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(Affiliated to CBSE up to +2 Level)

CLASS: X **SUB.: MATHS (NCERT BASED)** **DATE: 29 -07-2020**

REVISION

1. If the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ are a – b, a, a + b. find a and b.

Solution: Given polynomial is $p(x) = x^3 - 3x^2 +$

Here a = 1 , b = -3 , c = 1 , d = 1

Let $\alpha = (a - b)$, $\beta = a$ and $\gamma = (a + b)$

As we know,

$\Rightarrow \alpha + \beta + \gamma = -b/a$

$\Rightarrow (a - b) + a + (a - b) = -(-3)/1$

$\Rightarrow 3a = 3$

$\Rightarrow a = 3/3$

$\therefore a = 1$

Again,

$\Rightarrow \alpha\beta + \beta\gamma + \gamma\alpha = c/a$

$\Rightarrow a(a - b) + a(a + b) + (a + b)(a - b) = 1/$

$\Rightarrow a^2 - ab + a^2 + ab + a^2 - b^2 = 1$

$\Rightarrow 3a^2 - b^2 = 1$

$\Rightarrow (3 \times 1^2) - b^2 = 1 \qquad \{\because a = 1\}$

$\Rightarrow 3 - b^2 = 1$

$\Rightarrow b^2 = 3 - 1$

$\Rightarrow b^2 = 2$

$\therefore b = \pm\sqrt{2}$

Hence, it is solved

2. Show that $\sqrt{3}$ is an irrational number.

Let us assume that $\sqrt{3}$ is a rational number.

then, as we know a rational number should be in the form of p/q, where p and q are co- prime number.

So, $\sqrt{3} = p/q$ { where p and q are co- prime}

$\sqrt{3}q = p$

$(\sqrt{3}q)^2 = p^2$ Now, by squaring both the side

we get, $3q^2 = p^2$ .... (i)

So, if 3 is the factor of p^2

then, 3 is also a factor of p ..... (ii)

=> Let p = 3m { where m is any integer }

$p^2 = (3m)^2$ squaring both sides

$p^2 = 9m^2$

putting the value of p^2 in equation (i)

$3q^2 = p^2$

$3q^2 = 9m^2$

$q^2 = 3m^2$

So, if 3 is factor of q^2

then, 3 is also factor of q

Since 3 is factor of p & q both, HCF of p and q is 3.

So, our assumption that p & q are rational contradicts.

Therefore $\sqrt{3}$ is irrational.

Do your self

3. Show that $\sqrt{2}$ is an irrational number.
4. Show that $\sqrt{5}$ is an irrational number.
5. Show that $\sqrt{7}$ is an irrational number.