

# Algebra 1

## 6.2 Writing and Graphing Equations in Point-Slope Form

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

$m = \text{slope}$   
 $(x_1, y_1) = \text{given point}$

Write an equation in point-slope form.

Ex 1) Write an equation in point-slope form of the line that passes through the point  $(-3, 1)$  and has a slope of 3.

$m = 3$   $(-3, 1)$

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

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

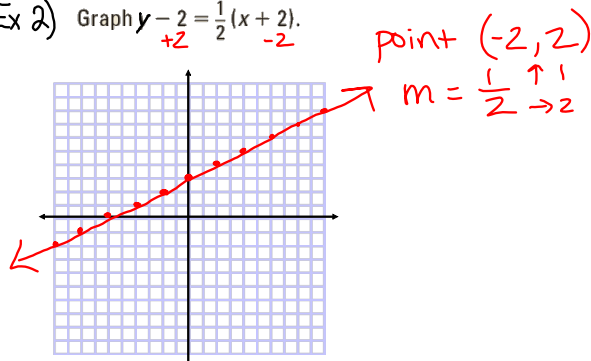
Slope-Int: solve for y

$$y - 1 = 3x + 9$$

$$y = 3x + 10$$

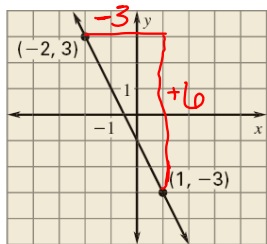
### Graph an equation in point-slope form

Ex 2) Graph  $y - 2 = \frac{1}{2}(x + 2)$ .



### Ex 3) Use point-slope form to write an equation

Write an equation in point-slope form of the line shown.



$$m = \frac{6}{-3} = -2$$

$(-2, 3)$

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

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

$m = -2$   $(1, -3)$

$$y + 3 = -2(x - 1)$$

$$y - 3 = -2x - 4$$

$$y = -2x - 1$$

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

$$y = -2x - 1$$

Try this:

1. Write an equation in point-slope form of the line that passes through the point  $(-1, 4)$  and has a slope of  $-2$ .

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

2. Graph the equation  $y - 1 = -(x - 2)$ .

$$m = -1$$

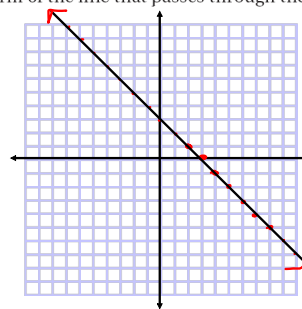
3. Write an equation in point-slope form of the line that passes through the points  $(2, 3)$  and  $(4, 4)$ .

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

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

or

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



# Homework:

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