

Study Guide

Elimination Using Addition and Subtraction

In systems of equations where the coefficient of the x or y terms are additive inverses, solve the system by adding the equations. Because one of the variables is eliminated, this method is called **elimination**.

Example: Use elimination to solve the system of equations
 $x - 3y = 7$ and $3x + 3y = 9$.

Add the two equations.	$\begin{array}{r} x - 3y = 7 \\ 3x + 3y = 9 \\ \hline 4x = 16 \\ x = 4 \end{array}$	Substitute 4 for x in either original equation and solve for y .	$\begin{array}{r} 4 - 3y = 7 \\ -3y = 7 - 4 \\ -3y = 3 \\ y = -1 \end{array}$
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The solution of the system is $(4, -1)$.

Use elimination to solve each system of equations.

1. $2x + 2y = -2$
 $3x - 2y = 12$

2. $4x - 2y = -1$
 $-4x + 4y = -2$

3. $x - y = 2$
 $x + y = -3$

4. $6x + 5y = 4$
 $6x - 7y = -20$

5. $2x - 3y = 12$
 $4x + 3y = 24$

6. $0.1x + 0.3y = 0.9$
 $0.1x = 0.3y + 0.2$

Use a system of equations and elimination to solve each problem.

7. Two angles are supplementary. The measure of one angle is 10 more than three times the other. Find the measure of each angle.

8. Rema is older than Ken. The difference of their ages is 12 and the sum of their ages is 50. Find the age of each.

9. The sum of two numbers is 70 and their difference is 24. Find the two numbers.

10. The sum of the digits of a two-digit number is 12. The difference of the digits is 2. Find the number if the units digit is larger than the tens digit.