Pair of linear equations in two variables - Points to Remember

1. General Form of A Pair Of Linear Equations In Two Variables:

A pair of linear equations in two variables x and y can be represented algebraically as follows:

$a1x+b1y+c1=0$

$a2x+b2y+c2=0$, where a1, a2, b1, b2, c1, c2 are real numbers such that $a12+b12\neq0$, $a22+b22\neq0$.

2. Graphical or Geometrical Meaning of a Pair of Linear Equations:

$a1x+b1y+c1=0$ and $a2x+b2y+c2=0$ are two equations representing a pair of straight lines which are

(i) intersecting, if $a1a2\neq b1b2$

(ii) parallel, if $a1a2=b1b2\neq c1c2$

(iii) coincident, if $a1a2=b1b2=c1c2$

3. Graphical Method of Solving Linear Pair of Equations:

To solve a pair of linear equations in two variables by the Graphical method, we first draw the lines represented by them.

(i) If the pair of lines intersect at a point, then we say that the pair is consistent, and the coordinates of the intersection point provide us the unique solution.

(ii) If the pair of lines are parallel, then the pair has no solution and is called an inconsistent pair of equations.

(iii) If the pair of lines are coincident, then it has infinitely many solutions. Each point on the line is a solution. In this case, we say that the pair of linear equations is consistent with infinitely many solutions.

4. Algebraic Method of Solving Linear Pair of Equations:

To solve a pair of linear equations in two variables algebraically, we have the following methods:

(i) Substitution method

(ii) Elimination method

(iii) Cross-multiplication method

5. Nature of Solution of Linear Pair of Equations:

If $a1x+b1y+c1=0$ and $a2x+b2y+c2=0$ is a pair of linear equations in two variables x and y such that

(i) $a1a2\neq b1b2$ the pair of linear equations is consistent with a unique solution

(ii) $a1a2=b1b2\neq c1c2$ then the pair of linear equations is inconsistent and has no solution.

(iii) $a1a2=b1b2=c1c2$ then the pair of linear equations is consistent with infinitely many solutions.