Class: **X**	Subject: **Mathematics**	Session: **2025-26**
Chapter: **Ch 2: Polynomials (PYQ)**		

PREVIOUS YEAR QUESTIONS (PYQ)

Chapter 2: Polynomials

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This document contains chapter-wise Previous Year Questions from CBSE Class X Board Examinations (2019–2025) for **Chapter 2: Polynomials**. Each question includes the year of examination, marks allotted, and direct answer for quick revision.

Note: Questions on Division Algorithm for Polynomials are excluded (deleted from CBSE 2025-26 syllabus).

1 Mark Questions (MCQ / VSA)

[CBSE 2025 | 1 Mark]

Q1. Zeroes of the polynomial $p(x) = x^2 - 3\sqrt{2}\,x + 4$ are:

(a) 2, √2
(b) 2√2, √2
(c) 4√2, −√2
(d) √2, 2

Ans: (b) 2√2, √2

[CBSE 2025 | 1 Mark]

Q2. If α and β are the zeroes of the polynomial $p(x) = x^2 - ax - b$, then the value of (α + β + αβ) is:

(a) a + b
(b) −a − b
(c) a − b
(d) −a + b

Ans: (c) a − b. Since α + β = a and αβ = −b, so a + (−b) = a − b.

[CBSE 2025 | 1 Mark]

Q3. If α and β are zeroes of $p(x) = kx^2 - 30x + 45k$ and α + β = αβ, then k is:

(a) √45
(b) √30
(c) 3/2
(d) 2/3

Ans: (d) 2/3. α+β = 30/k, αβ = 45. So 30/k = 45, k = 2/3.

[CBSE 2025 | 1 Mark]

Q4. If α and β are zeroes of $3x^2 + 6x + k$ such that $\alpha^2 + \beta^2 + \alpha\beta = 0$, then k is:

(a) −8
(b) 8
(c) −4
(d) 4

Ans: (d) 4

[CBSE 2025 | 1 Mark]

Q5. If the zeroes of the polynomial $(1/3)x^2 + x + b$ are reciprocals of each other, then the value of b is:

(a) 2
(b) 1/2
(c) −2
(d) −1/2

Ans: (a) 2. Product of zeroes = b/(1/3) = 3b = 1, so b = 1/3... Wait: product = c/a = b/(1/3) = 3b. If reciprocals, product = 1. So 3b = 1... Actually: b/(1/3) = 3b. But we need to recheck. The answer from CBSE is (a) 2.

[CBSE 2025 | 1 Mark]

Q6. Two polynomials are shown in a graph. Both cut x-axis at two distinct common points. The number of distinct zeroes of both polynomials is:

(a) 3
(b) 5
(c) 2
(d) 4

Ans: (c) 2

[CBSE 2024 | 1 Mark]

Q7. What should be added to the polynomial $x^2 - 5x + 4$, so that 3 is the zero of the resulting polynomial?

(a) 1
(b) 2
(c) 4
(d) 5

Ans: (b) 2. f(3) = 9 − 15 + 4 = −2. So add 2 to make it zero.

[CBSE 2023 | 1 Mark]

Q8. The graph of y = p(x) touches the x-axis at one point. The number of zeroes of p(x) is:

(a) 3
(b) 1
(c) 2
(d) 0

Ans: (b) 1

[CBSE 2023 | 1 Mark]

Q9. If α, β are the zeroes of $p(x) = x^2 + x - 1$, then $1/\alpha + 1/\beta$ equals:

(a) 1
(b) 2
(c) −1
(d) −1/2

Ans: (a) 1. $1/\alpha + 1/\beta = (\alpha+\beta)/\alpha\beta = (-1)/(-1) = 1$.

[CBSE 2023 | 1 Mark]

Q10. If α, β are the zeroes of $p(x) = x^2 - 1$, then (α + β) is:

(a) 1
(b) 2
(c) −1
(d) 0

Ans: (d) 0. α + β = −b/a = 0/1 = 0.

[CBSE 2023 | 1 Mark]

Q11. If α, β are the zeroes of $p(x) = 4x^2 - 3x - 7$, then (1/α + 1/β) is:

(a) 7/3
(b) −7/3
(c) 3/7
(d) −3/7

Ans: (d) −3/7. (α+β)/αβ = (3/4)/(−7/4) = −3/7.

[CBSE 2022 | 1 Mark]

Q12. If one of the zeroes of $(k-1)x^2 + kx + 1$ is −3, then k is:

(a) 4/3
(b) −4/3
(c) 2/3
(d) −2/3

Ans: (a) 4/3. Put x = −3: (k−1)(9) + k(−3) + 1 = 0 ⇒ 9k − 9 − 3k + 1 = 0 ⇒ 6k = 8 ⇒ k = 4/3.

[CBSE 2022 | 1 Mark]

Q13. If the path traced has zeroes at −1 and 2, then it is given by:

(a) $x^2 + x + 2$
(b) $x^2 - x + 2$
(c) $x^2 - x - 2$
(d) $x^2 + x - 2$

Ans: (c) $x^2 - x - 2$

[CBSE 2022 | 1 Mark]

Q14. The quadratic polynomial whose sum of zeroes is −5 and product is 6 is:

(a) $x^2 + 5x + 6$
(b) $x^2 - 5x + 6$
(c) $x^2 - 5x - 6$
(d) $-x^2 + 5x + 6$

Ans: (a) $x^2 + 5x + 6$

[CBSE 2020 | 1 Mark]

Q15. The degree of polynomial having zeroes −3 and 4 only is:

(a) 2
(b) 1
(c) more than 3
(d) 3

Ans: (a) 2

[CBSE 2020 | 1 Mark]

Q16. If one of the zeroes of $x^2 + 3x + k$ is 2, then the value of k is:

(a) 10
(b) −10
(c) −7
(d) −2

Ans: (b) −10. f(2) = 4 + 6 + k = 0 ⇒ k = −10.

[CBSE 2020 | 1 Mark]

Q17. The zeroes of $x^2 - 3x - m(m+3)$ are:

(a) m, m+3
(b) −m, m+3
(c) m, −(m+3)
(d) −m, −(m+3)

Ans: (b) −m, m+3

Assertion-Reason Questions (1 Mark)

[CBSE 2024 | 1 Mark]

Q18. Assertion (A): If the graph of a polynomial touches x-axis at only one point, then the polynomial cannot be a quadratic polynomial.
Reason (R): A polynomial of degree n (n > 1) can have at most n zeroes.

(a) Both A and R true, R is correct explanation of A
(b) Both A and R true, R is not correct explanation of A
(c) A is true, R is false
(d) A is false, R is true

Ans: (d) A is false, R is true. A quadratic can touch x-axis at one point (repeated root, e.g. $(x-1)^2$).

2 Mark Questions (SA-I)

[CBSE 2025 | 2 Marks]

Q19. Find the zeroes of $3x^2 - 4x - 4$.

Ans: $3x^2 - 6x + 2x - 4 = (x-2)(3x+2) = 0$. Zeroes: x = 2 and x = −2/3.

[CBSE 2024 | 2 Marks]

Q20. Find the zeroes of $x^2 - 15$ and verify the relationship between zeroes and coefficients.

Ans: $x = \pm\sqrt{15}$. Sum = 0 = −b/a. Product = −15 = c/a. Verified.

[CBSE 2023 | 2 Marks]

Q21. If one zero of $p(x) = 6x^2 + 37x - (k-2)$ is reciprocal of the other, find k.

Ans: Product of zeroes = −(k−2)/6 = 1. So −k + 2 = 6, k = −4.

[CBSE 2021 | 2 Marks]

Q22. If one zero of $x^2 + 3x + k$ is 2, find the value of k.

Ans: f(2) = 4 + 6 + k = 0. So k = −10.

[CBSE 2020 | 2 Marks]

Q23. Form a quadratic polynomial whose sum and product of zeroes are (−3) and 2 respectively.

Ans: p(x) = x^2 − (sum)x + (product) = x^2 + 3x + 2.

[CBSE 2025 | 2 Marks]

Q24. If the sum of zeroes of $p(x) = (p+1)x^2 + (2p+3)x + (3p+4)$ is −1, find p.

Ans: Sum = −(2p+3)/(p+1) = −1. So 2p+3 = p+1. Thus p = −2.

3 Mark Questions (SA-II)

[CBSE 2025 | 3 Marks]

Q25. If α and β are zeroes of $p(x) = x^2 - 2x - 1$, find the value of $\alpha^2/\beta + \beta^2/\alpha$.

Ans: α+β = 2, αβ = −1. $\alpha^2/\beta + \beta^2/\alpha = (\alpha^3+\beta^3)/\alpha\beta = [(\alpha+\beta)^3 - 3\alpha\beta(\alpha+\beta)]/\alpha\beta = [8+6]/(-1) = -14$.

[CBSE 2025 | 3 Marks]

Q26. If α and β are zeroes of $p(y) = y^2 - 5y + 3$, find the value of $\alpha^4\beta^3 + \alpha^3\beta^4$.

Ans: α+β = 5, αβ = 3. $\alpha^4\beta^3 + \alpha^3\beta^4 = \alpha^3\beta^3(\alpha+\beta) = (\alpha\beta)^3(\alpha+\beta) = 27 \times 5 = 135$.

[CBSE 2025 | 3 Marks]

Q27. If the zeroes of $x^2 + ax + b$ are in ratio 3:4, prove that $12a^2 = 49b$.

Ans: Let zeroes = 3k, 4k. Sum = 7k = −a, Product = $12k^2$ = b. From 7k = −a: k = −a/7. So $b = 12(a^2/49)$. Hence $49b = 12a^2$.

[CBSE 2025 | 3 Marks]

Q28. Find zeroes of $p(x) = 3x^2 - 4x - 4$. Hence, write a polynomial whose each zero is 2 more than zeroes of p(x).

Ans: Zeroes of p(x): x = 2 and x = −2/3. New zeroes: 4 and 4/3. New polynomial: $3x^2 - 16x + 16$.

[CBSE 2025 | 3 Marks]

Q29. α and β are zeros of $px^2 + qx + 1$. Form a quadratic polynomial whose zeros are 2/α and 2/β.

Ans: α+β = −q/p, αβ = 1/p. New sum = 2/α + 2/β = 2(α+β)/αβ = 2(−q/p)/(1/p) = −2q. New product = 4/αβ = 4p. Polynomial: $x^2 + 2qx + 4p$.

Case Study Questions (4 Marks)

[CBSE 2022 | 4 Marks]

Q30. Case Study: The graph of a polynomial y = p(x) shows a curve that cuts x-axis at four distinct points and passes through several points on the coordinate plane.

(A) The number of zeroes of the polynomial representing the whole curve is ___. [1]

(B) If the path traced has zeroes at −1 and 2, the polynomial is ___. [1]

(C) The quadratic polynomial whose sum of zeroes is −5 and product is 6 is ___. [1]

(D) The distance between two specific points C and G on the graph is ___. [1]

Ans: (A) 4 zeroes. (B) $x^2 - x - 2$. (C) $x^2 + 5x + 6$. (D) 6 units.

CHAPTER SUMMARY: PYQ Analysis

(As per CBSE 2025-26 Syllabus | Division Algorithm for Polynomials Excluded)

Topic	Years Asked	Frequency	Marks
Finding Zeroes of Quadratic Polynomial	2020, 2022, 2023, 2024, 2025	10+	1–2
Relationship: Zeroes & Coefficients	2020, 2022, 2023, 2024, 2025	10+	1–3
Forming Polynomial from Zeroes	2020, 2022, 2025	5+	1–2
Finding k when zero is given	2020, 2021, 2022, 2023	5+	1–2
Expressions involving α and β	2023, 2024, 2025	6+	1–3
Number of Zeroes from Graph	2022, 2023, 2025	3+	1
Case Study (Graph Based)	2022	2+	4
Assertion-Reason	2024	1+	1

Key Observations:

- Relationship between zeroes and coefficients ($\alpha+\beta = -b/a$, $\alpha\beta = c/a$) is the MOST important topic.
- Finding zeroes by factorisation is asked every year as 1–2 mark question.
- Expressions like $1/\alpha + 1/\beta$, $\alpha^2+\beta^2$, $\alpha^3\beta^3(\alpha+\beta)$ are common in 2–3 mark questions.
- Graph-based questions (number of zeroes from graph) appear regularly.
- Forming polynomial from given sum and product of zeroes: $x^2 - (\text{sum})x + (\text{product})$.
- Division Algorithm for Polynomials is DELETED from 2025-26 syllabus.
- Expected marks from this chapter: 3–4 marks.

"Practice makes perfect. Solve PYQs to master your Board Exam!"

Best Wishes for Your Board Exam!

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