Solving Systems of Linear Equations by the Substitution Method

Procedures for the Substitution Method

1. Solve for one variable in terms of the other variable in one of the equations.
2. Substitute the value of the variable found in the first step of the second equation.
3. Simplify then solve the resulting equation.
4. Substitute the value obtained to any of the original equations.
5. Check the values of the variables obtained against the linear equations in the system.

Practice Exercises

Solve each system of linear equation using the substitution method.

1. $\begin{cases} x-5y &= 4 \\ 2x+y &= 7 \end{cases}$
2. $\begin{cases} 2x+3y &= -13 \\ 5x-2y &= 34 \end{cases}$
3. $\begin{cases} 5x+3y &= 7 \\ 3x-5y &= -23 \end{cases}$
4. $\begin{cases} x+y &= \frac{1}{2} \\ 3x-y &= 5 \end{cases}$
5. $\begin{cases} 7(x-y)=14 \\ 2x=y+5 \end{cases}$

Problem Set

Solve each system of linear equation using the substitution method.

1. $\begin{cases} 2x-y &= 2 \\ 6x+5y &= 2 \end{cases}$
2. $\begin{cases} x-3y &= 1 \\ -2x+6y &= 5 \end{cases}$
3. $\begin{cases} x-3y &= 1 \\ -2x+6y &= -2 \end{cases}$
4. $\begin{cases} x+y &= 11 \\ 3x-y &= 5 \end{cases}$
5. $\begin{cases} 3x=4y-3 \\ 3x+2y=9 \end{cases}$

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