Given a line

a) How many Point-Slope equations are there for the line. Infinitely Many

b) How many Slope-Intercept equations are ther for the line. Only ONE

Use this equation of a line: $y = -3x + 5$ $(0, 5)$

Write this equation in Point-Slope Form.

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

$y - 5 = -3(x - 0)$

$y - 5 = -3x$

ec 6-2: Slope-Intercept Form for the equation of a line.

$y = mx + b$

slope

Y-intercept

Identify the Slope and y-intercept of each equation.

Equations should be Slope-Intercept Form to answer these questions

$y = 3x - 1$

Slope: 3

y-int: -1

$y = x + 13.7$

Slope: 1

y-int: 13.7

$y = -5 + 2x$

Slope: 2

y-int: -5

$y = -7x + 0$

Slope: -7

y-int: 0

$y = 0x + 8$

$y = 8$

Slope: 0

y-int: 8

$3x + 6y = 24$

Slope: $-\frac{1}{2}$

y-int: 4

$3x + 6y = 24 - 3x$

$-3x$

$\frac{6y = 24 - 3x}{6}$

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

b m

$y = mx + b$

$y - 6 = -3(x + 1)$

Slope: -3

y-int: 3

$y - 6 = -3x - 3$

$+6 \quad +6$

$y = -3x + 3$

m b

$x = 4$

Slope: undefined

y-int: none

This is a Vertical Line
Slope is Undefined
and it doesn't touch the
y-axis!

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. $m = \frac{21 - 1}{-3 - 2} = \frac{20}{-5} = -4$

Second: Write the equation in Point-Slope Form

$y - 1 = -4(x - 2)$

Third: Change Point-Slope into Slope-Intercept

$y - 1 = -4x + 8$

$+1 \quad +1$

$y = -4x + 9$

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 $1 = -4(2) + b$

Fourth: Solve for b. $1 = -8 + b$ $b = 9$

Fifth: Rewrite y = mx + b with the values of m and b you've found. $y = -4x + 9$