FMPC 12 Section 1.1-1.3 Outcomes

Section 1.1

* **Relations** are sets of ordered pairs
* **Domain** is the set of x-values of all the points
* **Range** is the set of y-values of all the points

The two main concerns when working with domain and range in any equation:

1. not having a negative number inside an even root, and
2. not having zero in the denominator
* **Functions** are relations where for every value of the domain there is only one value for the range.
* **One-to-One Functions** are functions in which every one value of the domain is associated with one value of the range and vice versa.

(see diagram on page 7)

* **Vertical Line Test for functions**

A graph represents a function if and only if every vertical line in the coordinate plane intersects the graph of the equation only once.

* **Horizontal Line Test for a one-to-one function**

A function is one-to-one if and only if every horizontal line in the coordinate plane intersects the function at most only once.

Section 1.2

**Sum, Difference, Product and Quotients of Functions**

1. Sum *( f + g )(x) = f(x) + g(x)*
2. Difference *( f - g )(x) = f(x) - g(x)*
3. Product *(fg)(x) = f(x)×g(x)*
4. Quotient *(* $\frac{f}{g})$*(x) =* $\frac{f(x)}{g(x)}$ *, g(x)≠0*

Section 1.3

**Composite of Functions**

*f ○ g* of two functions  *f* and *g*  is defined by (*f ○ g*)(*x*) = *f(g(x)).*

For all *x* in the domain of *g* such that *g(x)* is in the domain of *f*

Read the examples from 1.3 paying special attention to Example #5