Adding and Subtracting Polynomials

Clear Learning Target

You will be able to add and subtract polynomials.

Words Worth Knowing!

monomial - a number, a variable, or a product of a number and one or more variables

polynomial - a monomial or sum of monomials

**cannot have negative exponents nor variable exponents*

binomial - sum of **two** monomials

trinomial - sum of **three** monomials

Degrees

degree of a monomial - the **sum** of the exponents of all a monomial's variables

degree of a polynomial - the **greatest** degree of any term in the polynomial

3 2 1 0

$$x^3 - 10xy + 1$$

Naming Polynomials

Degree	Name
0	constant
1	linear
2	quadratic
3	cubic
4	quartic
5	quintic
6 or more	6th degree, 7th degree, and so on

MORE Words Worth Knowing!

standard form (polynomials) - a polynomial that is written with the terms in order from greatest degree to least degree

leading coefficient - the coefficient of the term with the highest degree in a polynomial

Example #1: Write each polynomial in standard form.

$$3x^2 + 4x^5 - 7x$$

2 5 1

$$4x^5 + 3x^2 - 7x$$

You Try! Write the polynomial in standard form.

$$5y - 9 - 2y^4 - 6y^3$$

$$-2y^4 - 6y^3 + 5y - 9$$

Adding or Subtracting Polynomials

*When finding a sum or difference of polynomials, simply **group like terms** and then **combine like terms**.*

*Remember, **like terms** are terms with...*

identical variable endings

Example #2: Find the sum or difference.

$(2x^2 + 5x - 7) + (3 - 4x^2 + 6x)$

$-2x^2 + 11x - 4$

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

$8 - 6x - x^2$

$-x^2 - 6x + 8$

You Try! Find the sum or difference.

$(7p + 4p^3 - 8) - (3p^2 + 2 - 9p)$

$4p^3 - 3p^2 + 16p - 10$

$(3y + y^3 - 5) + (4y^2 - 4y + 2y^3 + 8)$

$-y + 3y^3 + 3 + 4y^2$

$3y^3 + 4y^2 - y + 3$