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⇒Topic:-

⇒Equation And its types:-

⇒Equation:-

Equation is a statement that the value of two mathematical expressions are equal.

⇒It is indicated by putting sign (=) between two expressions.

⇒Types of Equation:-

There are following different types of equation.

⇒Linear equation:-

The equation in which each involved term is either variable of degree one in exponent or constant or product of constant is called linear equation.

⇒ General form:-

General form of linear equation is given by:

⇒ $Y = mx + c$

⇒ Example:-

$10x - 8 = 0$

⇒ Quadratic Equation:-

The seand order equation in which one of the variable contains an exponent of two is called quadratic equation.

⇒ General form:-

General form of quadratic equation is given by

⇒ $ax^2 + bx + c = 0$

⇒ Example:-

$5x^2 + 2x + 7 = 0$

⇒ Radical equation:-

The variable laying under square root symbol, that type of equation is called radical equation.

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⇒ General form:-

The general form of radical equation is given by:

$$\Rightarrow \sqrt{a} + b = c$$

⇒ Example:-

$$\sqrt{13} + 6 = 10$$

⇒ Exponential Equations:-

The equation which contain the variable in exponent form is called exponential equation.

⇒ General form:-

General form of exponential equation is given by:

$$\Rightarrow a^x = a^y \Rightarrow x = y$$

⇒ Examples:-

$$2^x = 32$$

$$2^x = 2^5$$

$$x = 5$$

⇒ Rational Equations:-

The equation in which, the equation contain rational expressions is called rational equation.

⇒ Example:-

$$\frac{y}{2} + \frac{y+2}{3}$$

⇒ Homogeneous equation:-

A linear equation in the form

$$a_1x_1 + a_2x_2 + a_3x_3 + \cdots\cdots + a_nx_n = b$$

A special case in which constant on right side i.e "b" is zero is called homogeneous equation.

⇒ Example:-

$$x_1 - 4x_2 + 7x_3 + 3x_4 = 0$$

⇒ Non-Homogeneous Equation:-

An equation in which constant on right side of equation is not zero is called non-homogeneous equation.

⇒ Example:-

$$x + 3y = 7$$

⇒ Quaritic equation:-

An equation in which one of variable has degree of 4 and equation may be homogeneous is called quaritic equation.

⇒ General form:-

The general form of quaritic equation is given by:

$$\Rightarrow ax^4 + bx^3 + cx = 0$$

⇒ Example:-

$$6x^4 + 3x^3 + 9x = 0$$

⇒ Quintic equation:-

An equation in which one of variable has exponent of five is called quintic equation.

It may be homogeneous equation

⇒ General form:-

The general form of quintic equation is given by:

$$\Rightarrow ax^5 + bx^4 + cx^3 + dx^2 + ex = 0$$

⇒ Example:-

$$3x^5 + 8x^4 + 2x^3 + x = 0$$

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⇒ Conditional Equations:-

The equation in which is true for specific value of variables is called conditional equation.

⇒ Example:-

$$4x-1 = 2x+1$$

When, $x=1$

$$4(1)-1 = 2(1)+1$$

$$4-1 = 2+1$$

$$3 = 3$$

Hence, it is conditional equation

⇒ Identity equation:-

The equation which is always true no matter which value of variable is plugged is called identity equation

⇒ Example:-

$$5(x-4)+4 = 2x+3(x+2)-22$$

$$5x-20+4 = 2x+3x+6-22$$

$$5x-16 = 5x-16$$

$$0 = 0$$

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Polynomial Equation:-

An equation made up of multi-terms of number and variables is called polynomial equation.

⇒ The highest degree tells us how many roots can be found in polynomial equation.

⇒ Example:-

If polynomial equation has highest degree of 3 then it has 3 roots. The roots are value of x_1, x_2, x_3 ... upto so on.

Cubic Equation:-

A third order equation in which one of variable contain an exponent of three is called cubic equation.

⇒ General form:-

The general form of cubic equation is given by:

$$\Rightarrow ax^3 + bx^2 + cx + d = 0$$

⇒ Example:-

$$3x^3 + 2x^2 + 6x = 7$$