Module 4: Polynomials

"We are all self made, but only the successful admit it."

4.4 Polynomials

Polynomial Type	Example
Monomial:	_____
Binomial:	_____
Trinomial:	_____
Polynomial:	_____

Terms are separated by _____ and _____.

Polynomial Degree: determined by the highest _____.

Leading Coefficient: coefficient with highest_____.

Given the polynomial: $a^6 + 9a^5 - 2a^{10} - 8a^3 + 3$

List the terms: _____

List the coefficients of each term_____

Find the degree of each term: _____

Find the degree of the polynomial: _____

Find the leading coefficient: _____

Evaluate: _____ and _____.

Always plug in with _____.

Ex. Evaluate $-2xy - x^3$ when $x = -3$ and $y = -2$

4.5 Adding and Subtracting Polynomials

Always_____ anything in front of the parentheses first.

Drop the parentheses if it is a _____. No change occurs.

If it is a _____, then distribute the negative sign and change the signs of each term within the parentheses.

When combining like terms, remember like terms have the same _____ and the same _____.

Note: Use symbols to organize like terms into separate groups.

Ex. Simplify: $5x^2 - 3x + 4x^2 - 7x + 6$

Ex. Simplify: $(x^2 - 5x - 7) + (3x^2 + 4x - 5)$

Ex. Simplify: $(-4x + 6) - (2x^2 - 6x^2 - 3)$

Ex. Simplify: $(9x^2 - x + 5) - (4x^2 + 3x - 6)$

4.6 MULTIPLYING POLYNOMIALS

Multiplying polynomials: Use the_____ property.

Ex. Simplify: $-3x^2(-x^4 + 3x^2 - 1)$

Ex. Simplify: $-5x^3y(3x^2y^4 - 7x^2 + 4y^3 - 2)$

If multiplying 2 *expressions* (side by side) use the acronym: FOIL

F _____

O _____

I _____

L _____

Ex. Simplify: $(3x + 2)(5x - 9)$

Ex. Simplify: $(x - 5)(-3x - 8)$

Ex. Simplify: $(x - 7)(x + 9)$

Multiplication is _____. (order doesn't matter)

Ex. Simplify: $2x\,(3x + 5)(x - 3)$

Ex. Simplify: $-x\,(8x + 6)(7x - 9)$

If multiplying a perfect square, write the expression _____.

Note: Do not ever distribute the exponent into an expression!

Ex. Simplify: $(3x)^2$

Note: This a monomial squared (no +/-)

Ex. Simplify: $(3x - 7)^2$

Note: This a binomial squared (expression with +/-); must FOIL

Ex. Simplify: $(x + 4)^2$

Ex. Simplify: $(2x + \frac{1}{4})^2$

_____ Pairs: Expressions that look to be the same (same terms), but with opposite signs in the middle.

Ex. Simplify: (5x – 6) (5x + 6)

Note: When you FOIL conjugate pairs, the 2 middle terms cancel

If multiplying conjugate pairs you can skip the outer and inner portion of F.O.I.L., only multiply the first and the last terms.

Ex. Simplify: (9x – 8) (9x + 8)

Ex. Simplify: $(x^2 - 7)(x^2 + 7)$

4.7 Division of Polynomials

Note: Properties of exponents for division tells me to _____ exponents.

Ex. Simplify: $\frac{30x^4y^3}{15x^2y^7}$

Ex. Simplify: $\frac{6x^5y^2z^2}{54x^5yz^{10}}$

When dividing with an expression on the top, and a monomial on the bottom, first _____ your fraction, then use properties of exponents for division

Ex. $\frac{10x^2-8x+4}{2}$

Ex. $\frac{90x^3-72x^2+54x}{-9x}$

Ex. $\frac{20x^3y^3-75x^4y^5+35x^6y^8}{5x^2y^3}$

Ex. $\frac{6a^{12}b^7-3a^7b^{10}+15a^5b^3}{3a^5b^3}$

Homework Checklist

- ☐ *Section 4.4 Polynomials*
- ☐ *Section 4.5 Polynomials: Adding and Subtracting*
- ☐ *Section 4.6 & 4.7 Polynomials: Multiplying/Dividing*