Mini-Lecture 2.2
The Graph of a Function

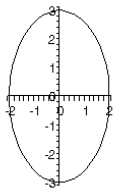
Learning Objectives:

1. Identify the graph of a function
2. Obtain information from or about the graph of a function

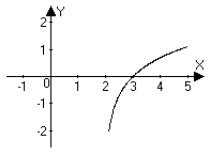
Examples:

1. Determine whether the graph is that of a function. If it is, then use the graph to find the domain, range, any intercepts, and symmetry with respect to the *x*-axis, the *y*-axis, or the origin.

(a)



(b)



2. For $f(x) = \dfrac{2x}{x-2}$ answer the following questions.
   (a) Is the point (3,6) on the graph of *f*?
   (b) For $x = -2$, what is $f(x)$? What are the coordinates of that point on the graph $y=f(x)$?
   (c) If $f(x) = 3$, what is x?
   (d) What is the domain of *f*?
   (e) List any intercepts and zeros of *f*.

Teaching Notes:

- The vertical-line test is a useful tool if a student has a graph to analyze.
- Draw a lot of different graphs, and use the vertical-line test. This will help establish the concept of a function.
- Spend a good amount of time having the students read information from graphs. This is often something they have difficulty with. This will also help them later when they are learning about increasing and decreasing functions.

Answers:

1. (a) No (b) Function; Domain=$(2,\infty)$, Range =$(-\infty,\infty)$, *x*-int=3, no symmetry.

2. (a) Yes (b) 1; $(-2,1)$ (c) $x = 6$ (d) $(-\infty,2)\cup(2,\infty)$

   (e) *x*-int=0; *y*-int=0; zero = 0.