Polynomial Arithmetic

A polynomial is a collection of terms that feature a coefficient time a variable raised to a natural number power. The terms are joined by addition or subtraction.

A monomial is just one term like . Negative 5 is the coefficient.

A binomial has two terms:  here are two of them

A trinomial is a type of quadratic: 

Any higher number of terms is usually just called “poly” nomial.

Addition and Subtraction

Here we need to pay attention to a quality of each term. You may only add and subtract terms that have the same variable raised to the same power. This is called combining LIKE terms.

NOT LIKE



LIKE



One way to help you figure out what is like is to say “I have 3 of these x squareds and I want to add 2 of these x squareds…if what follows “of these” are exactly the same words, then you are good to go.

Multiplication and Division

You can multiply polynomials with abandon. Use FOIL for multiplying two binomials. If you have the SAME base and you multiply, add the exponents. If you have the SAME base and you divide, then subtract the exponents. You may need to distribute a monomial over some terms inside parentheses.

Examples



Successive distribution



Multiply by x then by y, then combine like terms and you are done.



When dividing, subtract the exponents



Be careful to avoid dividing when you have sums in the numerator and denominator.

This one doesn’t simplify: 

Check it with two different numbers for the x’s!

Of course practice helps when determining what is like or not. Let’s look at xome pairs of numbers and declare them like or not like



Multiply and combine like terms where you can



Divide appropriately



Get with a tutor in CASA or come by my conference hours, please.