

**POINT – SLOPE FORM OF A LINEAR EQUATION AND FUNCTION NOTATION***Slope of a Line*

What is the slope between the two points  $(x_1, y_1)$  and  $(x_2, y_2)$  ?

*Point – Slope Form of a Linear Equation*

In order to write the equation of a line, all you need is one point,  $(x_1, y_1)$ , that is on the line and the slope,  $m$ .

The **point – slope form** of a linear equation is

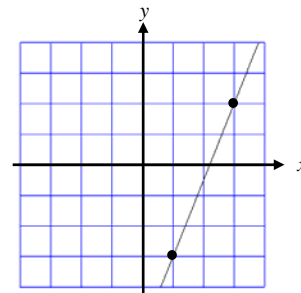
*Example:* For each of the following, write the equation of the line with the given information in point-slope form.

a) Point  $(-2, 6)$ ; Slope =  $-1$

b) Point  $(1, -3)$ ; Slope =  $\frac{5}{6}$

c) Points  $(12, 0)$  and  $(6, 3)$  are on the line.

d)



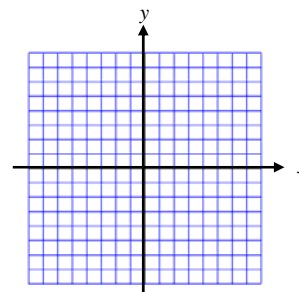
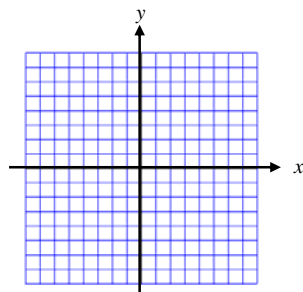
*Example:* State the point and slope used in each of the following equations.

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

b)  $y - \frac{1}{2} = -4(x - 8)$

c)  $y + \frac{2}{3} = -\frac{1}{2}(x + \frac{5}{8})$

*Example:* Graph equation  $a$  from each of the last two examples.





c) Using this new notation, evaluate each of the following:

i)  $f(a) =$

ii)  $f(\text{☺}) =$

iii)  $f(\text{♥}) =$

iv)  $f(2) =$

v)  $f(6) =$

vi)  $f(-8) =$

*Example:* Danika bought a used care. After 10 weeks of driving, the odometer read 29,265. After 25 weeks, it read 32,865. Danika knows she drives about the same number of miles each week.

a) Write a point – slope equation that models  $r$ , the odometer reading, as a function of  $t$ , the number of weeks she has owned the car.

b) What was the odometer reading when Danika bought the car?