7.2 Solve Linear Systems by Substitution

pp. 383–388

Alg. 9.0   **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 $(-2, -3)$. You can check the solution by substituting -2 for x and -3 for y in each of the original equations.

EXERCISES

EXAMPLES
1 and 2
on pp. 383–384
for Exs. 7–9

Solve the linear system using substitution.

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

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

9. $2x + y = -15$
$y - 5x = 6$

7.3 Solve Linear Systems by Adding or Subtracting

pp. 391–397

Alg. 9.0   **EXAMPLE**

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

STEP 1   Add the equations to $5x - y = 8$
eliminate one variable. $-5x + 4y = -17$
──────────────
$3y = -9$

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 $(1, -3)$. You can check the solution by substituting 1 for x and -3 for y in each of the original equations.

EXERCISES

EXAMPLES
1, 2, and 3
on pp. 391–392
for Exs. 10–12

Solve the linear system using elimination.

10. $4x - 5y = 14$
$-4x + y = -6$

11. $x + 7y = 12$
$-2x + 7y = 18$

12. $4y = 11 - 3x$
$3x + 2y = -5$

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