POLYNOMIALS

RELATION BETWEEN ZEROS OF POLYNOMIAL

EXERCISE

Q.1 Find the zeroes of the quadratic polynomial $6x^2 - 13x + 6$ and verify the relation between the zeroes and its coefficients.

Q.2 Find the zeroes of the quadratic polynomial $4x^2 - 9$ and verify the relation between the zeroes and its coefficients.

Q.3 Find the zeroes of the quadratic polynomial $9x^2 - 5$ and verify the relation between the zeroes and its coefficients.

Q.4 If α and β are the zeroes of $ax^2 + bx + c$, $a \neq 0$ then verify the relation between the zeroes and its coefficients.

Q.5 Prove relation between the zeroes and the coefficient of the quadratic polynomial $ax^2 + bx + c$.

Q.6 find the zeroes of the quadratic polynomial $x^2 - 2x - 8$ and verify a relationship between zeroes and its coefficients.

Q.7 Verify that the numbers given along side of the cubic polynomials are their zeroes.

Also verify the relationship between the zeroes and the coefficients. $2x^3 + x^2 - 5x + 2$; $\frac{1}{2}$, 1, – 2

Q.8 If α and β are the zeroes of the quadratic polynomial $ax^2 + bx + c$. Find the value of

(i) $\alpha^2 - \beta^2$ (ii) $\alpha^3 + \beta^3$.

Q.9 Find a cubic polynomial with the sum of its zeroes, sum of the products of its zeroes taken two at a time, and product of its zeroes as 2, – 7 and –14, respectively.

Q.10 Find the cubic polynomial with the sum, sum of the product of its zeroes taken two at a time and product of its zeroes as 0, –7 and –6 respectively.

ANSWER KEY

1. $\frac{2}{3}$ and $\frac{3}{2}$.

Sum of the zeroes $= \frac{-(-13)}{6} = \frac{-\text{coefficient of } x}{\text{coefficient of } x^2}$

Product of the zeroes $= \frac{6}{6} = \frac{\text{constant term}}{\text{coefficient of } x^2}$

2. are $\frac{3}{2}$ & $-\frac{3}{2}$.

Sum of the zeroes $= \frac{-(0)}{4} = \frac{-\text{coefficient of } x}{\text{coefficient of } x^2}$

Product of the zeroes $= \frac{-9}{4} = \frac{\text{constant term}}{\text{coefficient of } x^2}$

3. when $x = \frac{\sqrt{5}}{3}$ or $x = \frac{-\sqrt{5}}{3}$.

Sum of the zeroes $= \frac{-(0)}{9} = \frac{-\text{coefficient of } x}{\text{coefficient of } x^2}$

Product of the zeroes $= \frac{-5}{9} = \frac{\text{constant term}}{\text{coefficient of } x^2}$

4. Sum of the zeroes $= \frac{-b}{a} = \frac{-\text{coefficient of } x}{\text{coefficient of } x^2}$

Product of the zeroes $= \frac{c}{a} = \frac{\text{constant term}}{\text{coefficient of } x^2}$

5. $\alpha\beta = \frac{c}{a} = \frac{\text{constant term}}{\text{coefficient of } x^2}$

6. 4, – 2.

Sum of the zeroes $= \frac{-(-2)}{1} = \frac{-\text{coefficient of } x}{\text{coefficient of } x^2}$

Product of the zeroes $= \frac{-8}{1} = \frac{\text{constant term}}{\text{coefficient of } x^2}$

7. $\frac{1}{2}$, 1, – 2

Sum of the zeroes of p(x) $= -\frac{1}{2} = \frac{-\text{coefficient of } x^2}{\text{coefficient of } x^3}$

Sum of the products of two zeroes taken at a time $= -\frac{5}{2} = \frac{\text{coefficient of } x}{\text{coefficient of } x^3}$

Product of all the three zeroes $= \frac{-(2)}{2} = \frac{-\text{constant term}}{\text{coefficient of } x^3}$

8. (i) $= -\frac{b\sqrt{b^2-4ac}}{a^2}$

(ii) $= \frac{-b^3+3abc}{a^3}$

9. $\frac{b}{a}$, $\frac{c}{a}$ and $\frac{d}{a}$

$x^3 - 2x^2 - 7x + 14$

10. $\frac{b}{a}$, $\frac{c}{a}$ and $\frac{d}{a}$

$x^3 - 7x + 6$