

FUNCTIONS

Chapter 1

Section 4



Functions

- Input \longrightarrow FN \longrightarrow Output
- Domain \longrightarrow FN \longrightarrow Range
- X \longrightarrow FN \longrightarrow Y
- Independent \longrightarrow FN \longrightarrow Dependent

- Each element of the domain can be matched up with **ONLY** one element of the range.

Examples (table- set of points)

①

D	R
-4	7
3	9
2	-1
8	6

Function

②

D	R
2	4
7	2
-3	1
8	2

Function

③

D	R
6	7
-8	1
6	5
4	10

Not a FA.

Equations-Functions?

1.) $y = 5x + 4$ **Fn**

2.) $x^2 - y = 2$ **Fn** 

3.) $y^2 + x = 4$ **No** 

$$\sqrt{y^2} = \sqrt{3}$$

$$y = \pm \sqrt{3}$$

$$\sqrt{40}$$

$$2\sqrt{10}$$

Function Notation

□ $y = mx + b$

$y = x^2 + 2x - 10$

□ $f(x) = mx + b$

$f(x) = x^2 + 2x - 10$

□ 1.) $f(x) = 5x + 2$

$f(0) = 5(0) + 2$ $f(-3) =$

$f(0) = 2$

$f(-3) = 5(-3) + 2$

$f(-3) = -13$

2.) $g(x) = -4x^2 + 5x$

$g(-2) =$ $g(4) =$

$-4(-2)^2 + 5(-2)$ $-4(4)^2 + 5(4)$

$-16 + -10$

$-64 + 20$

-26

-44

Finding the domain of a function

- **Two “Checks”**

- 1.) Can't have “0” on the bottom of a fraction
- 2.) Can't have a negative number under a radical with an even exponent

Examples

□ 1.) $y = 5x + 4$

D: $(-\infty, \infty)$

□ 2.) $y = \frac{6}{x+2}$

$x+2=0$

$x=-2$

D: All \mathbb{R} except $x=-2$

D: $(-\infty, -2) \cup (-2, \infty)$

Examples

□ 3.) $y = \frac{-7x}{x-4}$

$$x-4 \neq 0$$

$$x \neq 4$$

$$(-\infty, 4) \cup (4, \infty)$$

□ 4.) $y = \frac{6}{x^2-4}$

$$x^2-4 \neq 0$$

$$\sqrt{x^2-4}$$

$$x \neq \pm 2$$

$$(-\infty, -2) \cup (-2, 2) \cup (2, \infty)$$

Examples

□ 5.) $y = \sqrt{x+5}$

$$x+5 \geq 0$$

$$x \geq -5$$

$$[-5, \infty)$$

□ 6.) $y = \sqrt[3]{x+5}$

$$D: (-\infty, \infty)$$

Examples

□ 7.) $y = \sqrt{x-4}$

$$x-4 \geq 0$$

$$x \geq 4$$

$$[4, \infty)$$

□ 8.) $y = \frac{1}{\sqrt{x+3}}$

$$x+3 \neq 0 \mid x+3 \geq 0$$

$$x+3 > 0$$

$$x > -3$$

$$(-3, \infty)$$

Class Work

- Pg 48 # 1-9 odd- out loud
13-20 out loud
25, 39

Homework

- Pg 48-49 # 2-10 even, 26, 28, 30, 31, 40, 41, 57-70