Adding and Subtracting Polynomials

Adding Polynomials:

When adding polynomials, it is important to follow these steps:

1. If the polynomials being used for adding are not in the correct order, remember to arrange them from the term with the HIGHEST exponent to the term with the LOWEST exponent.

2. Line up the polynomials VERTICALLY so each of the like terms are in the same column.

3. Add the like terms together by adding the coefficients of each like term.

Example:

$4x^2 + 8x - 5$ + $2x^2 - 4x + 3$

Line up the terms vertically and then add them together

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

Subtracting Polynomials:

Subtracting polynomials follows the same steps as adding polynomials with 1 additional step.

Put the 2nd polynomial being subtracted in parentheses and then DISTRIBUTING the minus sign to each term (it is the same as CHANGING the sign of each term in the 2nd polynomial).

Example:

$12x^2 + 3x - 5 \quad - \quad 9x^2 - 8x - 10$

First, line up the terms vertically with the 2nd polynomial in parentheses so the minus sign can be distributed to each term

$$12x^2 + 3x - 5$$

$$- \ (9x^2 - 8x - 10)$$

After distributing the minus sign to each term in the 2nd polynomial, it becomes

$$-9x^2 + 8x + 10$$

Finally, add the polynomials together

$$\begin{array}{r} 12x^2 + 3x - 5 \\ + \ -9x^2 + 8x + 10 \\ \hline 3x^2 + 11x + 5 \end{array}$$

Tips for Solving Problems:

1. Make sure before adding/subtracting polynomials, they are all in standard form (arranged from the term with the highest exponent to the term with the lowest exponent).

2. Make sure to line up your polynomials vertically before adding them, so it is easier to combine like terms.

3. When subtracting polynomials, make sure to distribute the minus sign to each term of the 2nd polynomial (switching the sign of every term in the 2nd polynomial) before adding the polynomials together to get the answer.