**Ch 5: Functions and Graphs**

Goal: Function concept, graphs and notation

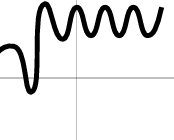
*Motivating Example:* Andy leaves his office in Padelford Hall on his way to teach in Kane Hall which is 2400 feet away.

Let *y* = *f*(*t*) be Andy’s distance from Padelford Hall in feet after t minutes.

Sketch a rough graph of each of the following functions…

1. Andy walks at a constant speed and get to Kane Hall in 10 minutes.
2. Andy walks at a constant speed for 5 minutes, gets halfway and is out of breath and stops for 2.5 minute, then decides to go back to his office walking twice as fast for 2.5 minutes.



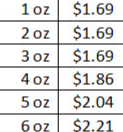
**Terminology**

*Definition*: A **function** is a procedure for assigning a unique output for each allowable input. It has three parts:

1. `a rule’ (*a table, graph, expression or description*)
2. **Domain**: A set of allowable inputs.
3. **Range**: A set of outputs.

Example: Sketch a graph and give domain range

* “height as a function of age”
* value of y in terms of x in the graph”



* “price to send a package as a function of weight” (table given below)

***Functions from mathematical expressions***

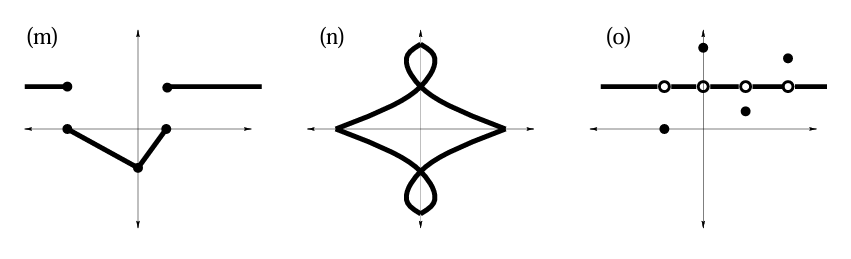
***Example***:

Sketch and give the domain and range of

Note: In order to be a “function” it must have only one output for each allowable input to avoid ambiguity. Visually this means the graph passes the ***vertical line test*.**

*Examples from homework:*

Are any of these functions?



**Semicircles**

The graph of all point satisfying the equation

does not give a function!

Instead we way that this equation *implicitly* defines more than one function.

***Functional Notation***:

Example:

Compute or simplify the following…

1. and
2. (*completely simplify!*)

***Try Again***

Example:

Example: (*challenge*)