

Math Analysis – Review Worksheet

Name: \_\_\_\_\_

Find the domain of each function algebraically. Show all work!

1.  $f(x) = \sqrt{x+9}$

2.  $f(x) = \frac{x+5}{x+8}$

3.  $f(x) = x^3 - 3x^2 + 6x - 7$

4.  $f(x) = \frac{x-7}{\sqrt{x-4}}$

5.  $f(x) = \frac{3}{x^2 + 3x - 18}$

6.  $f(x) = \frac{\sqrt{x}}{x-15}$

Find all x and y intercepts algebraically. Show all work!

7.  $y = -3x + 7$

8.  $y = x^2 - 9$

9.  $8x - 6y = 12$

Prove algebraically whether each function is even, odd, or neither. Show all work!

10.  $f(x) = \frac{|x|}{x^2 + 5}$

11.  $f(x) = \frac{x^3 + 1}{x^3 - 4x}$

12.  $f(x) = \frac{x^3}{x^4 - 2x^2 + 10}$

**CALCULATOR – Round all answers to the thousandths decimal place.**

$$f(x) = 3x^3 - 10.5x^2 - 6x + 2.75$$

13. Sketch the graph of  $f(x)$ .

14. State the window used, including the scale.

15. relative max \_\_\_\_\_

16. relative min \_\_\_\_\_

17. increasing interval(s) \_\_\_\_\_

18. decreasing interval(s) \_\_\_\_\_

19. x-intercept(s) \_\_\_\_\_

20. y-intercept \_\_\_\_\_

21. zeros \_\_\_\_\_

22.  $f(3) =$  \_\_\_\_\_

23. Where is  $f(x) = -12$ ? \_\_\_\_\_

24. Where is  $f(x) \geq 0$ ? \_\_\_\_\_

**Answers:** 1.  $x \geq -9$  2.  $x \neq -8$  3. ARN 4.  $x > 4$  5.  $x \neq -6,3$

6.  $x \geq 0, x \neq 15$  7.  $\left(\frac{7}{3}, 0\right), (0, 7)$  8.  $(3, 0), (-3, 0), (0, -9)$  9.  $\left(\frac{3}{2}, 0\right), (0, -2)$

10. even 11. neither 12. odd 15.  $(-2.257, 3.548)$  16.  $(2.591, -31.103)$

17.  $(-\infty, -2.257) \cup (2.591, \infty)$  18.  $(-2.257, 2.591)$  19.  $(-7.755, 0), (3.307, 0), (3.948, 0)$

20.  $(0, 2.75)$  21.  $(-7.755, 0), (3.307, 0), (3.948, 0)$  22.  $-28.75$

23.  $x = -1.250, 1.069, 3.680$  24.  $[-7.755, 3.307] \cup [3.948, \infty)$