -(x - 6)$

What is the slope of this line?

$m = -1$

What point was used to write this equation?

$(6, -11)$

You can now finish Hwk #25: Sec 6-4.

Pages 307-308

Problems 11-14, 21, 22, 37, 38, 40

(for 21, 22, 40 write eq in Point-Slope Form only)

To graph a line the minimum information you need is

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OR

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