

5.3 Solving Systems by Elimination**HOW TO SOLVE A SYSTEM BY ELIMINATION**

1. _____

2. _____
3. _____
4. _____

EXAMPLE 1: Solving a System of Linear Equations by Elimination

a)

Solve the system by elimination.

$$x + 3y = -2$$

$$x - 3y = 16$$

b)

Solve the system by elimination.

$$-6x + 5y = 25$$

$$-2x - 4y = 14$$

EXAMPLE 2: Real-Life Application

You buy 8 hostas and 15 daylilies for \$193. Your friend buys 3 hostas and 12 daylilies for \$117. Write and solve a system of linear equations to find the cost of each daylily.

Use this guide for you and then use it again for your friend.

$$\begin{array}{|c|} \hline \text{Number} \\ \hline \text{of hostas} \\ \hline \end{array} \cdot \begin{array}{|c|} \hline \text{Cost of each} \\ \hline \text{hosta, } x \\ \hline \end{array} + \begin{array}{|c|} \hline \text{Number of} \\ \hline \text{daylilies} \\ \hline \end{array} \cdot \begin{array}{|c|} \hline \text{Cost of each} \\ \hline \text{daylily, } y \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Total} \\ \hline \text{cost} \\ \hline \end{array}$$

On your own: Solve systems by elimination

1. $3x + 4y = -6$

$$7x + 4y = -14$$

2. $4x - 5y = -19$

$$-x - 2y = 8$$

3. A landscaper buys 4 peonies and 9 geraniums for \$190. Another landscaper buys 5 peonies and 6 geraniums for \$185. Write and solve a system of linear equations to find the cost of each peony.

Summary: Methods for Solving Systems of Linear Equations

Method	When to Use
Graphing (Lesson 5.1)	To estimate solutions
Substitution (Lesson 5.2)	When one of the variables in one of the equations has a coefficient of 1 or -1
Elimination (Lesson 5.3)	When at least 1 pair of like terms has the same or opposite coefficients
Elimination (Multiply First) (Lesson 5.3)	When one of the variables cannot be eliminated by adding or subtracting the equations