



## Introductory Lesson 2 – Tools for Success

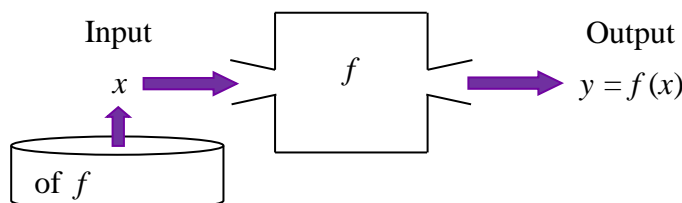
**Precalculus** is the mathematical discipline that combines topics from algebra and trigonometry that are necessary for understanding calculus concepts and solving calculus problems. One of the unique aspects of the AUCI calculus course is that it incorporates the foundational precalculus material throughout the calculus curriculum.

**Technology** not only allows us to solve complicated problems very quickly, but it helps us to demonstrate and investigate fundamental ideas. Although this course was developed with the TI-84 calculator in mind, instructors and students are encouraged to experiment with other types of technology.

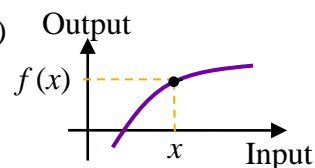
Although calculus helps us to analyze changes in certain quantities, the quantities themselves are usually encoded into mathematical models called *functions*. A **function** is a rule that assigns exactly one output value  $y$  to each input value  $x$ . It can be expressed as a formula, as a graph, as a table, or in words.

**Domain:** The domain of a function is the set of all allowable inputs. Zeros in denominators are not allowed, and negative numbers under even roots are not allowed.

**Notation:** The expression  $y = f(x)$  means that the function called  $f$  assigns the unique output  $y$  to the input  $x$ . A function diagram may be helpful:



**Graph:** The graph of a function  $f$  is the set of all ordered pairs  $(x, f(x))$  plotted in a coordinate plane. The horizontal axis is the input axis, and the vertical axis is the output axis. The graph of a function passes the **vertical line test**; that is, no two points on the graph have the same input.



### For next class:

1. Navigate to Lesson 1.1.
2. Watch the Lesson 1.1 and Examples 1.1 videos at least once and as many times as you wish. You may take notes on the lesson or highlight the hardcopy of the text, but be sure to take careful notes on the examples as if you are sitting in class.
3. Complete Quiz 1.1 (WeBWorK). Note the closing time!
4. Begin Homework 1.1 (WeBWorK), if desired. Note the closing date!