

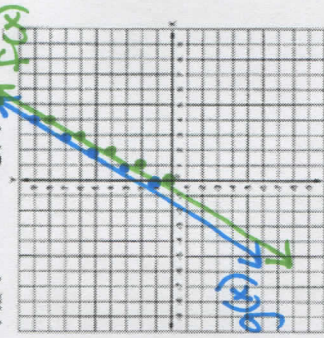
OBJECTIVE 1: Graphing Linear Functions

A linear function is any line that is not vertical and can be written in the form $y = mx + b$.

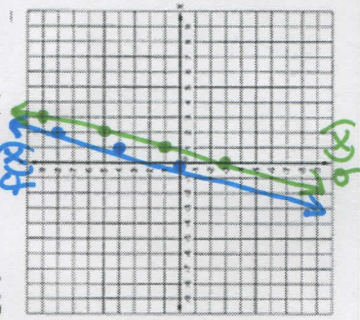
- The **m** is the slope and how we **MOVE** on the graph
 - Up if positive
 - Down if negative
 - Always right
- The **b** is the y-intercept and where we **BEGIN** on the graph

TASK 1: Graph and Compare.

a) $f(x) = 2x + 1$ and $g(x) = 2x + 1$

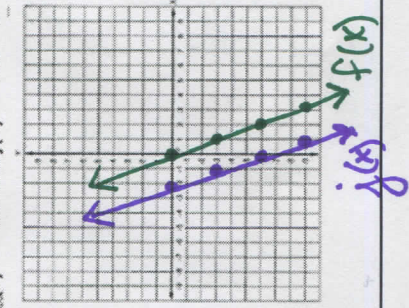


b) $g(x) = 4x - 3$ and $f(x) = 4x$

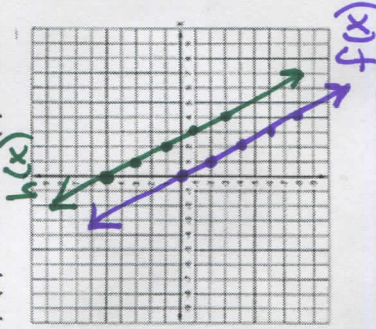


TASK 2: Graph and Label.

a) $f(x) = -3x - 6$ and $j(x) = -3x - 6$



b) $f(x) = -2x + 5$ and $h(x) = -2x + 5$



OBJECTIVE 2: Writing Equations of Lines Using Function Notation

$$y = mx + b$$

Slope-intercept form of a linear equation: slope is m , and y -intercept is $(0, b)$

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

Point-slope form of a linear equation: slope is m , and (x_1, y_1) is the point on the line.

$$y = c$$

Horizontal line: the slope is 0 and the y -intercept is $(0, c)$.

TASK 3:

- a) Find an equation of the line with slope -3 and y -intercept of $(0, -5)$. Write the equation using function notation.
 $y = mx + b$
 $f(x) = -3x - 5$
- b) Find an equation of the line with slope of -4 and y -intercept of $(0, -3)$. Write the equation using function notation.
 $y = mx + b$
 $g(x) = -4x - 3$

TASK 4:

- a) Find an equation of the line through points $(4, 0)$ and $(-4, -5)$. Write the equation using function notation.
 $m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5 - 0}{-4 - 4} = \frac{-5}{-8} = \frac{5}{8}$
 $y - y_1 = m(x - x_1)$
 $y - 0 = \frac{5}{8}(x - 4)$
 $j(x) = \frac{5}{8}(x - 4)$
- b) Find an equation of the line through points $(-1, 2)$ and $(2, 0)$. Write the equation using function notation.
 $m = \frac{0 - 2}{2 - (-1)} = \frac{-2}{3}$
 $y - 2 = \frac{-2}{3}(x + 1)$ or $y - 0 = \frac{-2}{3}(x - 2)$
 $h(x) = \frac{-2}{3}(x - 2)$

TASK 5:

- a) Find an equation of the horizontal line containing the point $(2, 3)$. Write the equation using function notation.
 $m(x) = 3$
- b) Find an equation of the horizontal line containing the point $(3, 2)$. Write the equation using function notation.
 $n(x) = 2$

Still need help with: