Algebra Cheat Sheet

by Lady's Notenook (Lady_Notenook) via cheatography.com/203562/cs/43368/

Linear Functions

Standard/General form:	f(x) = ax + b
Slope/rate of change	a/m = y2-y1/x2-x1
y-intercepy	b
Slope intercept form	f(x) = mx + b
Point-slope form	y-y1 = y2-y1/x2-x1 (x-x1)

Variable occurs to the **first power only**

The graph is a line

Constant rate of change

Positive rate of change	Slope Upward
Negative rate of change	Slope Downward

Effects of Changing h and k

vertex form: (h, k)

Changing h	x = h; horizontal shift
Changing k	y = k; vertical shift

How to solve Polynomial Functions

1. Factor out (no exponent is inside the parenthesis)
2. Set the function equal to zero
3. Solve for x
4. Find Multiplicity
5. Find x and y intercept. Use 0, if imaginary use 2 numbers that are symmetric to each other
6. Plot out the x you solve on step 3 sa x-axis
7. Plot the x and y intercepts on step 5

7 Check if tama ang graph using ang leadig coefficient

Create Quadratic func. with the Vertex and points

1. Substitute the vertex to the function
2. Substitute x and y intercept
3. Solve for a

Formula:

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

Quadratic Functions

General form	$f(x) = ax + bx + c$
Standard form	$f(x) = a(x - h) + k$
Vertex	(h, k)

Polynomial function of degree **2**

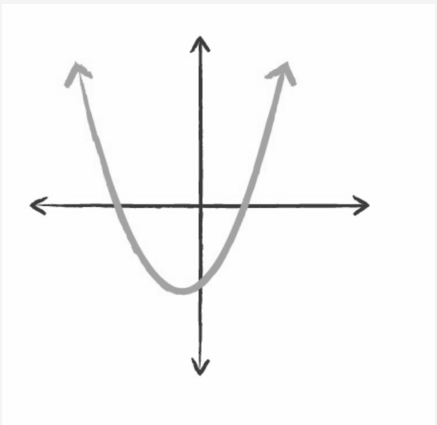
Graph of f is a **parabola**

Parabola opens upward	a > 0 (+) : minimum
parabola opens downward	a < 0 (-) : maximum

How to graph Quadratic Functions

1. Expressing in standard form by completing the square or using (x = -b/2a
2. Find Vertex
3. Identify max/min
4. Find x and y intercept
5. Plot Vertex and points
6. Find domain ad range **Note:** Domain is always real number

Even Coefficient Graph



Same Direction sa start and end If Positive: Upward If Negative: Downward

Odd Coefficient

Polynomial Function

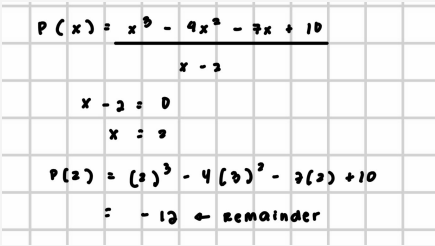
Example sa form	$f(x) = 2x^3 - 6x^2 + 10$
Exponents	Always positive exponents and no fractional exponents
Coefficients	2, -6
Constant coefficient/-Constant term	10
Leading coeffi-cient	2
Leading term	$2x^3$

It is continuous; graph has no breaks or holes

Note: Dapat always sunod ang mga terms depende sa # of degree or exponents. If kulangan butangan ug 0 ang exponent

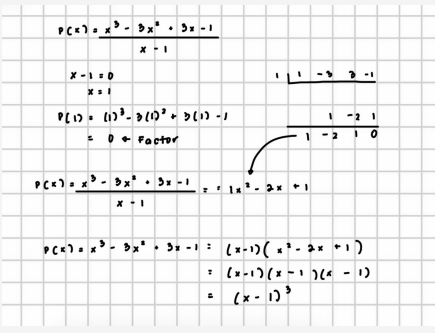
Higher exponent (even)	Steeper, flatter
Higher exponent (odd)	wider

Remainder Theorem

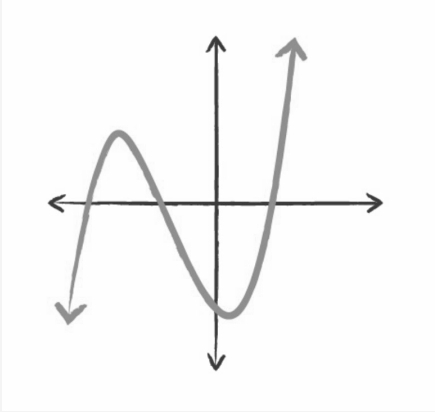


If a polynomial p(x) is divided by the binomial x - a, the remainder obtained is p(a)

Factor Theorem



C is a zero of p if and only x - c is a factor of P(x)



Opposite Directions If Postive:ascending, If Negative: descending

By **Lady's Notenook**
(Lady_Notenook)
cheatography.com/lady-notenook/

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