

Name _____

Elimination Method Using Addition and Subtraction:

In systems of equations where the coefficient (the number in front of the variable) 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 2:

Use elimination to solve the system of equations

$$x - 3y = 7 \text{ and } 3x + 3y = 9.$$

Add the two equations.

$$\begin{array}{r} x - 3y = 7 \\ + 3x + 3y = 9 \\ \hline 4x \qquad = 16 \\ \frac{4x}{4} = \frac{16}{4} \end{array}$$

$$x = 4$$

Substitute 4 for x in either original equation. Then solve for y.

$$\begin{array}{r} x - 3y = 7 \\ 4 - 3y = 7 \\ -3y = 3 \\ \frac{-3y}{-3} = \frac{3}{-3} \end{array}$$

$$y = -1$$

The solution of this 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. $x - y = 2$
 $x + y = -3$