



# Reteaching

## 9.2 The Substitution Method

### ◆ Skill A Solving systems of linear equations by using the substitution method

**Recall** To use the substitution method, solve one of the equations for  $x$  or  $y$ . Then substitute the right side of the new equation for  $x$  or  $y$  in the other equation. There will be a new equation with one variable, and you can solve for this variable. Then find the solution for the remaining variable.

#### ◆ Example

Solve the system of equations:

$$\begin{cases} x + 6y = 1 \\ 3x - 10y = 31 \end{cases}$$

#### ◆ Solution

Solve for  $x$  in the first equation.

$$\begin{aligned} x + 6y &= 1 \\ x + 6y - (6y) &= 1 - (6y) && \text{Subtraction Property of Equality} \\ x &= 1 - 6y && \text{Simplify.} \end{aligned}$$

To solve the second equation, substitute  $(1 - 6y)$  for  $x$ .

$$\begin{aligned} 3x - 10y &= 31 \\ 3(1 - 6y) - 10y &= 31 && \text{Substitution} \\ 3 - 18y - 10y &= 31 && \text{Distributive Property} \\ 3 - 28y &= 31 && \text{Simplify.} \\ 3 - 3 - 28y &= 31 - 3 && \text{Subtraction Property of Equality} \\ \frac{-28y}{-28} &= \frac{28}{-28} && \text{Division Property of Equality} \\ y &= -1 \end{aligned}$$

$$\text{Solve for } x. \quad x = 1 - 6(-1) = 1 + 6 = 7 \quad \text{Substitution}$$

Solution:  $(7, -1)$

Use the substitution method to solve each system of equations.

1.  $y = 4x$  and  $4x + 5y = -24$  \_\_\_\_\_

2.  $y = 2$  and  $2x - 4y = 1$  \_\_\_\_\_

3.  $\frac{x}{3} - y = 3$  and  $2x + y = 25$  \_\_\_\_\_

4.  $3y = 3x - 3$  and  $3x + 3y = 9$  \_\_\_\_\_

5.  $-3x + y = -4$  and  $-2x + 3y = 9$  \_\_\_\_\_

6.  $-x + 2y = -5$  and  $-3x + 5y = -8$  \_\_\_\_\_