Mini-Lecture 2.3

Functions and Their Graphs

Learning Objectives:

1. Find the domain (and the intercepts) of a function.
2. Obtain information from the graph of a function.
3. Interpret graphs of functions and use function notation.

Preparing for Function and Their Graphs:

Determine whether the following is in the domain of x for the expression: $\dfrac{x+3}{2x-6}$.

i) $x = 3$ $\quad \dfrac{3+3}{2\cdot 3-6}$

NO $\quad \dfrac{6}{0}$ undef.

ii) $x = -3$

$\dfrac{-3+3}{2(-3)-6} = \dfrac{0}{-12} = 0$ yes

DEFINITION

When only the equation of a function is given, we agree that the **domain of *f*** is the largest set of real numbers for which $f(x)$ is a real number.

Examples:

1. Find the domain of each function.

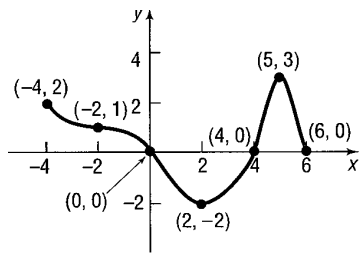
a) $f(x) = -\dfrac{4}{3}x - 2$

$(-\infty, \infty)$

b) $g(x) = \dfrac{2x+5}{x-2}$

D: $\{x \mid x \neq 2\}$

2. Given the graph of the function, find each of the following:



a) domain $[-4, 6]$

b) range $[-2, 3]$

c) intercepts, if any x-int $(0,0)$ $(4,0)$ $(6,0)$
y-int $(0,0)$

d) $f(5) = 3$

e) $f(-2) = 1$

f) For what value(s) of x is $f(x) = -2$? $x = 2$