

Mathematics

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(Chapter – 2) (Polynomials)(Exemplar Problems)

(Class – X)

Exercise 2.1

Question 6:

If one of the zeroes of the cubic polynomial $x^3 + ax^2 + bx + c$ is -1 , then the product of the other two zeroes is

- (A) $b - a + 1$ (B) $b - a - 1$ (C) $a - b + 1$ (D) $a - b - 1$

Answer 6:

- (A) $b - a + 1$

Solution:

Let $p(x) = x^3 + ax^2 + bx + c$

Let α, β and γ are the zeroes of cubic polynomial $p(x)$, where $\alpha = -1$ and $p(-1) = 0$

$$\Rightarrow (-1)^3 + a(-1)^2 + b(-1) + c = 0$$

$$\Rightarrow -1 + a - b + c = 0$$

$$\Rightarrow c = 1 - a + b$$

... (i)

We know that,

Product of all zeroes

$$= -\frac{\text{constant term}}{\text{coefficient of } x^3} = -\frac{c}{1}$$

$$\Rightarrow \alpha\beta\gamma = -c$$

$$\Rightarrow (-1)\beta\gamma = -c \quad [\because \alpha = -1]$$

$$\Rightarrow \beta\gamma = c$$

$$\Rightarrow \beta\gamma = 1 - a + b \quad [\text{From equation (i)}]$$

Hence, product of the other two zeroes is $1 - a + b$.

