7.2 Solve Linear Systems by Substitution
pp. 435–441

EXAMPLE

Solve the linear system: $3x + y = -9$ **Equation 1**
$y = 5x + 7$ **Equation 2**

STEP 1 **Substitute** $5x + 7$ for y in Equation 1 and solve for x.

$3x + y = -9$ **Write Equation 1.**

$3x + 5x + 7 = -9$ **Substitute $5x + 7$ for y.**

$x = -2$ **Solve for x.**

STEP 2 **Substitute** -2 for x in Equation 2 to find the value of y.

$y = 5x + 7 = 5(-2) + 7 = -10 + 7 = -3$

▶ The solution is $(-2, -3)$. Check the solution by substituting -2 for x and -3 for y in each of the original equations.

EXERCISES

Solve the linear system using substitution.

8. $y = 2x - 7$
$x + 2y = 1$

9. $x + 4y = 9$
$x - y = 4$

10. $2x + y = -15$
$y - 5x = 6$

11. **ART** Kara spends $16 on tubes of paint and disposable brushes for an art project. Each tube of paint costs $3, and each disposable brush costs $.50. Kara purchases twice as many brushes as tubes of paint. Find the number of brushes and the number of tubes of paint that she purchases.

7.3 Solve Linear Systems by Adding or Subtracting
pp. 444–450

EXAMPLE

Solve the linear system: $5x - y = 8$ **Equation 1**
$-5x + 4y = -17$ **Equation 2**

STEP 1 **Add** the equations to eliminate one variable.

$5x - y = 8$
$-5x + 4y = -17$
——————————
$3y = -9$

STEP 2 **Solve** for y.
$y = -3$

STEP 3 **Substitute** -3 for y in either equation and solve for x.

$5x - y = 8$ **Write Equation 1.**

$5x - (-3) = 8$ **Substitute -3 for y.**

$x = 1$ **Solve for x.**

▶ The solution is $(1, -3)$. Check the solution by substituting 1 for x and -3 for y in each of the original equations.