Adding & Subtracting Polynomials

Like terms are defined as having the same variable and the same degree.

When adding and subtracting polynomials, you add and subtract the coefficients.

the number in front of variable

Adding Polynomials:

1. Remove parentheses and rewrite each term.
2. Combine like terms!

**Note: Final answers should be in standard form of polynomials!

Example 1: Simplify.

(a) $(12m^2 + 4) + (8m^2 + 5)$

$20m^2 + 9$

(b) $(6s^2 + 3s + 7) + (2s^3 - 6s - 4)$

$6s^2 - 3s + 3 + 2s^3$

$\boxed{2s^3 + 6s^2 - 3s + 3}$

What about these: $5(2x^2 - 3x + 10) + 3(3x^2 + 2x - 10)$

1. Distribute constant outside of the parenthesis FIRST!
2. Follow Steps Above

Try it……

(c) $5(2x^2 - 3x + 10) + 3(3x^2 + 2x - 10)$

$10x^2 - 15x + 50 + 9x^2 + 6x - 30$

$19x^2 - 9x + 20$

Subtracting Polynomials: Subtraction is the same thing as adding the variables.

1. Remove the parentheses from the first expression and rewrite each term, make sure to distribute the negative into the second parentheses.

   **In the second expression, each term should now have the opposite sign.

2. Combine like terms. Write in standard form.

Example 2: Simplify.

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

$2x^3 + 4x^2 - 6 - 5x^3 - 2x^2 + 2$

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

(b) $(8c^4 + 2c + 3) - (3c^2 - c + 1)$

$8c^4 + 2c + 3 - 3c^2 + c - 1$

$8c^4 - 3c^2 + 3c + 2$

What if it looks like this: $5(2x^2 - 3x + 10) - 3(3x^2 + 2x - 10)$

1. Distribute the constant outside of the parenthesis to each term FIRST!
   (Be Mindful of the MINUS!)
2. Combine like terms.

Try it……

(c) $5(2x^2 - 3x + 10) - 3(3x^2 + 2x - 10)$

$10x^2 - 15x + 50 - 9x^2 - 6x + 30$

$1x^2 - 21x + 80$

Unit 7A Day 1: Naming Polynomials

A polynomial is an expression made up of a monomial or the sum or difference of monomials. A polynomial can be named based on its number of terms and its degree (highest exponent).

Polynomial	Degree	Name Using Degree	Number of Terms	Name Using Number of Terms
$3x^1 + 2$	1	linear	2	binomial
$a^2 - 3a^1 + 5$	2	quadratic	3	trinomial
$6z^3$	3	cubic	1	monomial
$2x^4 + 2x^1 - 4$	4	quartic	3	trinomial
7 no variable	0	constant	1	monomial

Note: To name a polynomial by degree, only use the degree of the term which has the largest degree.

$3x^2 + 5x^4 - 6x^7 + x^9$ → degree → largest

Standard Form of a Polynomial: the degrees of its monomial terms decrease from left to right

$x^9 - 6x^7 + 5x^4 + 3x^2$

Write each polynomial in standard form based its degree.

a. $5 - 2x^1$

$-2x + 5$

b. $3x^4 - 4 + 2x^2$

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

You try:

1) $6x^2 + 7 - 9x^4$

$-9x^4 + 6x^2 + 7$

2) $3y - 4 - y^3$

$-y^3 + 3y - 4$

3) $8 + 7v - 11v$

$8 + -4v$

$-4v + 8$