

Chapter 2 Polynomials

UNIT TEST

Duration: 1 hour

Marks: 30

SECTION A

Each carry 1 mark

1. If 2 and -3 are the zeroes of the quadratic polynomial $x^2 + (a + 1)x + b$, then the value of $a + b$ is
a) -5 b) 0 c) 6 d) -6
2. If two zeroes of a quadratic polynomial are $5 - 3\sqrt{2}$ and $5 + 3\sqrt{2}$, then the quadratic polynomial is
a) $x^2 - 10x - 7$ b) $x^2 - 10x + 6$ c) $x^2 - 10x + 14$ d) $x^2 - 10x + 7$
3. The zeroes of the quadratic polynomial $x^2 + 99x + 127$ are
a) both positive b) both negative c) one positive and one negative d) both equal
4. Assertion: If zeroes of the polynomial $f(x) = 5x^2 - 11x - (k - 3)$ are reciprocal of each other, then $k = -2$

Reason: The product of the zeroes of the polynomial $ax^2 + bx + c$ is $\frac{-c}{a}$.

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true but Reason (R) is false.
- (d) Assertion (A) is false but Reason (R) is true.

SECTION B

Each carry 2 marks

5. Form a quadratic polynomial, one of whose zeroes is $2 + \sqrt{3}$ and sum of zeroes is 4.

6. If α and β are the zeroes of the quadratic polynomial $p(x) = 5x^2 + 5x + 1$ then find the value of $\alpha^{-1} + \beta^{-1}$.

7. If one zero of the quadratic polynomial $f(x) = 4x^2 - 8kx + 8x - 9$ is negative of the other, then find the zeros of $kx^2 + 3kx + 2$.

SECTION C

Each carry 3 marks

8. Show that $\frac{1}{2}$ and $\frac{-3}{2}$ are the zeroes of the polynomial $4x^2 + 4x - 3$ and verify the relationship between zeroes and coefficient of polynomial.

9. If product of the zeroes of the polynomial $kx^2 + 41x + 42$ is 7, then find the zeroes of the polynomial $(k - 4)x^2 + (k + 1)x + 5$.

SECTION D

Each carry 5 marks

10. If α and β are the zeroes of the quadratic polynomial $p(x) = x^2 - p(x + 1) - c$, show that $(\alpha + 1)(\beta + 1) = 1 - c$.

11. If α and β are the zeroes of the quadratic polynomial $2x^2 - 5x + 7$, then find a quadratic polynomial whose zeroes are $(3\alpha + 4\beta)$ and $(4\alpha + 3\beta)$.

SECTION E

12. Mrs.A is a Mathematics Teacher. She knows how important Mathematics assignments are. These help to review classwork, to include study habits, to learn to use resources etc.

Today she prepared the following assignment on application of relation between the zeroes α and β and the coefficient of a quadratic polynomial $x^2 + x - 6$.

i) Find the value of $\alpha + \beta$.

ii) Evaluate $\alpha - \beta$ (Or) Find the value of $\alpha^2 + \beta^2$.

iii) Find the value of $\alpha^3 + \beta^3$.

UNIT TEST

1. d) -6

2. d) $x^2 - 10x + 7$

3. b) both negative

4. (c) Assertion (A) is true but Reason (R) is false.

5. $x^2 - 4x + 1$

6. -5

7. -1 and -2

8. Verification

9. $\frac{-5}{2}$ and -1

10. Proof

11. $2x^2 - 35x + 157$

12. i) -1 ii) ± 5 (Or) 13 iii) -19