

MT 1800 Calculus I
Worksheet 1.1 – Functions and Functional Notation

Purpose: The purpose of this worksheet is to review the definition of a function and carefully examine its components and different representation forms.

Procedure: Complete this worksheet.

- *Review of Basic Concepts:*

- Definition of Function:

- Independent Variable & Domain:

- Dependent Variable & Range:

- Functional Notation:

Answer the questions below:

1. Consider the following **function** represented in tabular form:

x	$y = f(x)$
3	22
6	9
-4	17
2	9
1	-8

- What is the **domain** of this function? _____
- What is the **range** of this function? _____
- Find $f(1)$: $f(1) =$ _____
- Find all x for which $f(x) = 9$: i.e., solve $f(x) = 9$ for x : $x =$ _____

2. Consider the following **function** describing a falling body:

$t = \text{Time(sec)}$	$D(t) = \text{Distance Fallen (cm)}$
.16	12.2
.25	32.7
.30	44.2
.36	65.1
.50	124.6
.57	150.2
.61	182.2
.72	261.0

- What is the **domain** of this function? _____
- What is the **range** of this function? _____
- Find $D(.36)$: $D(.36) =$ _____. What is the meaning of $D(.36)$?
- How long did it take for the falling body to fall a distance of 182.2 cm?

3. Consider the following **function** represented symbolically by, $C = f(T)$, giving chirp rate (in chirps per minute) as a function of temperature (in degrees Fahrenheit) for a particular type of cricket. This function is only valid for positive chirp rates and for temperatures less than 136 degrees Fahrenheit, the highest temperature ever recorded at a weather station.

$$C = 4T - 160$$

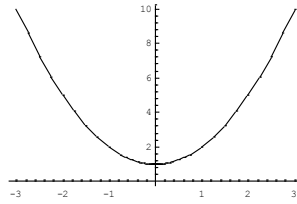
- What is the **domain** of this function? _____
 - What is the **range** of this function? _____
 - Find $C(52)$: $C(52) =$ _____. What is the meaning of $C(52)$?
 - If you hear one of these crickets chirping at a rate of 164 chirps per minute, then what would you predict the temperature to be?
4. Consider the following **function**, $y = f(x)$:

$$y = \frac{1}{\sqrt{x-4}}$$

- What is the **domain** of this function? _____
- What is the **range** of this function? _____
- Find $f(20)$: $f(20) =$ _____.
- Find all x for which $f(x) = 0.4$: I.e., solve $f(x) = 0.4$ for x :

 $x =$ _____

5. Consider the following **function**, $y = f(x)$, represented by the graph below:



a. What is the **domain** of this function? _____

b. What is the **range** of this function? _____

c. Find $f(3)$: $f(3) =$ _____ .

a. Find all x for which $f(x) = 6$: I.e., solve $f(x) = 6$ for x :

$x =$ _____

- Provide “real life” examples (like 2 and 3 above) of functions in the different representations. Make sure that you label dependent and independent variables correctly. BE CREATIVE, DO NOT USE EXAMPLES DISCUSSED IN CLASS!!!

1. Example of a function represented in tabular form:

2. Example of a function represented graphically:

3. Example of a function represented symbolically/analytically:

4. Example of a narrative description of a function: