Solving Systems of Linear Equations by the Elimination Method

Procedures for the Elimination Method

- 1. Rewrite both equations in standard form.
- 2. Multiply either equation or both equations by a nonzero number so that the coefficients of x or y will have a sum of o.
- 3. Add the resulting equations.
- 4. Simplify then solve the resulting equation.
- ${\bf 5}.$ Substitute the value obtained to any of the original equations.
- 6. Check the values of the variables obtained against the linear equations in the system.

Practice Exercises

Solve each system of linear equation using the elimination method.

1.
$$\begin{cases} 2x + y = 12 \\ 3x + y = 17 \end{cases}$$

$$2. \begin{cases} 3x + 4y = 4 \\ x - 2y = 0 \end{cases}$$

3.
$$\begin{cases} 6x + 25 = 5y \\ 8x + 9y = 45 \end{cases}$$

$$\begin{cases} 3x + 4y = 7 \end{cases}$$

5.
$$\begin{cases} 3x + 4y = 19 \\ 7x - 2y = -1 \end{cases}$$

Problem Set

Solve each system of linear equation using the elimination method.

1.
$$\begin{cases} 2x - 3y = 12 \\ 4x + 3y = 24 \end{cases}$$

$$\begin{cases} 5x + 11 = 7y \\ 9x + 19 = 3x \end{cases}$$

$$3. \begin{cases} 3x + 4y = 7 \\ 2x - 2y = 7 \end{cases}$$

4.
$$\begin{cases} x = y + 1 \\ y = y = 1 \end{cases}$$

5.
$$\begin{cases} 2x + y = 4 \\ x + 2y = 4 \end{cases}$$

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Practice Exercises

Solve each system of linear equation using the elimination method.

1.
$$\begin{cases} 2x + y = 12 \\ 3x + y = 17 \end{cases}$$

$$\int_{2}^{2} 3x + 4y = 4$$

$$\left(\begin{array}{cc} x-2y & = & 0 \end{array}\right)$$

3.
$$\begin{cases} 6x + 25 = 5y \\ 8x + 0y = 45 \end{cases}$$

$$(8x+9y = 49$$

$$4. \begin{cases}
3x + 4y = 7 \\
3x + 4y = 8
\end{cases}$$

$$5. \quad \begin{cases} 3x + 4y = 19 \\ 7x - 2y = -1 \end{cases}$$

Problem Set

Solve each system of linear equation using the elimination method.

1.
$$\begin{cases} 2x - 3y = 12 \\ 4x + 3y = 24 \end{cases}$$

$$\int 5x + 11 = 7y$$

2.
$$\begin{cases} 3^{N+12} & 7^{N} \\ 8^{N-18} & -3^{N} \end{cases}$$

2.
$$\begin{cases} 8y - 18 = 3x \end{cases}$$

$$3. \begin{cases} 3x + 4y = 7 \\ 2x - 2y = 7 \end{cases}$$

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

$$\int_{A} x = y + 1$$

$$\int 2x + y = 4$$

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- 3. Add the resulting equations.
- 4. Simplify then solve the resulting equation.
- 5. Substitute the value obtained to any of the original equations.
- 6. Check the values of the variables obtained against the linear equations in the system.

Practice Exercises

Solve each system of linear equation using the elimination method.

1.
$$\begin{cases} 2x + y = 12 \\ 3x + y = 17 \end{cases}$$

$$\int 3x + 4y = 2$$

$$\begin{cases} 3x + 4y = x \\ x - 2y = 0 \end{cases}$$

3.
$$\begin{cases} 6x + 25 = 5y \\ 8x + 9y = 45 \end{cases}$$

$$\int 3x + 4y = 7$$

$$\begin{cases} 3x + 4y = 19 \end{cases}$$

Solve each system of linear equation using the elimination method.

1.
$$\begin{cases} 2x - 3y = 12 \\ 4x + 3y = 24 \end{cases}$$

2.
$$\begin{cases} 5x + 11 &= 7y \\ 8y - 18 &= 3x \end{cases}$$

$$3. \begin{cases} 3x + 4y = 7 \\ 2x - 2y = 7 \end{cases}$$

4.
$$\begin{cases} x = y + 1 \\ y = y = 1 \end{cases}$$

$$5. \begin{cases} 2x+y = x \\ x+2y = x \end{cases}$$

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Procedures for the Elimination Method

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- Add the resulting equations.
- 4. Simplify then solve the resulting equation.
- 5. Substitute the value obtained to any of the original equations.
- 6. Check the values of the variables obtained against the linear equations in the system.

Practice Exercises

Solve each system of linear equation using the elimination method.

1.
$$\begin{cases} 2x + y = 12 \\ 2x + y = 17 \end{cases}$$

$$\int 3x + y = 17$$

$$\begin{cases} 3x + 4y = 4 \end{cases}$$

$$(x-2y = 0$$

$$\begin{cases} 6x + 25 = 5y \end{cases}$$

$$(8x+9y = 45$$

$$\begin{cases} 3x + 4y = 7 \\ 4 & \end{cases}$$

$$\int 3x + 4y = 19$$

$\int 7x - 2y = -1$ Problem Set

Solve each system of linear equation using the elimination method.

1.
$$\begin{cases} 2x - 3y = 12 \\ 4x + 3y = 24 \end{cases}$$

$$\int_{0}^{\infty} 4x + 3y = 24$$

2.
$$\begin{cases} 5x + 11 &= 7y \\ 8y - 18 &= 3x \end{cases}$$

$$\int 3x + 4y = 7$$

$$\int 2x - 2y = 7$$

$$4. \begin{cases} x = y + 1 \\ x - y = 1 \end{cases}$$

$$\int 2x + y =$$

$$5 \quad \left\{ x + 2y = x \right\}$$