Functions – Quick Reference

Function Notation can be written as:

 $\begin{array}{ll} f(x) = 3x + 2 & \text{this translates to: "f of x" equals } 3x + 2" \\ g(x) = 3x - 1 & \text{this translates to: "g of x equals } 3x - 1" \end{array}$

Identifying Functions using the Vertical Line Test

If a graph represents a function, that graph will only intersect with a vertical line one time.



Evaluating Functions

f(x) = 6x -1	Find f(5)	Original Problem	
↓ f(x) = 6x -1	↓ Find f(5) ← Notice I the fi	how 5 replaces the x in unction notation.	
f(5) = 6(5) -1	Substitute 5 for x in the original function.		
f(5) = 29	Evaluate! This is your answer!		

This answer means that if you substitute 5 for x, into this function, you will get an answer of 29! You "used" to write: y = 29. Now, in place of y, you will use f(5).

**(The 5 can be replaced with whatever number you substitute into the equation.)

Linear Functions

Function notation can be confusing, but once you can identify the x and y coordinate, you can think of your typical ordered pair.

A typical ordered pair:	(2, 5)	where	(2, ↑ x	5) ↑ y	
An ordered pair using fun	ction n	otation:	f(2)) =5 ▲	
f(x) = v coordinate			X	v	

Quadratic Functions

Quadratic Functions will have a "squared term"

$f(x) = ax^2 + bx + c$		f(x) = 2x ² + 3x	f(x) = 2x ² + 3x + 4		
↑ 1	₹	↑ 1	*		
coefficients	constant	coefficients	constant		

A quadratic function will result in a "parabola" when graphed.



**If the lead coefficient is positive, then the parabola will open up. Example: $3x^2 + 2x - 5$ (3 is positive) **If the lead coefficient is negative, then the parabola will open down. Example: $-2x^2 + 2x - 5$ (2 is negative)

Vertex Formula Given the function: $f(x) = ax^2 + bx + c$

Given the function. f(x) = dx + bx

Vertex Formula: $\frac{-b}{2a}$

(The opposite of b divided by 2 times a)