POLYNOMIAL FUNCTIONS

$$d = an!$$

- where d is the common n'th degree differences, a is the leading coefficient, and n is the degree of the function
- subbing in -x in order to check if a function is even or odd
- calculating n'th degree differences
    - always compare to the past
      $$x^8 + x^4 +1$$
- the above is even as all the exponents are even

POLYNOMIAL EQUATIONS AND INEQUALITIES

$$3x^3 -7x + 1\overline{)-6x^5+3x^4 +2x^3 -9x^2+2-6}$$

- long division
  $$\dfrac{-6x^5+3x^4 +2x^3 -9x^2+2-6}{3x^3 -7x + 1} = -2x^2 + x-4\dfrac{-2}{2x^3 - 7x + 1}$$

- quotient form
  $$ -6x^5+3x^4 +2x^3 -9x^2+2-6 = (-2x^2 + x-4)(2x^3 - 7x + 1) -2 $$

- factored form

- remainder theorem

  > when polynomial function $P(x)$ is divided by $x-b$, the remainder is $P(b)$
  > $$ \dfrac{dividend}{divisor} = quotient $$
  >
  > - nomenclature

$$ a^3 + b^3 = (a + b)(a^2 – ab + b^2)$$

- difference of cubes

  > SOAP(same, opposite, always positive)
  >
  > - Application of polynomial equations / inequalities

RATIONAL FUNCTIONS

- speed bump = unfactorable bottom
- oblique = top is divisible by bottom
- horizontal asymptote is highest bottom term coefficient dividing top coefficient of same degree
- Work solving equations and inequalities (especially expanding and solving)
- inequalities solution format

TRIGONOMETRY

- exact values
- rationalizing denominator
- trig identities equations
- arc length formula

TRIGONOMETRIC FUNCTIONS

- graphing inverse trig functions
- graphing sine + cosine waves
- solving for quadrants
- practical application

LOGARITHMS

- Graphing Logs
- logs <=> exponents

$log337 = \dfrac{log{10}37}{log_{10}3}$

- base swap rule
- solving logs for x
- solving $a^x + b + c^{-x}$
- quadratics and Logs