

FUNCTIONS

Chapter 1
Section 4



Functions

- Input → FN → Output
- Domain → FN → Range
- X → FN → Y
- Independent → FN → Dependent

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

Examples (table- set of points)

FN	
X	Y
6	-7
5	8
4	6
2	1

② Not a Fn

X Y	
6	11
3	2
8	4
3	5

③ FN

X Y	
3	5
8	1
4	6
11	5

Function → No repeated x-values

Equations-Functions?

1.) $y = 5x + 4$ FN

2.) $x^2 - y = 2$ FN

3.) $y^2 + x = 4$ Not a FN

Function Notation

□ $y = mx + b$

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

□ $f(x) = mx + b$

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

□ 1.) $f(x) = 5x + 2$

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

$$= 2$$

$$\left. \begin{array}{l} 2.) g(x) = -4x^2 + 5x \\ g(-2) = -4(-2)^2 + 5(-2) \\ = -16 + -10 \\ = -26 \end{array} \right\}$$

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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.) $y = \frac{6}{x+2}$

$$\begin{aligned}x+2 &\neq 0 \\x &\neq -2\end{aligned}$$

$\dots \nearrow \text{unum} \nearrow \dots$

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

Examples

$$\square 3.) y = \frac{-7x}{x-4}$$

$$x-4 \neq 0$$

$$x \neq 4$$

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

$$\square 4.) y = \frac{6}{x^2 - 4}$$

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

$$x^2 \neq 4$$

$$x \neq \pm 2$$

$$-\infty \text{---} 2 \text{---} 2 \text{---} \infty$$

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

Examples

□ 5.) $y = \sqrt{x+5}$

$$x+5 \geq 0$$

$$x \geq -5$$

\leftarrow ~~open~~ $\rightarrow \infty$

-5

$$D: [-5, \infty)$$

□ 6.) $y = \sqrt[3]{x+5}$

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

Examples

□ 7.) $y = \sqrt{x-4}$

$$x-4 \geq 0$$

$$x \geq 4$$

$$D: [4, \infty)$$

□ 8.) $y = \frac{1}{\sqrt{x+3}}$

$$x+3 > 0$$

$$x > -3$$

$$D: (-3, \infty)$$

Class Work

- Pg 48 # 1-9 odd- out loud
- 13-20 out loud
- 30, 34, 36, 37

Homework

- Pg 48-49 #28, 29, 31, 35, 38, 43, 57-70