Add or subtract polynomials 3 1 10 d 4 n 5 8n 3 3

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Polynomials: A Comprehensive Guide**

Understanding Polynomials

- **Definition:** A polynomial is an algebraic expression composed of variables and constants, linked by addition or subtraction operations only.
- **Degree:** The highest power of the variable in a polynomial determines its degree.
- **Types:** Polynomials can be monomials (one term), binomials (two terms), trinomials (three terms), or higher-order polynomials.

Identifying Polynomials

- **Key Features:**
  - Variables raised to non-negative integer powers
  - Constants added or subtracted

- **Examples of Polynomials:**
  - $x^2 + 3x - 5$
  - $2y^3 - 4y^2 + 7$

- **Examples of Non-Polynomials:**
  - x^{-1} (Negative exponent)

- ○ ?x (Non-integer exponent)
- ○ sin(x) (Trigonometric function)

Operations on Polynomials

Addition and Subtraction:

- Add or subtract like terms (terms with the same variable and exponent)
- For fractional polynomials, convert to a common denominator before adding or subtracting
- Example: (x^2 + 3x - 5) + (2x^2 - 4x + 7) = 3x^2 - x + 2

Multiplication:

- Use the distributive property and FOIL method
- Example: (x + 2)(x - 3) = x^2 - x - 6

Special Polynomials

- **Constant Polynomial:** A polynomial with a degree of 0, consisting only of a constant, e.g., 3
- **Monomial:** A polynomial with one term, e.g., 21
- **Polynomial 10:** An algebraic expression whose highest degree is 10
- **End Behavior of a Graph:** The behavior of a polynomial function as the input approaches positive or negative infinity

Classification of Polynomials

- **Order:** Refers to the degree of a polynomial, e.g., order 3 for a polynomial with x^3 as its highest term
- **Degree:** The highest power of the variable present in a polynomial

Polynomials in Real-World Applications

- Modeling curves and shapes

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- Physics and engineering equations

- Computer science algorithms

- Finance and economics

Common Questions

- **Is ? a polynomial?** No, ? is not a polynomial as it has a non-integer exponent.

- **Are all polynomials algebraic?** Yes, polynomials are a subset of algebraic expressions.

- **What is the sum of the polynomials 7x^3 + 4x^2 and 2x^3 + 4x^2?** 9x^3 + 8x^2

- **How to subtract the polynomial 2x^3y^2 - 4x^2y^3 + 3xy^4 - 6x^4y + 5x^2y^3 - y^5 from the polynomial 6x^3y^2 - 6x^2y^3 + 8xy^4 - 12x^4y + 3x^2y^3 + 2y^5?** -4x^3y^2 + 8x^2y^3 - 5xy^4 + 6x^4y + 18x^2y^3 - 3y^5

- **Is 8 a polynomial?** Yes, 8 is a constant polynomial with a degree of 0.

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