

## Polynomials - Adding, Subtracting and Multiplying

Polynomials - An expression of the form  $a_n x^n + a_{n-1} x^{n-1} + \dots + a_1 x^1 + a_0$ .

$$2x^5 - 3x^2 + 1$$

$$-\frac{2}{3}x^4 + 3x^3 + x^2 - x + 7$$

Coefficient - The number in front of the variable.

Degree - The highest exponent in a polynomial.

Standard Form - A polynomial written with descending powers of  $x$ .

$$-6x^2 + 4x^3 + 1$$

$$8 + \frac{1}{2}x^6$$

7

Monomial - A polynomial with one term.

$$7x^2y$$

Binomial - A polynomial with two terms.

$$6 - x^7$$

Trinomial - A polynomial with three terms.

$$2x^5 - 3x^2 + 1$$

Like Terms - Terms with the same variable and exponents.

$$5x^4, -7x^4$$

$$\frac{1}{2}x^2y, x^2y$$

8, -6

Adding and Subtracting Polynomials - Combine the like terms. Add or subtract the coefficients.

Directions: Perform the operation and write the answer in standard form.

1.  $(3x^2 + 4) + (8x^2 - 1)$

2.  $(6x^3 + 4x - 7) + (-8x + 6)$

3.  $(-15x^2 - 4) - (3x^2 + 2)$

4.  $\left(\frac{1}{4}x^2 + 1\right) - [(x^2 + 1) - (3x^2 + 7)]$

5. Subtract  $x - 3$  from  $5x^2 - 3x + 4$ .

Multiplying Polynomials - Use the Distributive Property. Add the exponents.

Directions: Perform the operation and write the answer in standard form.

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

7.  $-4x^2(6 - x^7)$

8.  $-2xy\left(\frac{1}{4}x^3y + 8x\right)$

9.  $5x(x+1) - 2x(x-2)$

10.  $(x+5)(2x+1)$

11.  $(8x+7)(8x-7)$

12.  $(4x-9)^2$

13.  $(3x+2y)(2x-3y)$

14.  $[(x+2)-y]^2$

15.  $(x-3)^3$

16.  $(5x^2 + 2x + 1)(2x - 3)$

17.  $(x + y)(x - y)(x^2 + y^2)$