

Reteaching with Practice

For use with pages 279–284

GOAL

Use slope and any point on a line to write an equation of the line and use a linear model to make predictions about a real-life situation

VOCABULARYTwo nonvertical lines are **parallel** if and only if they have the same slope.**EXAMPLE 1****Writing an Equation of a Line**Write an equation of the line that passes through the point $(-2, 5)$ and has a slope of 3.**SOLUTION**Find the y -intercept.

$$y = mx + b \quad \text{Write slope-intercept form.}$$

$$5 = 3(-2) + b \quad \text{Substitute 3 for } m, -2 \text{ for } x, \text{ and 5 for } y.$$

$$5 = -6 + b \quad \text{Simplify.}$$

$$11 = b \quad \text{Solve for } b.$$

The y -intercept is $b = 11$.

Now write an equation of the line, using slope-intercept form.

$$y = mx + b \quad \text{Write slope-intercept form.}$$

$$y = 3x + 11 \quad \text{Substitute 3 for } m \text{ and 11 for } b.$$

Exercises for Example 1

Write an equation of the line that passes through the point and has the given slope. Write the equation in slope-intercept form.

1. $(1, -6), m = -2$

2. $(-3, -2), m = 4$

3. $(4, 5), m = -1$

Write an equation of the line that is parallel to the line $y = 2x + 1$ and passes through the point $(1, 5)$.

SOLUTION

The given line has a slope of $m = 2$. A parallel line through $(1, 5)$ must also have a slope of $m = 2$. Use this information to find the y -intercept.

LESSON

5.2

CONTINUED

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$$y = mx + b \quad \text{Write slope-intercept form.}$$

$$5 = 2(1) + b \quad \text{Substitute 2 for } m, 1 \text{ for } x, \text{ and 5 for } y.$$

$$5 = 2 + b \quad \text{Simplify.}$$

$$3 = b \quad \text{Solve for } b.$$

The y -intercept is $b = 3$.

Write an equation using the slope-intercept form.

$$y = mx + b \quad \text{Write slope-intercept form.}$$

$$y = 2x + 3 \quad \text{Substitute 2 for } m \text{ and 3 for } b.$$

Exercises for Example 2

Write an equation of the line that is parallel to the given line and passes through the given point.

4. $y = 4x - 1$, $(2, 3)$ 5. $y = x + 6$, $(-3, 0)$ 6. $y = -2x + 3$, $(1, -1)$