

EXAMPLE 2 Find a negative slope

FIND SLOPE

In Example 2, if you used two other points on the line, such as (4, 3) and (5, 1), in the slope formula, the slope would still be -2 .

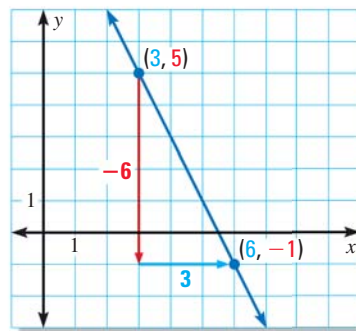
Find the slope of the line shown.

Let $(x_1, y_1) = (3, 5)$ and $(x_2, y_2) = (6, -1)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \text{Write formula for slope.}$$

$$= \frac{-1 - 5}{6 - 3} \quad \text{Substitute.}$$

$$= \frac{-6}{3} = -2 \quad \text{Simplify.}$$



The line falls from left to right.
The slope is negative.

EXAMPLE 3 Find the slope of a horizontal line

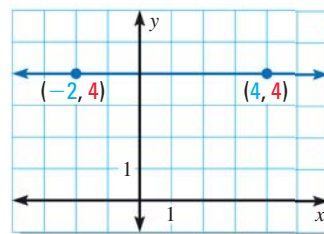
Find the slope of the line shown.

Let $(x_1, y_1) = (-2, 4)$ and $(x_2, y_2) = (4, 4)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \text{Write formula for slope.}$$

$$= \frac{4 - 4}{4 - (-2)} \quad \text{Substitute.}$$

$$= \frac{0}{6} = 0 \quad \text{Simplify.}$$



The line is horizontal.
The slope is zero.

EXAMPLE 4 Find the slope of a vertical line

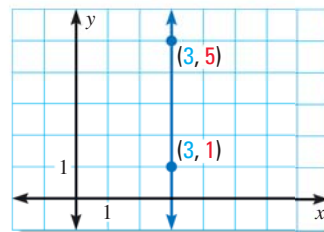
Find the slope of the line shown.

Let $(x_1, y_1) = (3, 5)$ and $(x_2, y_2) = (3, 1)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \text{Write formula for slope.}$$

$$= \frac{1 - 5}{3 - 3} \quad \text{Substitute.}$$

$$= \frac{-4}{0} \quad \text{Division by zero is undefined.}$$



The line is vertical.
The slope is undefined.

► Because division by zero is undefined, the slope of a vertical line is undefined.



GUIDED PRACTICE for Examples 2, 3, and 4

Find the slope of the line that passes through the points.

4. (5, 2) and (5, -2)

5. (0, 4) and (-3, 4)

6. (0, 6) and (5, -4)