

11. $f(x) = 3x - 6$

Warm Up

2/14/19

Find the average rate of change for the interval $2 \leq x \leq 4$

1. $f(x) = 3x - 6$

$$f(2) = 3(2) - 6 = 0$$

$$f(4) = 3(4) - 6 = 6$$

$(2, 0)$

$(4, 6)$

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

$$\frac{6 - 0}{4 - 2} = \frac{6}{2}$$

$$m = 3$$

2. $f(x) = x^2 - 2x + 5$

$$f(2) = (2)^2 - 2(2) + 5 = 4 - 4 + 5 = 5$$

$$f(4) = (4)^2 - 2(4) + 5 = 16 - 8 + 5 = 13$$

$(2, 5)$

$(4, 13)$

$$m = \frac{13 - 5}{4 - 2} = \frac{8}{2}$$

$$m = 4$$

3. Find the average rate of change in the table on the interval of $-9 \leq x \leq 3$

| x | y |
|-----|----|
| 3 | -6 |
| 0 | -2 |
| -3 | 2 |
| -6 | 6 |
| -9 | 10 |
| -12 | 14 |

$$m = \frac{10 - 6}{-9 - 3} = \frac{4}{-12}$$

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

Point - Slope Formula

$$\underline{y} - \underline{y_1} = \underline{m} (\underline{x} - \underline{x_1})$$

What does it stand for?

$(-2, 4)$

y:

y₁ : y-value from ordered pair

m: slope

x₁ : x-value from your ordered pair

x :

Writing an equation given a point and the slope

1. Plug in the ordered pair for X_1 and Y_1 and the slope in for m

2. Solve the equation for Y

Writing an equation given a point and the slope

$(-4, 6)$ and $m = -3$

$$y - \underline{y_1} = \underline{m}(x - \underline{x_1})$$

$$y - \underline{6} = \underline{-3}(x + \underline{4})$$

$$\begin{array}{r} y - 6 = -3x - 12 \\ +6 \qquad \qquad +6 \end{array}$$

$$\boxed{y = -3x - 6}$$

$$y = mx + b$$

Writing an equation given a point and the slope

(12, -5) and $m = 1/2$

$$y - \underline{y_1} = m(x - \underline{x_1})$$

$$y + 5 = \frac{1}{2}(x - 12)$$

$$\begin{array}{r} y + 5 = \frac{1}{2}x - 6 \\ \underline{-5} \qquad \qquad \underline{-5} \end{array}$$

$$\boxed{y = \frac{1}{2}x - 11}$$

Writing an equation given a point and the slope

$(-3, -7)$ and $m = 0$

$$y = -7$$

Writing an equation given a point and the slope

$(-2, 9)$ and m is undefined.

$$x = -2$$

$$(3, 2) \quad m = 15$$

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

$$y - 2 = 15(x - 3)$$

$$y - 2 = 15x - 45$$

$$\begin{array}{r} +2 \qquad \qquad +2 \\ \hline y = 15x - 43 \end{array}$$

$$(-10, -20) \quad m = -5$$

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

$$y + 20 = -5(x + 10)$$

$$y + 20 = -5x - 50$$

$$\begin{array}{r} -20 \qquad \qquad -20 \\ \hline y = -5x - 70 \end{array}$$

$$(-12, 5) \quad m = 7$$

$$y - 5 = 7(x + 12)$$

$$y - 5 = 7x + 84$$

$$\begin{array}{r} +5 \qquad \qquad +5 \\ \hline y = 7x + 89 \end{array}$$

Writing an Equation given two points

- 1. Find the slope from the 2 points**
- 2. Use the point-slope formula to plug in the X_1 and Y_1 from 1 point and the slope**

Writing an Equation given two points

$(-7, 4)$, and $(12, -3)$

$$\textcircled{1} m = \frac{-3 - 4}{12 - (-7)} = \frac{-7}{19}$$

$$\textcircled{2} y - y_1 = m(x - x_1)$$

$$y + 3 = \frac{-7}{19}(x - 12)$$

$$y + 3 = \frac{-7}{19}x + \frac{84}{19}$$

$$-3 \qquad \qquad \qquad -3$$

$$\frac{84}{19} - \frac{57}{19}$$

$$y = \frac{-7}{19}x + \frac{27}{19}$$

Writing an Equation given two points

$(-2, 6)$, and $(-2, 9)$

$$m = \emptyset$$

$$\boxed{x = -2}$$

Writing an Equation given two points

(15, -6), and (7, -6)

$$m = 0$$
$$y = -6$$

Exit Ticket

2/14/19

Write the equation of the line that passes through $(-3,7)$ and $(5,19)$