7.2 Polynomial Functions – Operations with Polynomials

A **term** is an algebraic expression that can be written using constants, variables, multiplication and division. The constants are called _____. A **polynomial** can be written using terms and addition and subtraction. The term of the polynomial which does not include a variable is called the _____. Any letter may be used as the variable in a polynomial.

Note the characteristics of a polynomial.

Any letter may be used as the variable in a polynomial. Examples of **polynomials** include the following.

POLYNOMIALS	NOT POLYNOMIALS

Degree of a Polynomial – The *exponent* of the highest power of *x* is the **degree** of the polynomial, and the coefficient of this highest power of the variable is the **leading coefficient.**

Polynomial	Degree	Leading Coefficient	Constant Term
$6x^7+4x^3+5x^2-7x+10$			
x^3			
12			
$2x^6+3x^7-x^8-2x-4$			

Polynomial functions of degree less that 5 are often referred to by special names.

- First-degree polynomial functions are called **_____ functions.**
- Second-degree polynomial functions are called **_____ functions.**
- Third- degree polynomial functions are called **_____ functions.**
- Fourth- degree polynomial functions are called **_____ functions.**

Adding and Subtracting Polynomials To add or subtract polynomials, _____.

ex. $(-2x^3+x^2-4x+1)-(2x^3-x+4)$

Multiplying Polynomials To multiply polynomials, _____.

ex. $(2x-3)(x^2+3x-5)$

Dividing Polynomials

Ex. $(3x^4 - 8x^2 - 11x + 1) \div (x - 2)$

Synthetic Division

Long Division