

# POLYNOMIALS

- A **polynomial** is the sum or difference of many monomials.
- The **highest exponent** of a polynomial is called the \_\_\_\_\_.
- **Standard Form:** \_\_\_\_\_

Write the polynomials below in standard form:

10.  $-k^5 - 1 + 8k - 3k^3 + \frac{1}{4}k^2$  \_\_\_\_\_

11.  $18a^2b^2 + 7ab - b^2 + 4a^3$  \_\_\_\_\_

12.  $5xy^2 - x^2 + 9x^3y - y^4 + 2$  \_\_\_\_\_

## CLASSIFYING POLYNOMIALS

Degree	
0	
1	
2	
3	
4	
5	

Number of Terms	
1	
2	
3	
4+	

Polynomials are **classified by degree** (highest exponent) and **number of terms**. Use the charts to the left to classify each polynomial below.

13.  $-3x + 1$  \_\_\_\_\_

14.  $9x^5 - x^4 + 2x$  \_\_\_\_\_

15.  $24$  \_\_\_\_\_

16.  $\frac{1}{2}x^3 - 2x^2 + 4x + 15$  \_\_\_\_\_

17.  $-x^2 - 18x + 31$  \_\_\_\_\_

18.  $-\frac{3}{2}x^4$  \_\_\_\_\_

## Adding & Subtracting Polynomials

① <b>COMBINE LIKE TERMS!</b> (Watch out for subtraction problems!)	
② Write your answer in <b>STANDARD FORM</b> .	
1. $(3x^2 + 11x + 4) + (-5x + x^2 - 13)$	2. $(9n^3 - 4n^2 + 2n - 10) + (-2n^2 + n + 7)$
3. $(5k^3 - 2k^2 + 2k) - (2k^2 + 2k + 17)$	4. $(y + 4y^2 - 3) - (1 + 2y^2 - 5y - y^3)$
5. Subtract $(-10ab + 7a^2 - b^2)$ from $(8b^2 + ab - 2a^2)$ .	

## Multiplying Polynomials

① **DISTRIBUTE** or **FOIL**.

② **COMBINE LIKE TERMS!**

③ Write your answer in **STANDARD FORM**.

6.  $(w - 7)(w^2 + 2w + 1)$

7.  $(2x + 1)(4 - 9x) - 2x(3x + 11)$

8.  $-3(a + 5)(a - 2)(a + 8)$

9.  $(2c + 5d)^3$

10.  $(3m^2 - 4m + 1)(2m^2 + 5m - 9)$

11.  $(x^2 + 6x - 7)(-x^2 - 9x - 4)$

12. The height of a trapezoid can be expressed as  $(2x + 9)$  while the bases can be expressed as  $(3x - 7)$  and  $(x + 5)$ . Write an expression to represent the area of the trapezoid.