

Mini-Lecture R.4

Polynomials

Learning Objectives:

1. Recognize Monomials (p. 39)
2. Recognize Polynomials (p. 40)
3. Add and Subtract Polynomials (p. 41)
4. Multiply Polynomials (p. 42)
5. Know Formulas for Special Products (p. 43)
6. Divide Polynomials Using Long Division (p. 44)
7. Work with Polynomials in Two Variables (p. 47)

Examples:

Perform the indicated operations.

1. $(5y^2 + 6y - 3) + (2y^2 - 5y) - (-4y^3 + 5y^2 - 7)$
2. $(5x^2y + 2x)(5x^2y - 2x)$
3. $(2y - 5)^3$
4. Divide $x^4 + 3x^3 - 2x^2 + x - 5$ by $x^2 - 1$.

Teaching Notes:

- Encourage students to learn the Special Products. This knowledge will save them time in future coursework.
- Emphasize that $(A \pm B)^2 \neq A^2 \pm B^2$, $(A \pm B)^3 \neq A^3 \pm B^3$, etc.
- Show that if n is the exponent on the binomial, then the product will have $n + 1$ terms.
- Show an example of addition, subtraction, and multiplication of polynomials using the vertical method. Many students relate better to this method.
- Be sure to work the example of dividing two integers in the book before dividing two polynomials.

Answer: 1) $4y^3 + 2y^2 + y + 4$; 2) $25x^4y^2 - 4x^2$; 3) $8y^3 - 60y^2 + 150y - 125$;

$$4) x^2 + 3x - 1 + \frac{4x - 6}{x^2 - 1}$$