

SOLVING LINEAR SYSTEMS USING ELIMINATION

 Guide Notes

LINEAR SYSTEM OF EQUATIONS: is a set of equations with the same pair of variables. When we are solving systems using the **Elimination Method**, we either add or subtract the equations to get an equation in one variable. For two variable systems, there are three possible types: Independent, inconsistent and dependent.

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

4.
$$\begin{cases} 4x - 3y = 5 \\ x + y = 0 \end{cases}$$

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

5.
$$\begin{cases} x + y = 4 \\ 5x - 4y = 6 \end{cases}$$

3.
$$\begin{cases} 3x + 2y = 7 \\ 6x + 4y = 14 \end{cases}$$

6.
$$\begin{cases} 6x - y = 3 \\ 5x - 2y = -1 \end{cases}$$

INDEPENDENT SYSTEM is a system where two distinct non-parallel lines intersect at one specific point (x,y) .

Systems:

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INCONSISTENT SYSTEM is a system where two distinct lines are parallel. Since parallel lines never intersect, then there can be no solution.

System:



DEPENDENT SYSTEM is a system which has infinite solutions.

System:



Sample Problems: Find the solution of the following systems using Elimination and identify the type of linear system

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

2.
$$\begin{cases} 4x - y = 2 \\ 8x - 2y = 4 \end{cases}$$

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