

Solving Linear Systems by Elimination

Elimination can be a more efficient for solving a linear system. This method allows you to eliminate one of the variables by “adding” the two equations together.

Steps to Solve a Linear System by Elimination

1. Rearrange the equations into $ax + by = c$ form and number them.
2. Multiply one (or both) of the equations by a number so that one of the variables has equal but opposite coefficients (ax and $-ax$ or by and $-by$).
3. Add your new equations together to eliminate one variable.
4. Solve for the unknown variable.
5. Use this solution to solve for the other variable.
6. State the point of intersection.

Example – Solve the linear system below using both the method of comparison and the method of elimination.

$$10x - 9y = 46$$

and

$$-2x + 3y = 10$$

<u>Comparison</u>	<u>Elimination</u>

Example – Solve the linear system below by elimination.

$$-4x + 9y = -17 \quad \text{and} \quad 3x - 4y = 10$$

Example – Solve the linear system below by elimination.

$$-2x - 7y - 22 = 0 \quad \text{and} \quad -5y = 7x - 1$$

Example – Solve the linear system below by elimination. Then check your solution.

$$4x - 3y = 9$$

$$5x + 7y = -12$$

Homework – Please complete the question below and questions C2, #3bd, 4b, 5c, 6c, 7 on pages 39-40.

1. Solve the linear system below by elimination. Then check your solution.

$$12x - 7y = 13$$

$$8x + 11y = 29$$