

Mathematics

(www.tiwariacademy.net)

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

(Class – X)

Exercise 2.3

Find the zeroes of the following polynomials by factorization method and verify the relations between the zeroes and the coefficients of the polynomials.

Question 4:

$$t^3 - 2t^2 - 15t.$$

Answer 4:

$$\text{Let } f(t) = t^3 - 2t^2 - 15t.$$

$$= t(t^2 - 2t - 15)$$

$$= t(t^2 - 5t + 3t - 15)$$

$$= t[t(t - 5) + 3(t - 5)]$$

$$= t(t - 5)(t + 3)$$

So, the value of $t^3 - 2t^2 - 15t$ is zero when $t = 0$ or $t - 5 = 0$ or $t + 3 = 0$

i.e., when $t = 0$ or $t = 5$ or $t = -3$.

So, the zeroes of $t^3 - 2t^2 - 15t$ are -3 , 0 and 5 .

$$\therefore \text{Sum of zeroes} = -3 + 0 + 5 = 2 = -\frac{(-2)}{1}$$

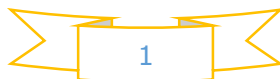
$$= -\left(\frac{\text{coefficinet of } t^2}{\text{coefficinet of } t^3}\right)$$

Sum of product of zeroes taking two at a time

$$= (-3)(0) + (0)(5) + (5)(-3) = 0 + 0 - 15 = -15$$

$$= \left(\frac{\text{coefficinet of } t}{\text{coefficinet of } t^3}\right)$$

$$\text{and product of zeroes} = (-3)(0)(5) = 0$$



Mathematics

(www.tiwariacademy.net)

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

(Class – X)

$$= - \left(\frac{\text{Constant term}}{\text{coefficinet of } t^3} \right)$$

Hence, the relations between the zeroes and the coefficients of the polynomial is verified.

