

Objectives

- Solve systems of equations by using substitution.
- Solve systems of equations by elimination.

Vocabulary

Example 1

Use substitution to solve each system of equations.

a)
$$\begin{cases} y = x + 2 \\ x + y = 8 \end{cases}$$

b)
$$\begin{cases} 2x + y = 6 \\ y - 8 = 1 \end{cases}$$

Try It!

Use substitution to solve each system of equations.

c)
$$\begin{cases} y = 2x - 1 \\ 3x + 2y = 26 \end{cases}$$

d)
$$\begin{cases} 5x + 6y = -9 \\ 2x - 2 = -y \end{cases}$$

Example 2

Use elimination to solve each system of equations.

a)
$$\begin{cases} x + y = 4 \\ 2y + 4 = x \end{cases}$$

b)
$$\begin{cases} 2x + 4y = -10 \\ 3x + 3y = -3 \end{cases}$$

Try it!

Use elimination to solve each system of equations.

a)
$$\begin{cases} 4x + 7y = -25 \\ -12x - 7y = 19 \end{cases}$$

b)
$$\begin{cases} 5x - 3y = 42 \\ 8x + 5y = 28 \end{cases}$$

Example 3

Classify each system and determine the number of solutions.

a)
$$\begin{cases} 2x + y = 8 \\ 6x + 3y = -15 \end{cases}$$

Try it!

Classify each system and determine the number of solutions.

a)
$$\begin{cases} 56x + 8y = -32 \\ 7x + y = -4 \end{cases}$$

b)
$$\begin{cases} 6x + 3y = -12 \\ 2x + y = -6 \end{cases}$$

Example 4

A zoo keeper needs to mix feed for the prairie dogs so that the feed has the right amount of protein. Feed A has 12% protein. Feed B has 5% protein. How many pounds of each does he need to mix to get 100 lb of feed that is 8% protein?

Try it!

A coffee blend contains Sumatra beans which cost \$5/lb and Kona beans which cost \$13/lb. If the blend cost \$10/lb, how much of each type of coffee is in the 50 lb of the blend?

Try it!

Ravi is comparing the costs of long distance calling cards. To use card A, it costs \$0.50 to connect and then \$0.05 per minute. To use card B, it costs \$0.20 to connect and then \$0.08 per minute. For what number of minutes does it cost the same amount to use each card for a single call?