

Linear Functions

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Objectives:

1. I will be able to find the equation of a line given certain information.
2. I will be able to find the equation of a line given the graph.
3. I will be able to graph a linear function given the equation or other information.



Writing Equations of Linear Functions

Slope = 3
through the point (0, -4)

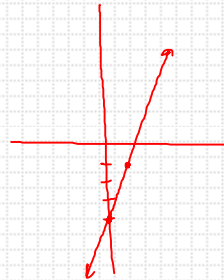
$$y = mx + b$$

$$\boxed{y = 3x - 4}$$

$$y = 3x + b$$

$$-4 = 3(0) + b$$

$$-4 = b$$



I will be able to graph and write equations of linear functions.



Forms of Linear Equations

Slope Intercept Form: $y = mx + b$

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

POINT (x_1, y_1)

SLOPE = m

Standard Form: $Ax + By = C$

A, B, C ARE INTEGERS

$A > 0$ $\{-2, -1, 0, 1, 2, \dots\}$

I will be able to graph and write equations of linear functions.



Writing Equations of Linear Functions

through the point $(5, -1)$
perpendicular to $y = 3x + 4 \rightarrow m = 3 \rightarrow m_{\perp} = -\frac{1}{3}$

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

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



SLOPE INTERCEPT FORM

$$y + 1 = -\frac{1}{3}x + \frac{5}{3}$$

$$y = -\frac{1}{3}x + \frac{5}{3} - 1$$

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

STANDARD FORM $3y = -x + 2$

$$x + 3y = 2$$

I will be able to graph and write equations of linear functions.



Writing Equations of Linear Functions

through the points $(3, 4)$ and $(2, -5)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5 - 4}{2 - 3} = \frac{-9}{-1} = 9$$

PT SLOPE FORM

$$y - 4 = 9(x - 3)$$

SLOPE INT

$$y = 9x - 27 + 4$$

$$y = 9x - 23$$

STANDARD FORM

$$9x - y = 23$$

I will be able to graph and write equations of linear functions.



Classwork:

1.4 WS - Lines

Homework:

I will be able to solve inequalities and write the answer in interval notation.

