

ADDING AND SUBTRACTING POLYNOMIALS

- *To add, just combine like terms.*
- *To subtract, distribute the negative and then combine like terms.*
- *Standard form: exponents in descending order*

Add or subtract the following polynomials. Write your answer in standard form.

- 1.) $(4x^2 - 6x + 9) + (x^2 - 5x - 12)$
- 2.) $(5x^3 - 7x^2 + 3x - 8) + (-x^4 - 6x^3 + 2x^2 - 5)$
- 3.) $(x^2 + 3x - 8) - (2x^2 + 5x - 6)$

NAMING POLYNOMIALS AND PARTS OF A POLYNOMIAL

- *Name polynomials by their degree: constant, linear, quadratic, cubic, quartic, etc.*
- *Name polynomials by their number of terms: monomial, binomial, trinomial, polynomial*
- *Name the parts of a polynomials: terms, coefficients, constants, etc.*

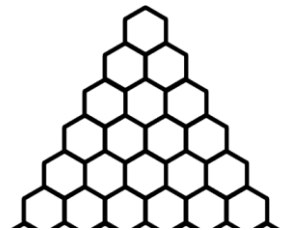
Name the leading coefficient, degree and constant in the following polynomial:

- 4.) $5x - 3x^4 + x^2 + 12$
 Leading Coefficient: _____
 Degree: _____
 Constant: _____

MULTIPLYING POLYNOMIALS

- *Use FOIL or the distributive property to multiply binomials and trinomials*
- *Use Pascal's Triangle to multiply or expand binomials raised to a power greater than 2*
- *Pascal's Triangle:*

- 5.) Use Pascal's triangle to expand the following binomial: $(2x - 3)^4$



- 6.) What is the coefficient of the third term in the expansion of $(y - 2x)^4$?
- 7.) What is the 2nd term in the expansion of $(3x - 1)^5$?

DIVIDING POLYNOMIALS

- Use long division to divide polynomials
- Use synthetic division to divide polynomials

8.) Use synthetic division to find the quotient of $(2x^3 - 3x^2 + x - 8) \div (x - 2)$.

9.) Determine whether the following are roots of: $x^3 - 13x + 12$:

a.) 1 _____

b.) -1 _____

c.) 2 _____

d.) -2 _____

e.) 3 _____

f.) -3 _____

g.) How many other roots of the polynomial are there and what are they?

OPERATIONS WITH FUNCTIONS

- Understand function notation and be able to add, subtract, multiply, and evaluate using it
- Find composite functions: $f(g(x))$, $g(f(x))$, $f(h(x))$, etc. [plug the inside function into the x of the outside function and simplify]
- Inverse of functions:
 - To find: Algebraically: switch x & y in the function and solve for y; Graphically: switch the x's and y's of the order pairs of the function
 - Will be symmetrical across the line $y = x$
 - To check if two functions are inverses: find $f(g(x))$ and $g(f(x))$; If those are equal they are inverses
- One to One functions: pass the vertical line test and the horizontal line test

Use the following functions to answer #10 - #18

$$f(x) = x^2 + 1$$

$$g(x) = 3x - 2$$

$$h(x) = -2x^2$$

10.) $f(x) + h(x)$

11.) $f(x) - g(x)$

12.) $f(x) * h(x)$

Unit 2- Operations with Polynomials

13.) $f(g(x))$

14.) $g(h(x))$

15.) $(f * g)(-1)$

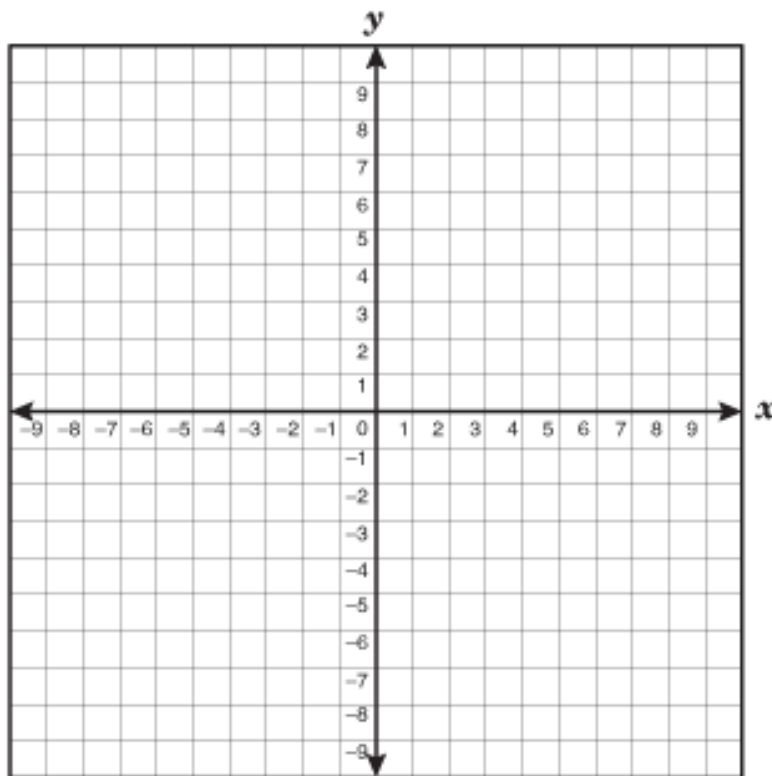
16.) $g(h(-2))$

17.) $g^{-1}(x)$

18.) Graph $f(x)$ and its inverse:

x	F(x)
-3	
-2	
-1	
0	
1	
2	
3	

x	$f^{-1}(x)$
-3	
-2	
-1	
0	
1	
2	
3	



19.) Is the graph of $f(x)$ and $f^{-1}(x)$ one to one?