Math 150 Lecture Notes
Graphs of Functions

If f is a function with domain A, then the **graph** of I is the set of ordered pairs

$$\{(x, f(x)) \mid x \in A\}$$

In other words, the graph of f is the set of all points (x, y) such that $y = f(x)$.

A **linear function** is a function f of the form $f(x) = mx + b$, which represents a line with slope m and y-intercept b. When the slop is $m = 0$, the function $f(x) = b$ is a **constant function**, and its graph is the horizontal line $y = b$.

One way to graph a function is to make a table of values, plot the points, and join them with a smooth curve.

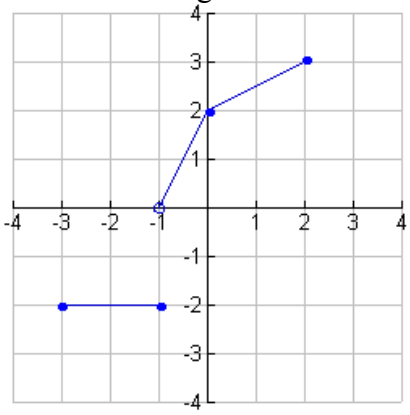
The **values of a function** are represented by the height of its graph above the x-axis (the y-values of the function).

To graph a **piecewise function**, sketch the graph of each piece with a dotted line. Then use a solid line to show the part of each piece that satisfies the domain given for that piece.

The **greatest integer function** is defined by $[[x]]$ = greatest integer less than or equal to x.

Vertical Line Test
A curve in the coordinate plane is the **graph of a function** iff no vertical line intersects the curve more than once.

Example 1: Determine whether the curve is the graph of a function of x. If it is, state the domain and range of the function.



Example 2: Determine whether the equation defines y as a function of x: $\sqrt{x} + y = 6$

Example 3: Determine whether the equation defines y as a function of x: $2x + |y| = 0$