

Name: _____
Pre-Calculus

Date: 09/14/14
Ms. Wilson

Unit 1: Functions and Graphs
Homework Packet #2 – Due 9/22/14

For questions 1-4, find the domain of each function algebraically.

1.) $f(x) = x^2 + 4$

2.) $f(x) = \frac{3x-1}{(x+3)(x-1)}$

3.) $g(x) = \frac{x}{x^2-5x}$

4.) $h(x) = \frac{\sqrt{4-x^2}}{x-3}$

For questions 5-6, find the range of each function.

5.) $f(x) = 5 + \sqrt{4-x}$

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

For questions 7-8, sketch a graph of the function and determine if there is a point of discontinuity at $x=0$. If there is a discontinuity, determine if it is removable or nonremovable.

7.) $g(x) = \frac{3}{x}$

8.) $h(x) = \frac{x^3+x}{x}$

For questions 9-10, determine all local maxima and minima, and find the x-values where they occur. Round to two decimal places if necessary.

9.) $f(x) = 4 - x + x^2$

10.) $g(x) = x^3 - 4x + 1$

For questions 11-14, determine if the function is odd, even, or neither.

11.) $f(x) = 2x^4$

12.) $g(x) = 2x^3 - 3x$

13.) $h(x) = -x^2 + 0.03x + 5$

14.) $g(x) = \frac{3}{1+x^2}$

For questions 15-16, find all horizontal and vertical asymptotes.

15.) $f(x) = \frac{x+2}{3-x}$

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

17.) The function $f(x) = \sqrt{x^2}$ is one of the twelve basic functions written in another form.

a.) Sketch a graph of the function, and identify which basic function it is.

b.) Explain algebraically why the two functions are equal.

18.) Let $f(x)$ be the function that gives the cost, in cents, to mail a letter that weighs x ounces. As of June 2002, the cost is 37 cents for a letter that weighs up to one ounce, plus 23 cents for each additional ounce or portion thereof.

a.) Sketch a graph of $f(x)$.

b.) How is this function similar to the greatest integer function? How is it different?

For questions 19-20, find formulas for $f+g$, $f-g$, fg , and f/g . Write the domain of each.

19.) $f(x) = 2x - 1$; $g(x) = x^2$

20.) $f(x) = (x - 1)^2$; $g(x) = 3 - x$