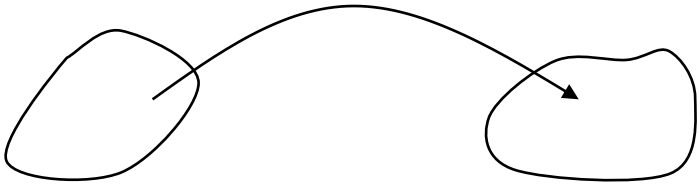
What is a function?



Forms of Functions

$x^2 + 2y = 1$

$y = \frac{1}{2}(1 - x^2)$

$f(x) = \frac{1}{2}(1 - x^2)$

Domain:

Range:

Independent Variable: Represents

Dependent Variable: Represents

The domain may be given **explicitly** or **implicitly**

Ex: State the domain and range for the following functions:

a) $f(x) = x^2 - 4$

b) $f(x) = \frac{1}{\sqrt{x+1}}$

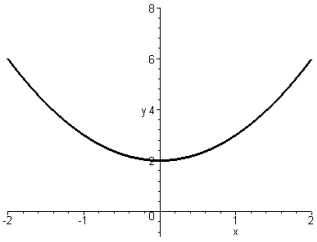
Ex: Given $f(x) = \frac{1}{2}(1 - x^2)$

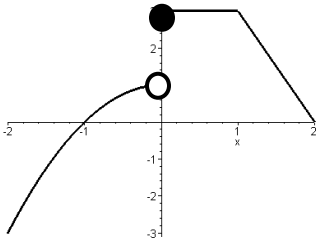
a) Find $f(-3)$

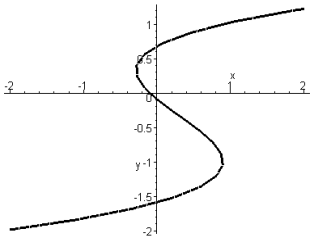
b) Find $f(4x)$

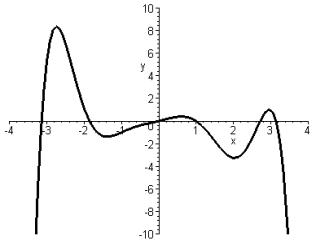
Ex: Given $f(x) = x^2$, find and simplify $\frac{f(a+h)-f(a)}{h}$

Which of the following graphs represent functions?









Why?

Piecewise Functions:

Ex: Find the domain and sketch the function $f(x) = \begin{cases} x+2 & \text{if } x < 0 \\ 3 & \text{if } 0 \le x < 2 \\ x^2 - 1 & \text{if } x \ge 2 \end{cases}$

Ex: Given $f(x)=\begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$

a) Make a table of values and sketch the function

b) What is the domain and range?

c) Do you recognize this function? If so, what is it?

Ex: A rectangular area has an area of 60 ft^2. Express the perimeter of the rectangle as a function of the length of one of its sides.

Homework: Section 1.1, p. 19: #1, 3, 7, 9, 25, 27, 29, 31, 35, 41, 45, 49, 57, 63