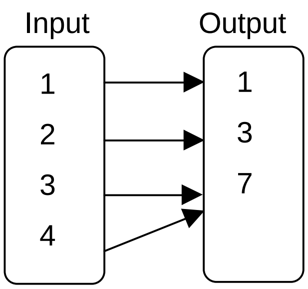
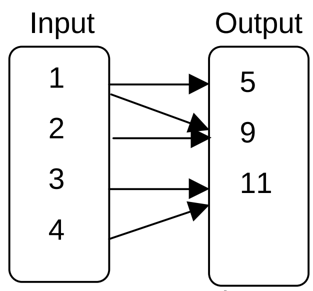
Section 4.8 Functions and Relations

As you might recall from chapter one (section 7), we have already learned one definition for a function. A function must be consistent; for every input there can only be one output. Today we will learn two more ways to approach that definition. We will also learn function notation.

The first new way to look at functions is by using input/output tables with arrows relating the inputs to the outputs. Again, a function must have only one output for a given input.

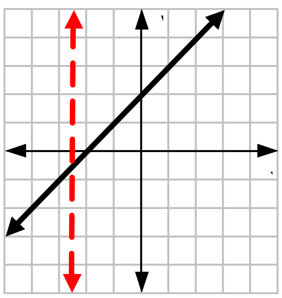


Function

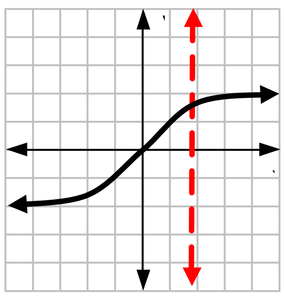


NOT a Function
(because input 1 has two outputs)

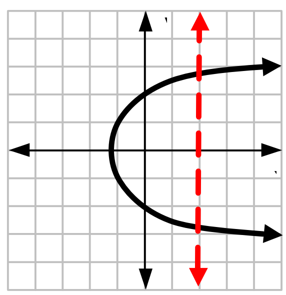
The next way to look at functions is using the vertical line test. the vertical line test says that it is a function if no vertical line can be drawn to pass through two or more points on the graph.



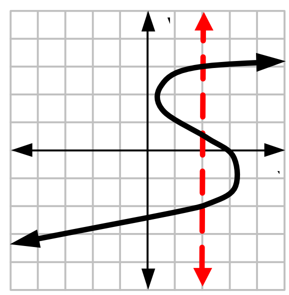
Function



Function



NOT a Function



NOT a Function

Function Notation

Although y = 3x + 2 is a function, we often write f(x) = 3x + 2. This is function notation where f(x) is read as “f of x”. G(x) would be read as “g of x”. To graph a function in function notation, simply replace the f(x) or g(x) with y and graph as usual.

Domain and Range

The **domain** of a function is the set of all possible inputs. The **range** is the set of all possible outputs.

Example: Is the relation a function? If so, state the domain and range.

Yes it is a function.
Domain: 1, 2, 3, 4
Range: 8, 9, 11