

## GUIDED NOTES – 3.2 DOMAIN AND RANGE

### LEARNING OBJECTIVES

In this section, you will:

- Find the domain of a function defined by an equation.
- Graph a piecewise-defined function.

### FINDING THE DOMAIN OF A FUNCTION DEFINED BY AN EQUATION

- As a review, write the 4 conventions of interval notation as described in your textbook:

1.

2.

3.

4.

**Try It:** Read Example 1 in the text, then answer the following.

Find the domain of the function:  $\{(-5, 4), (0, 0), (5, -4), (10, -8), (1, -12)\}$

- Write the 3-step process for finding the domain, given a function written in equation form.

1.

2.

3.

**Try It:** Read Example 2 in the text, then answer the following.

Find the domain of the function:  $f(x) = 5 - x + x^3$ .

- Write the 3-step process for finding the domain, given a function written in equation form that includes a fraction.
  - 1.
  - 2.
  - 3.

**Try It:** Read Example 3 in the text, then answer the following.

Find the domain of the function  $f(x) = \frac{1+4x}{2x-1}$ .

- Write out the 3-step process for finding the domain, given a function written in equation form including an even root.
  - 1.
  - 2.







3.

**Try It:** Read Example 4 in the text, then answer the following.

Find the domain of the function  $f(x) = \sqrt{5 + 2x}$ .

**USING NOTATIONS TO SPECIFY DOMAIN AND RANGE**

Study Figure 5 in your textbook section which compares inequality, set-builder, and interval notation.

	<b>Inequality Notation</b>	<b>Set-Builder Notation</b>	<b>Interval Notation</b>
	$5 < h \leq 10$		
			$[5, 10)$
	$5 < h < 10$	$\{ h \mid 5 < h < 10 \}$	
		$\{ h \mid h < 10 \}$	$(-\infty, 10)$
			$[10, \infty)$
	All real numbers		

- Write out the 4-step process for describing the set of values using interval notation, given a line graph.

1.

2.

3.

4.

**Try It:** Read Example 5 in the text, then answer the following.

Given this figure, specify the graphed set in

a. words

b. set-builder notation

c. interval notation

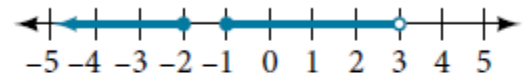


Figure 7

### FINDING DOMAIN AND RANGE FROM GRAPHS

**Try It:** Read Examples 6 and 7 in the text, then answer the following.

Given **Figure 12**, identify the domain and range using interval notation.

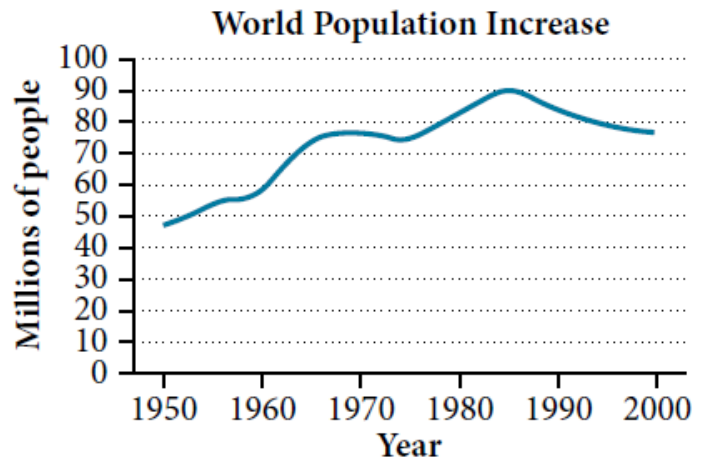


Figure 12

**FINDING DOMAINS AND RANGES OF THE TOOLKIT FUNCTIONS**

Study the table in your textbook section under “Finding Domains and Ranges of the Toolkit Functions”.

- Fill in the domains and ranges of the toolkit functions, using interval notation.

TOOLKIT FUNCTIONS		
Name	Domain	Range
Constant		
Identity		
Absolute Value		

Quadratic		
Cubic		
Reciprocal		
Reciprocal Squared		
Square Root		
Cube Root		

- Write out the 4-step process for determining the domain and range, given the formula for a function.

1.

2.

3.

4.

**Try It:** Read Examples 8, 9, and 10 in the text, then answer the following.

Find the domain and range of  $f(x) = -\sqrt{2-x}$ .



$$f(x) = \begin{cases} x^3 & \text{if } x < -1 \\ -2 & \text{if } -1 < x < 4 \\ \sqrt{x} & \text{if } x > 4 \end{cases}$$

