

# Algebra 1

## 6.1 part 2 Writing Equations in Slope-Intercept Form

☆ Before writing an equation of a line:

You must always find  $m$  and  $b$  (slope & y-intercept).

Ex 1

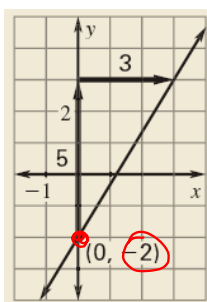
Write an equation in slope-intercept form of a line with a slope of  $-2$  and a y-intercept of  $5$ .

$$y = mx + b$$

$$y = -2x + 5$$

Ex 2

Write an equation of the line shown.



$$y = mx + b$$

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

$$m = \frac{5}{3}$$

### Write an Equation Given Slope and One Point

Ex 3) Write an equation in slope-intercept form if the slope of the line is  $-\frac{3}{5}$  and it contains the point  $(-10, 8)$ .

$$m = -\frac{3}{5} \quad (-10, 8) \quad y = -\frac{3}{5}x + 2$$

$$b = 2$$

$$y = m \cdot x + b$$

$$8 = -\frac{3}{5} \cdot -10 + b$$

$$8 = 6 + b$$

$$-6 = -6$$

$$2 = b$$

Ex 4) Write an equation of the line that passes through  $(3, 0)$  and  $(2, -4)$ .

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 - 0}{2 - 3} = \frac{-4}{-1} = 4$$

$$m = 4 \quad (3, 0)$$

$$y = mx + b$$

$$0 = 4 \cdot 3 + b$$

$$0 = 12 + b$$

$$-12 = b$$

$$y = 4x - 12$$

Ex 5) Which function has the values

$$f(2) = 8 \text{ and } f(-2) = -4?$$

$$(2, 8) \quad (-2, -4)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 - 8}{-2 - 2} = \frac{-12}{-4} = 3$$

$$m = 3 \quad (2, 8)$$

$$y = mx + b$$

$$8 = 3 \cdot 2 + b$$

$$-8 = -6 + b$$

$$2 = b$$

$$y = 3x + 2$$

Try this:

1. Write an equation of the line that passes through the point (6, 3) and has a slope of 2.  $y = 2x - 9$

$$\begin{aligned} 3 &= 2 \cdot 6 + b \\ 3 &= 12 + b \\ -12 &= -12 \\ -9 &= b \end{aligned}$$

2. Write an equation of the line that passes through (1, -2) and (-5, 4).  $y = -x - 1$

3. Write an equation for the linear function with the values  $f(-2) = 10$  and  $f(4) = -2$ .  $y = -2x + 6$

$$2) \frac{4 - (-2)}{-5 - 1} = \frac{b}{-6} = -1$$

$$\begin{aligned} 4 &= -1 \cdot -5 + b \\ 4 &= 5 + b \\ -5 &= -5 \\ -1 &= b \end{aligned} \quad \boxed{y = -x - 1}$$

$$3) (-2, 10) (4, -2)$$
$$m = \frac{-2 - 10}{4 - (-2)} = \frac{-12}{6}$$

$$m = -2$$

$$10 = -2 \cdot -2 + b$$

$$10 = 4 + b$$

$$-4 = -4$$

$$6 = b$$

$$\boxed{y = -2x + 6}$$

# Homework:

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