CHAPTER – 4
LINEAR EQUATION

4.1 INTRODUCTION

LINEAR EQUATIONS IN ONE VARIABLE

An equation of the form ax + b = 0 where a and b are real numbers and 'x' is a variable, is called a linear equation in one variable.

Here 'a' is called coefficient of x and 'b' is called as a constant term. i.e. 3x + 5 = 0, 7x - 2 = 0 etc.

LINEAR EQUATION IN TWO VARIABLES

An equation of the form ax + by + c = 0 where a,b,c are real numbers and a, b $\neq$ 0, and x, y are variable, is called a linear equation in two variables, here 'a' is called coefficient of x, 'b' is called coefficient of y and 'c' is called constant term.

Any pair of values of x and y which satisfies the equation ax + by + c = 0, is called a solution of it.

Ex.1 Prove that x = 3, y = 2 is a solution of 3x - 2y = 5.

Sol. x = 3, y = 2 is a solution of 3x - 2y = 5, because L.H.S. = 3x - 2y = 3 × 3 - 2 × 2 = 9 - 4 = 5 = R.H.S.

i.e. x = 3, y = 2 satisfied the equation 3x - 2y = 5.

$\therefore$ it is solution of the given equation.

Ex.2 Prove that x = 1, y = 1 as well as x = 2, y = 5 is a solution of 4x - y - 3 = 0.

Sol. Given eq. is 4x - y - 3 = 0 ....(i)

First we put x= 1, y = 1 in L.H.S. of eq...(i)

Here L.H.S. = 4x - y - 3 = 4 × 1 - 1 - 3 = 4 - 4 = 0 = R.H.S.

Now we put x = 2, y = 5 in eq. (i)

L.H.S. = 4x - y - 3 = 4 × 2 - 5 - 3 = 8 - 8 = 0 = R.H.S.

Since, x = 1, y = 1 and x = 2, y = 5 both pair satisfied in given equation therefore they are the solution of given equation.

Ex.3 Determine whether the x = 2, y = -1 is a solution of equation 3x + 5y - 2 = 0.

Sol. Given eq, is 3x + 5y - 2 = 0 ....(i)

Taking L.H.S. = 3x + 5y - 2 = 3 × 2 + 5 × (-1) - 2 = 6 - 5 - 2 = 1 $\neq$ 0

Here L.H.S. $\neq$ R.H.S. therefore x = 2, y = - is not a solution of given equations.