Math 418: Worksheet 2

September 7, 2020

Directions: DO NOT DO YOUR WORK ON THIS SHEET. Justify ALL your answers.

1 Suppose $f(x) = 2x + x^2$. Evaluate: $f(2), f(-2), f(9)$ and $f(10)$.

2 Suppose $f(x) = -x+x^2$ and a, h are real numbers. Evaluate and simplify: $f(a), f(-a)$, $f(a+1)$ and $f(a+h)$.

3 Suppose $f(x) = \sqrt{-3x+5}$. What is the domain of f?

4 Suppose $g(x) = \sqrt[3]{-3x+5}$. What is the domain of g?

5 Suppose $h(t) = \frac{15t}{8t-2}$ What is the domain of h?

6 Suppose $r(x) = \sqrt[4]{3x+12}$ What is the domain of r?

7 Consider the two functions $f(x) = \frac{x^2}{x}$, $g(x) = x$. Are these two functions equal? Why or why not. Justify your reasoning.

8 Give an example of a function with domain $\{x|x \neq 3\}$.

9 Give an example of a function with domain $\{x|x \geq 4\}$.

10 Draw the graph of a function with domain $[1, 5]$ and range $(-3, 4]$.

11 Suppose $f(x) = \sqrt{|-7x+5|-3}$. What is the domain of f?

12 Suppose $g(x) = \frac{1}{\sqrt{|2x+12|-6}}$. What is the domain of g?

13 Joe Student says that the domain of $f(x) = \sqrt{x^2+4}$ is all real numbers except for ± 2. Is Joe correct or incorrect? Fully explain your reasoning.

14 Find two different functions with domain $\{x|x \neq 0\}$.

15 Suppose $w(t) = \frac{15t}{\sqrt{3t+4}}$ What is the domain of w?

16 Suppose $q(x) = \frac{1}{3x-9} - \frac{14}{x^2-16}$. What is the domain of q?

17 Suppose $n(x) = \frac{26}{\sqrt{10t-6}}$. What is the domain of n?

18 A function $f(x)$ is said to be **even** if $f(-x) = f(x)$. $f(x)$ is NOT even if there exists a so that $f(-a) \neq f(a)$. Determine if $f(x) = 3x^2$ is even or not.

19 A function $f(x)$ is said to be **odd** if $f(-x) = -f(x)$. $f(x)$ is NOT odd if there exists a so that $f(-a) \neq -f(a)$. Determine if $f(x) = -2x^5$ is odd or not and fully explain your answer.

20 Determine if $g(x) = x + x^2$ is even, odd or neither. Fully explain your answer.

21 Is $f(x) = x^4 - x^2$ even? Odd? Neither? Fully explain your answer.

22 Is $g(x) = \frac{1}{x}$ even? Odd? Neither? Fully explain your answer.

23 Are there any functions that are odd and even? Give an example of one if so or explain why there aren't any.