

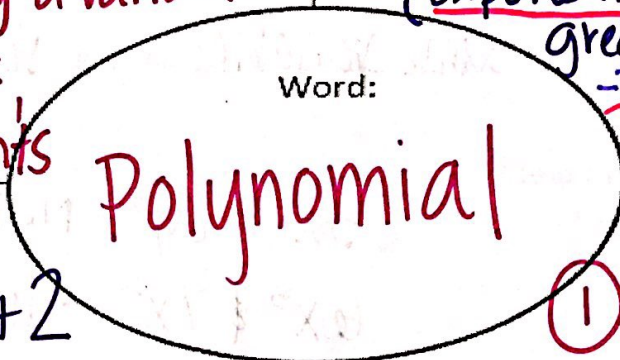
Definition: Expression with constants, variables, and exponents

- * No division by a variable
- * only whole #, positive exponents

Characteristics:

- * Named by their degree
- * Named by their # of terms
- * Written in standard form (exponents are in order from greatest to least)

~~$-7x^2 + 8x^3 - 2x^4 + 6 + 5x$~~
 ~~$-2x^4 + 8x^3 - 7x^2 + 5x + 6$~~



Examples:

- $6x^5 - 5x^4 + 3x^2 + 2$
- $5x^2 - 3x + 10$
- $-2y^3 - 9$
- $8c$

Non-examples:

- $\frac{2}{x}$
- $5x^{1/2}$
- $x + y^{-2} - 4$

Polynomials are named according to their

degree and # of terms.

The degree is:

Highest Exponent

Terms are:

Items separated by the + or - sign

Degree	Name	Example
0	constant	5 or 17
1	Linear	$3x + 4$
2	Quadratic	$5x^2 - 3x + 10$
3	cubic	$-2y^3 - 9$
4	Quartic	$7x^4 + 3x^3 - 1$
5	Quintic	$2x^5 + 3x^3$
6	6 th degree	$5x^6 - 3$

Terms	Name	Example
1	monomial	$4x$
2	Binomial	$3x + 8$
3	trinomial	$5x^2 + 3x - 2$
4+	Polynomial	

7 7th degree

Practice: Name the Polynomial

- | | <u>Degree</u> | <u># of Terms</u> |
|-----------------------|---------------|-------------------|
| 1. $-7 + 3n^3$ | Cubic | Binomial |
| 2. 5 | Constant | Monomial |
| 3. $-x^4 + 3x^2 - 11$ | Quartic | trinomial |

Adding and Subtracting Polynomials

In order to add and subtract polynomials, you add and subtract like terms.
You will get more or less of the same variable with the same exponent.

The exponents DO NOT change! *only combine coefficients*

Like terms are terms that have the same variable and the same exponent.

Examples of like terms are:

$$12x \text{ and } -7x$$

$$-3y^2 \text{ and } 14y^2$$

$$5x^3 \text{ \& } 8y^3 - \text{NOT like terms}$$

$$6x^5 \text{ \& } 7x^5 - \text{like terms}$$

$$2y^2 \text{ \& } 3y^6 - \text{NOT like terms}$$

Examples of adding and subtracting polynomials:

$$5x - 8x = -3x$$

$$14y^3 + 8y^3 = 22y^3$$

* Adding: combine like terms

* Subtracting: ① Distribute the negative
② combine like terms

Try the following:

1. ~~$(3x^4 - 2x + 5x^2 + 7x^2 + 9x^3 - 2x)$~~

$$\boxed{3x^4 + 9x^3 + 12x^2 - 4x}$$

3. $(v^3 + 6v^2 - v) - (9v^3 - 7v^2 + 3v)$

$$\cancel{v^3} + \cancel{6v^2} - \cancel{v} - \cancel{9v^3} + \cancel{7v^2} - \cancel{3v}$$

$$\boxed{-8v^3 + 13v^2 - 4v}$$

2. $(2p^3 + 6p^2 + 10p) + (9p^3 + 11p^2 + 3p)$

$$\boxed{11p^3 + 17p^2 + 13p}$$

4. $(11x^2 + 6x - 1) - (2x^2 - 7x + 5)$

$$\cancel{11x^2} + \cancel{6x} - \cancel{1} - \cancel{2x^2} + \cancel{7x} - \cancel{5}$$

$$\boxed{9x^2 + 13x - 6}$$