Class Notes and Examples

Exploratory Activity:

We transform the graph of a known, or "base" function, by adding/subtracting, multiplying/dividing a constant in various ways to the function. Let's explore the relationship between the graphs of a base function and related functions that are transformations of that function, by using our graphing calculators.

	Domain & Range	Graph	Relationship between graph and graph of base function
Base function: $y = f(x) = \sqrt{x}$			
$y = f(x) + 2 = \sqrt{x} + 2$			
$y = f(x) - 2 = \sqrt{x} - 2$			
$y = f(x+2) = \sqrt{x+2}$			
$y = f(x-2) = \sqrt{x-2}$			
$y = -f(x) = -\sqrt{x}$			
$y = f(-x) = \sqrt{-x}$			

	Domain & Range	Graph	Relationship between graph and graph of base function
Base function: $y = f(x) = (x^3 - x)$			
$y = 2f(x) = 2(x^3 - x)$			
$y = \frac{1}{2} f(x) = \frac{1}{2}(x^3 - x)$			
$y = f(2x) = (2x)^3 - (2x)$			
$y = f\left(\frac{1}{2}x\right) = \left(\frac{1}{2}x\right)^3 - \left(\frac{1}{2}x\right)$			