**Calculus – Study Guide for Unit Test 1: Functions**

*\*\*\* Note – This is not the actual test; more information may or may not be included on the test. This is only a guide to help with studying, recall of materials learned, and an organization of the topics discussed during the unit – questions on the test may or may not be limited to the following topics. \*\*\**

Unit 1 – Functions

* Real Numbers – Rational vs. Irrational
	+ Give examples or determine such numbers
* Number Lines & Intervals
	+ Create number lines
	+ Compare and determine intervals
* Domain & Range of Functions – describe from graph and/or diagrams
	+ X and Y values, Input vs. Output
	+ Determine from graphs
	+ Determine from diagrams or examples
* Graphing Functions – make use of the online graphing calculator: <https://www.desmos.com/calculator>
	+ You may use this site for any graphing *(YES – there is graphing on the test!)*
* Real World use of Functions – word problems
	+ Examples will be word problems
* Important Functions: Linear, Quadratic, Polynomial, Rational, Power, and Absolute Value
	+ List and provide the general form
* Factoring of Math Expressions
	+ Factor with the use of FOIL and such other properties
* FOIL – the use of the property in “both directions”
	+ Check for understanding
* Exponents
	+ SIMPLIFY *(remember, real numbers you can actually give me a real number result…go beyond just* $5^{4}$*, actually express the number itself!)*
	+ Use of real numbers AND variables
	+ Make use of properties
* Applications of Functions in the Real World
	+ How are functions used in the real world or even at LCCTC including vocational?