Basics of Polynomials

Polynomials are expressions with many terms. There are specific names for certain polynomials that have 1, 2 or 3 terms in them.

A monomial is a polynomial with 1 term

A binomial is a polynomial with 2 terms

A trinomial is a polynomial with 3 terms

Vocabulary:

Terms - Numbers or variables that differ by their exponents (Examples are $6x^2$, $3x$, and 15)

In polynomials, terms are separated by addition or subtraction signs

Like Terms - Terms that have the SAME exponents but have DIFFERENT coefficients ($20x^5$ and $10x^5$ are like terms)

Coefficients - A number placed BEFORE a variable in a term (In $4x^2$, 4 is the coefficient)

Exponents - The number that the base is RAISED to (In 8^2, 2 is the exponent and 8 is the base)

Variables -A symbol used to describe any number (In $3x^3$, x is variable)

Constant -A FIXED value that never changes - as a variable, it would be x^0, which is 1 (Examples are 35, 5, п)

Degree - The HIGHEST exponent of the monomials that comprise a polynomial (For instance, in the polynomial $3x^3 + 9x^2 + 18x +5$, 3 would be the degree)

If the polynomial is not arranged from highest to lowest exponents (the first term has the highest exponent and the last term has the lowest exponent), rearrange the terms so it is in the correct form

Leading Coefficient - The coefficient attached to the term with the HIGHEST EXPONENT in a polynomial (In $4x^4-18x^3+32x^2-64$, 4 is the leading coefficient)

Examples:

1) $2x^2 + 3x - 18$

Terms: $2x^2$, $3x$, -18

Coefficients: 2, 3

Variable: x

Exponents: 2, 1, 0

Degree: 2

Leading Coefficient: 2

2) $3x^3 - 18x^2 + 32x + 1$

Terms: $3x^3$, $-18x^2$, $32x$, 1

Coefficients: 3, -18, 32

Variable: x

Exponents: 3, 2, 1, 0

Degree: 3

Leading Coefficient: 3

Tips for Solving Problems:

1. Make sure to order the polynomial from the highest to lowest exponent if it is not already in that form.

2. Remember constants are variables that are raised to the 0th power, hence they are just numbers. However, they are not coefficients because they are not in front of a variable that has an exponent of 1 or higher.

3. Remember the leading coefficient is the number attached to the front of the term with the highest degree in the polynomial.