5.2 Adding & Subtracting Polynomials

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Objectives:

- Know the basic definitions for polynomials.
- Add and subtract polynomials

Definitions for Polynomials

- _____ – a number (constant), a variable, or the product or quotient of a number and one or more variables raised to powers.
- _____ – a term or the sum of two or more terms.
- _____ or just the _____ – the a in ax^n or the numerical factor in a term.
- _____ – the n in ax^n or the exponent on the variable.

Definitions for Polynomials

- _____ – terms with exactly the same variables raised to exactly the same powers.
- _____ – a term or the sum of a finite number of terms of the form ax^n.
- _____– the terms of a polynomial written in order of decreasing powers from left to right.
- _____ – the greatest-degree term which is written first. Its coefficient is called the _____ _____.

Definitions for Polynomials

- _____– a polynomial with only one term.
- _____ – a polynomial with exactly two terms.
- _____ – a polynomial with exactly three terms.
- To find the _____ of a term with more than one variable find the _____ on the variables.
- _____– the greatest degree of all its terms.

Example 1

- Write each polynomial in descending order. Then give the leading term and the leading coefficient.

a) $y - 6y^3 + 8y^5 - 9y^4 + 12$

b) $-3z^4 + 2z^3 + z^5 - 6z$

Example 2

- Classify each polynomial as a *monomial, binomial, trinomial,* or *none of these.* Also, give the degree.

a) $a^4b^2 - ab^6$

b) -100

c) $p^2 - 5 + 6p - p^4$

d) $-x^2 + 5x + 1$

Example 3

- Combine like terms then state the degree of the polynomial.

a) $2z^4 + 3x^4 + z^4 - 9x^4$

b) $5x^2z - 3x^3z^2 + 8x^2z + 12x^3z^2$

Example 4

- Add the following polynomials.

a) $(3a^5 - 9a^3 + 4a^2) + (-8a^5 + 8a^3 + 2)$

b) $(4k^3 + k^2 + k) + (2k^3 - 4k^2 - 3k)$

Example 5

- Add the following polynomials.

$$\begin{array}{r} -6r^5 + 2r^3 - r^2 \\ \underline{8r^5 - 2r^3 + 5r^2} \end{array}$$

Example 6

- Add the following polynomials.

$$\begin{array}{r} -6m^3 + 2m^2 + 5m \\ -3m^3 + 2m^2 - 7m \\ \underline{\quad 8m^3 + 4m^2 - 6m \quad} \end{array}$$

Example 7

- Subtract the following polynomials.

$$(p^4+p^3+5)-(3p^4+5p^3+2)$$

Example 8

- Subtract the following polynomials.

$$\begin{array}{r} 2k^3 - 3k^2 - 2k + 5 \\ \underline{4k^3 + 6k^2 - 5k + 8} \end{array}$$

Example 9

- Subtract the following polynomials.

$$\begin{array}{r} 6y^3 - 9y^2 \qquad\qquad + 8 \\ \underline{4y^3 + 2y^2 + 57y \qquad\qquad\quad} \end{array}$$