1. Introduction:

A polynomial is an algebraic expression consisting of variables (also called literals), coefficients, and only the operations of addition, subtraction, and multiplication, and non-negative integer exponents of variables.

Example:

- 3x2+2x−53x^2 + 2x - 53x2+2x−5 is a polynomial in variable xxx

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2. Types of Polynomials:

Based on the Number of Terms:

Type	Example	Description
Monomial	3x3x3x	One term

Binomial	x+2x + 2x+2	Two terms
Trinomial	x2+x+1x^2 + x + 1x2+x+1	Three terms

 Based on the Degree (highest power of the variable):

Degree	Type	Example
0	Constant Polynomial	555
1	Linear Polynomial	x+2x + 2x+2
2	Quadratic Polynomial	x2−3x+2x^2 - 3x + 2x2−3x+2
3	Cubic Polynomial	x3+2x2+xx^3 + 2x^2 + xx3+2x2+x

🔹 3. Algebraic Identities (Very Important for Exams):

1. $(a+b)^2 = a^2 + 2ab + b^2$
2. $(a-b)^2 = a^2 - 2ab + b^2$
3. $a^2 - b^2 = (a+b)(a-b)$
4. $(x+a)(x+b) = x^2 + (a+b)x + ab$

✅ Tip: Learn these by heart and use them to simplify and factor expressions.

🔹 4. Zeroes of a Polynomial:

A number ‘a’ is called a zero of a polynomial p(x)p(x)p(x), if
 p(a)=0p(a) = 0p(a)=0

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5. Remainder Theorem:

If a polynomial p(x)p(x)p(x) is divided by x−ax - ax−a, then the remainder is:
 p(a)p(a)p(a)

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6. Factor Theorem:

If p(a)=0p(a) = 0p(a)=0, then
 x−ax - ax−a is a factor of p(x)p(x)p(x)

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7. Factorisation of Polynomials:

To factorise means to write the polynomial as a product of its factors.
Methods include:

- Taking out common factors
- Using identities
- Splitting the middle term
- Using factor and remainder theorems

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8. Exam Tips:

 Memorize identities and apply them confidently
 Learn to identify degree and number of terms

 Practice problems from NCERT textbook
 Understand zeroes, factor theorem, and remainder theorem
 Revise frequently with sample questions and formulas

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9. Common Exam Questions:

- Define and give examples of polynomials based on degree and terms
- Find the zeroes of a given polynomial
- Factorise using identities or theorems
- Use the remainder theorem to find the remainder
- Apply the factor theorem to check if a given term is a factor

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 Final Advice:
This chapter builds your algebra basics. Practice simplification, identity application, and factorisation as much as possible. Focus on understanding concepts, not just memorizing them.