MATH 156: Precalculus
Fall 2015
Worksheet §2.1: Functions

DEFINITION: A function is a rule that assigns to each x (or "input") _____ y (or "output"), called $f(x)$.

EXAMPLE: Give an example of a rule whose inputs (or x's) are PEOPLE and such that

(1) the rule is a function; (2) the rule is NOT a function.

EVALUATING A FUNCTION: Let $f(x) = x^2 - 3x$. Find the indicated values.

1. $f(5)$

2. $f(-7)$

3. $f(2a)$

4. $f(a+2)$

5. $f(a)+2$

6. $f(-x)$

7. $f(\frac{a}{2})$

8. $f(x^2)$

9. $(f(x))^2$

EVALUATING A FUNCTION: Let $f(x) = \begin{cases} 9 & \text{if } x \leq 2 \\ \frac{x}{2} & \text{if } 2 < x \leq 8 \\ 2x - 1 & \text{if } 8 < x \end{cases}$ Find the indicated values.

1. $f(0)$

2. $f(2)$

3. $f(5)$

4. $f(8)$

5. $f(10)$

DOMAIN Find the domain of the functions below:

1. $g(x) = \frac{x}{9-x^2}$

2. $h(x) = \sqrt{x^2 - 2x - 8}$

EVALUATE THE DIFFERENCE QUOTIENT: Find $\frac{f(a+h)-f(a)}{h}$ for each function below.

1. $f(x) = 2 + 11x$

2. $f(x) = \frac{2}{1-x}$