CBSE CLASS 10 MATHEMATICS

Polynomials – Chapter 2/ Important Questions

Answer the following:

1. Find the zeroes of the quadratic polynomial x^2 + 9x – 36 and verify the relationship between the zeroes and the coefficients?

Solution:

We have x^2 + 9x – 36 = (x + 12) (x – 3)

So the value of x^2 + 9x – 36 is zero when x + 12 = 0 or x – 3 = 0

i.e, x = -12 or x = 3

Therefore, the zeroes of x^2 + 9x – 36 are -12 and 3.

Now sum of zeroes = (-12) + 3 = -9 = $\frac{-9}{1} = \frac{-(coefficient\ of\ x)}{Coefficient\ of\ x^2}$.

Product of zeroes = (-12) × 3 = -36 = $\frac{-36}{1} = \frac{Constant\ term}{Coefficient\ of\ x^2}$.

2. Find a quadratic polynomial, the sum and product of whose zeroes are -5 and 2 respectively.

Solution:

Let the quadratic polynomial be ax^2 +bx + c and its zeroes be α andβ.

We have $\alpha + \beta = \frac{-b}{a}$ = -5

$\alpha\beta = \frac{c}{a}$ = 2

If a = 1, then b = 5 and c = 2.

So one quadratic polynomial which fits the given conditions is x^2+5x +2.

3. If the sum of zeroes of the quadratic polynomial 3x^2 + kx +5 is 6, then find the value of k?

Solution:

Here a = 3, b = k, c = 5

Sum of the zeroes = $\frac{-b}{a} = \frac{-k}{3}$ = 6 (given)

-k = 3 × 6 = 18

k = -18.

4. If α and β are the zeroes of a polynomial such that $\alpha + \beta$ = -12 and $\alpha\beta$ = 7, then find the polynomial?

Solution:

Quadratic polynomial is $x^2 - (\alpha + \beta)x + \alpha\beta = 0$

x^2 – (-12) x + 7 = 0

x^2 + 12 x + 7 = 0, which is the required polynomial.

5. Find the zeroes of the polynomial p(x) = 3x^2 + 5x – 2.

Solution:

By the method of splitting the middle term,

3x^2+5x – 2 = 3x^2 + 6x – x – 2

= 3x(x +2) – 1(x + 2)

= (x + 2) (3x – 1)

Hence the value of 3x^2 + 5x – 2 is zero when either 3x – 1 = 0 or x + 2 = 0

i.e, when x = $\frac{1}{3}$ or x = -2

So the zeroes of 3x^2+ 5x – 2 are $\frac{1}{3}$ and (-2).