

# Chapter 3

## Worksheet 3Z

Name \_\_\_\_\_

Period \_\_\_\_\_

**Directions:** Graph the following equations on your calculator. Adjust the window so you see the important parts of the graph. Make a small sketch of your screen next to the equation. Label your window.

1.  $y = \frac{x}{x^2 - 4}$

2.  $y = \frac{1}{x^2 - 1}$

3.  $f(x) = \frac{3x^3 - 24}{x^3 + 2x + 1}$

4.  $y = \frac{12 - 4x + x^3}{6x^3 + 2x}$

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

6.  $y = \frac{x^2 + 2x + 1}{x + 1}$

7.  $y = \frac{x - 3}{x + 1}$

8.  $y = \frac{-2}{x^2 - 16}$

9.  $y = \frac{x^2 - 25}{x - 5}$

10.  $y = \frac{3x - 2}{x - 1}$

$$11. \quad f(x) = \begin{cases} x & \text{if } x > 0 \\ 2 & \text{if } x \leq 0 \end{cases}$$

$$12. \quad g(x) = \begin{cases} |x| & \text{if } x < 0 \\ x^3 & \text{if } x > 0 \end{cases}$$

$$13. \quad w(x) = \begin{cases} |x+3| & \text{if } x < -3 \\ 2 & \text{if } -3 < x < 0 \\ \sqrt{x} & \text{if } x \geq 0 \end{cases}$$

$$14. \quad g(x) = \begin{cases} \frac{3}{x+2} & \text{if } x < -2 \\ \sqrt{x+2} & \text{if } x \geq -2 \end{cases}$$

$$15. \quad f(x) = \begin{cases} x^2 & \text{if } x \neq 0 \\ 4 & \text{if } x = 0 \end{cases}$$

$$16. \quad h(x) = \begin{cases} \frac{1}{x} & \text{if } x < 0 \\ x^2 & \text{if } 0 < x < 2 \\ \sqrt{x-2} & \text{if } x \geq 2 \end{cases}$$

$$17. \quad w(x) = \begin{cases} |x+5| & \text{if } x < -5 \\ 3 & \text{if } -5 < x < 0 \\ -x^2 & \text{if } x \geq 0 \end{cases}$$

$$18. \quad f(x) = \begin{cases} x^2 & \text{if } x < 0 \\ 3 & \text{if } x = 0 \\ -\sqrt{x} & \text{if } x > 0 \end{cases}$$

Graph  $-w(x)$ ,  $w(-x)$ ,  $|w(x)|$ , and  $w(|x|)$ .

Sketch  $f(x)$ ,  $-f(x)$ ,  $f(-x)$ ,  $|f(x)|$ , and  $f(|x|)$ .