



## 2.1 Adding/Subtracting Polynomials

\* **Monomial:** is a number, variable, or the product of a number and one or more variables with whole number exponents (a monomial will never have addition or subtraction, will never have a negative exponent)

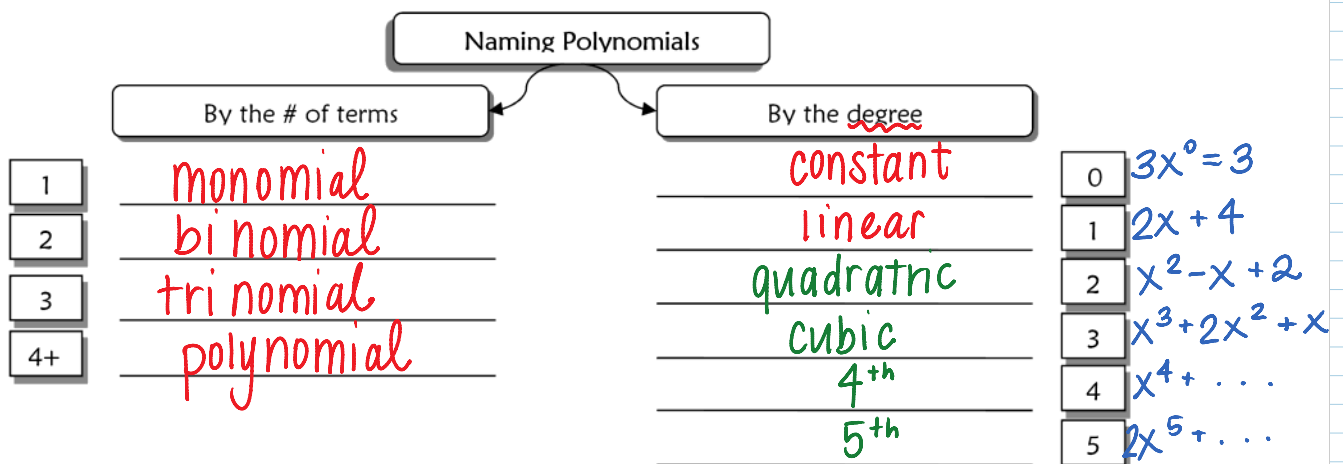
Examples of Monomial	10	3x	$\frac{1}{2}ab^2$	$-1.5m^5$
Degree	0	1	$1+2=3$	5

These are not monomials:  $5+x$ ,  $\frac{2}{n}$  ( $2n^{-1}$ ),  $4^9$ ,  $x^{-1}$

**Polynomial:** is a monomial or sum of monomials, each called a *term* of the polynomial

**Degree of polynomial :** the greatest degree of its terms

Polynomial	9	$2x^2 + x - 5$	$79x^5$	$5x^3$
Degree	0	2	5	3



Name the following Polynomials:

	Degree (linear, quadratic, etc.)	# of terms (monomial, binomial, etc.)	Leading Coefficient
① $\frac{y}{m}$	<u>linear</u>	<u>monomial</u>	<u>1</u>
2) $x - 3x^3 + 2x^2 + 7$	<u>cubic</u>	<u>polynomial</u>	<u>-3</u>
3) $3y^5 - 7y + 1$	<u>5<sup>th</sup></u>	<u>trinomial</u>	<u>3</u>
→ 4) $4w - 6w^2$ $-6w^2 + 4w$	<u>quadratic</u>	<u>binomial</u>	<u>-6</u>

$$-6w^2 + 4w$$

$$2 \cdot 3 = 6$$

$$3 \cdot 2 = 6$$

9.1 Notes  
Day 1

## 9.1 Adding/Subtracting Polynomials

① **Like Terms:** A "term" is a monomial. Like terms must have the same variables with the same corresponding degree. *Circle the like terms from each group of terms.*

a.  $3x, 4y, 3y$

b.  $3x^2, 4y, 3y^2$  none

c.  $3x, \frac{1}{2}xy, 3xy$

d.  $3x^2, 4y^2, 3y^2, 4x$

e.  $x, 10x, -3x$

f.  $2xy^2, 4y^2, 3x^2y, -2y^2x$

\*Note:

Not Standard form:  
 $7 - 3a^2 + 5a^3$

Standard Form:

$$5a^3 - 3a^2 + 7$$

↑ 3  
↑ 2  
↑ 0

2. **Combine Like Terms.** Write your answer in decreasing order (standard form). Then, name the polynomial by the number of terms and the degree.

1.)  $(3s^2 + 7s - 6) + (s^3 + s^2 - s - 1)$

$$\boxed{s^3 + 4s^2 + 6s - 7}$$

polynomial  
degree = 3  
cubic

3.)  $(3x^2 - 2x + 10) - (2x^2 + 4x - 6)$

$$3x^2 - 2x + 10 - 2x^2 - 4x + 6$$

$$\boxed{x^2 - 6x + 16}$$

quadratic  
trinomial

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

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

$$\boxed{2x^4 - 3x + 1}$$

trinomial  
4th degree

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

$$\boxed{9x^5 + x^4 + 5x^2 + 9}$$

polynomial  
5th degree

You try these!

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

$$1 + 7x^2 - x^4 - x - 3x^4 + 9$$

$$\boxed{-4x^4 + 7x^2 - x + 10}$$

4th deg.  
polynomial

6.)  $(7x^5 - 2x^2 - 3x^3) - (2x^4 - x^5 - 3x^2 - 4x^3 + 5)$

$$7x^5 - 2x^2 - 3x^3 - 2x^4 + x^5 + 3x^2 + 4x^3 - 5$$

$$\boxed{8x^5 - 2x^4 + x^3 + x^2 - 5}$$

5th degree  
polynomial

What's the problem?

Talk with your partner about what is wrong with the following problems.

Classify the following polynomials. Name each polynomial and identify the degree and leading coefficient.

1)  $7s - 3s^2 - 6$

~~Monomial~~ trinomial  
Degree: 2  
Leading Coefficient: 7 - 3

2)  $5x^4 - 3x^6$

~~Trinomial~~ binomial  
Degree: -3 6  
Leading Coefficient: 6 - 3

