

## L2: Slope-Point Form

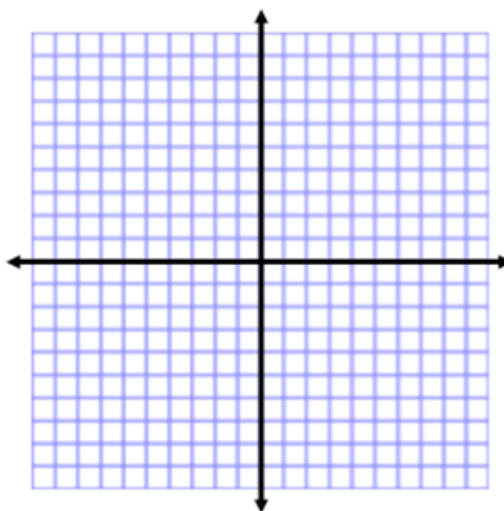
**Scheduled Review**

Draw the graph of

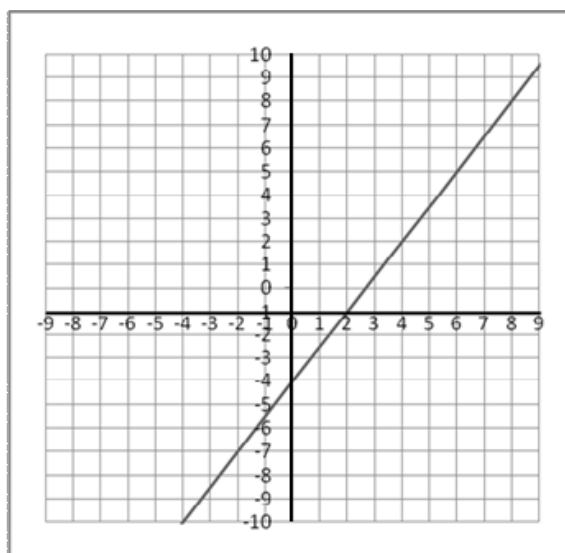
$$y = \frac{2}{3}x - 5$$

m =

y-intercept =



What is the equation for the following graph?



What is the slope?

What is the y-intercept?

Therefore the equation is

There is another equation that can be used to find the equation of a linear relation which is called the slope-point form

Slope Int:  $y = mx + b$

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

where  $m$  is the slope and  $(x_1, y_1)$  is a point on the line

This is used when

- you are given a point and a slope
- when you are given two points that are on the line.  
-for this you use the two points to find the slope and you choose one point to use

Eg Find the equation of a line in the form of  $y =$  that has:

- a) a slope of 3 and goes through  $(-1, 2)$

$$m = 3$$

$(x_1, y_1)$

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

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

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

$$\Rightarrow y = 3(x + 1) + 2$$

$$= 3x + 3 + 2$$

$$y = 3x + 5 : \text{Slope Int}$$

Slope :  
point :

- b) a slope of  $\frac{-1}{2}$  and goes through  $(2, -7)$

c) goes through the points of  $(-3, 10)$  and  $(2, -5)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5 - 10}{2 - (-3)} = \frac{-15}{5} = -3$$

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

$$y - 10 = -3(x - (-3))$$

$$y - 10 = -3(x + 3)$$

$$m = -3$$

$$\rightarrow y = -3(x + 3) + 10$$

$$= -3x - 9 + 10$$

$$y = -3x + 1 \quad \text{slope int}$$

d) goes through the points of  $(-2, -3)$  and  $(6, 1)$

When graphing an equation given in slope-point form simply find the slope and point and graph. You may also rearrange the equation to slope y-intercept form but often your y-intercept may be an ugly rational.

Eg graph the equation

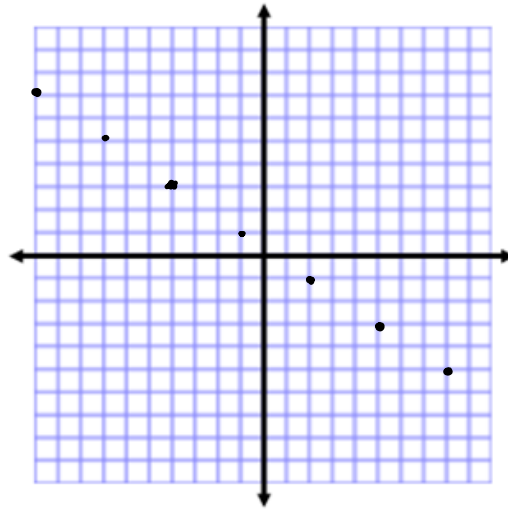
$$y - 3 = -\frac{2}{3}(x + 4)$$

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

$$m = -\frac{2}{3} \quad \begin{array}{l} \text{down 2} \\ \text{right 3} \end{array}$$

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

$$(-4, 3)$$

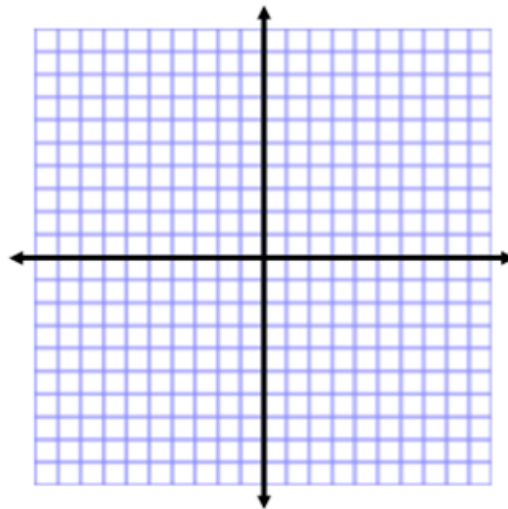


Draw line through  
points

$$y + 5 = 3(x - 2)$$

$$m =$$

$$\text{point} =$$



Homework Pg 372 #4, 5, 6(ac), 7-9, 11, 12, 14, 16, 19, 27

