Chapter 3
Worksheet 3E

Name_____

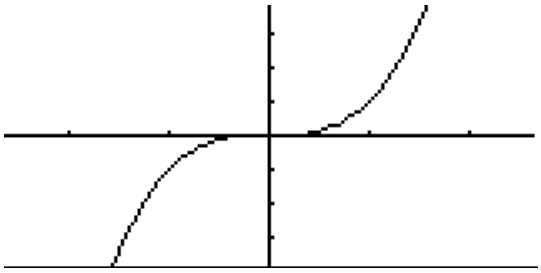
Period_____

Directions: Determine whether each function below is even, odd, or neither. Explain.

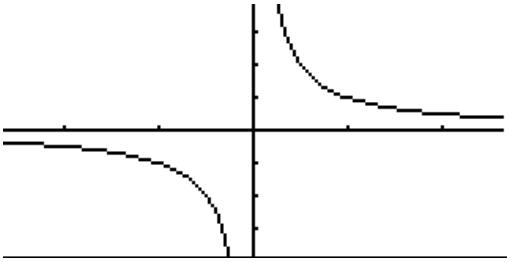
1. $y = \frac{1}{x^2 - 1}$

2. $f(x) = -7x^4 + 6x - 3$

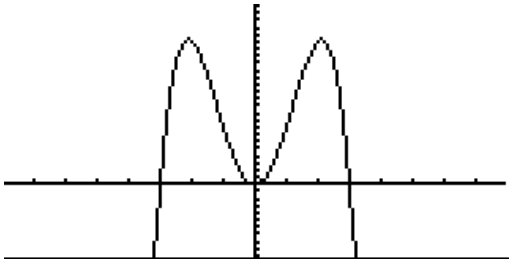
3.



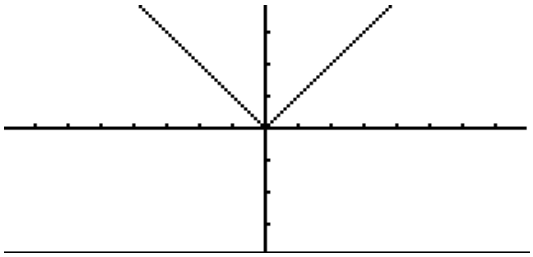
4.



5,

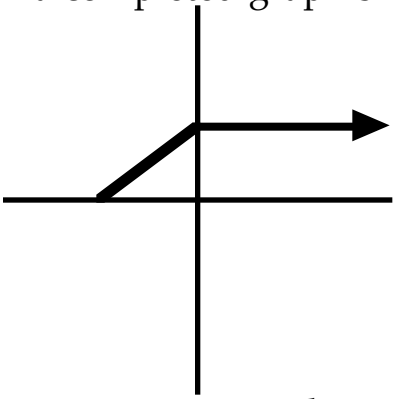


6.



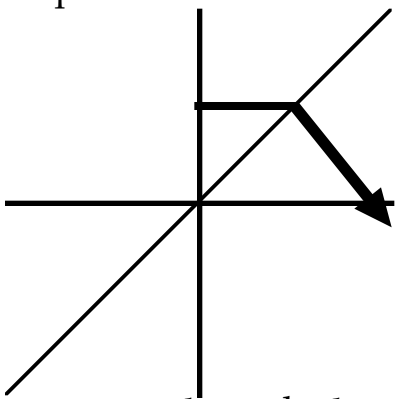
Directions: For questions 7 and 8 the graphs below are portions of completed graphs. Sketch a completed graph showing the symmetry requested.

7.



symmetry about the x-axis

8.



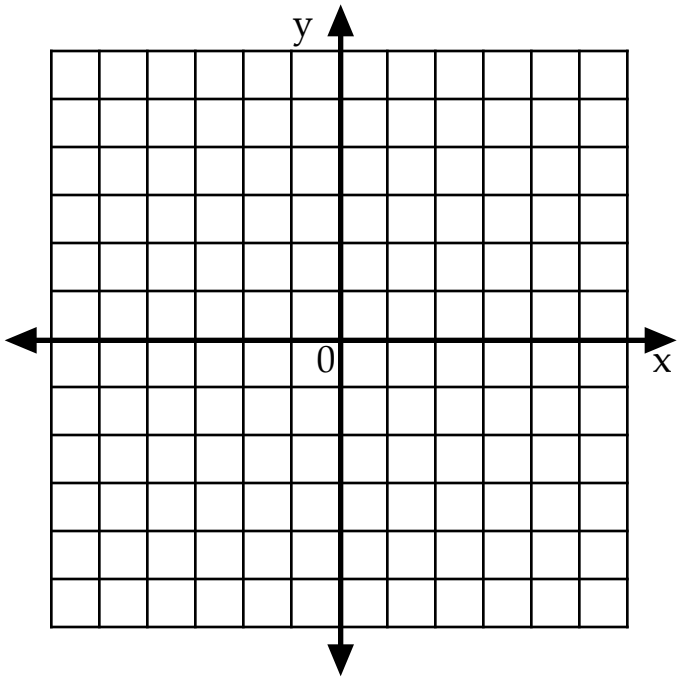
symmetry about the line y = x

Directions: Solve the following problems.

9. Where does the graph of $f(x) = \frac{3x^3 - 24}{x^3 + 2x + 1}$ touch the x-axis?

10. What is the horizontal asymptote of $y = \frac{12 - 4x + x^3}{6x^3 + 2x}$?

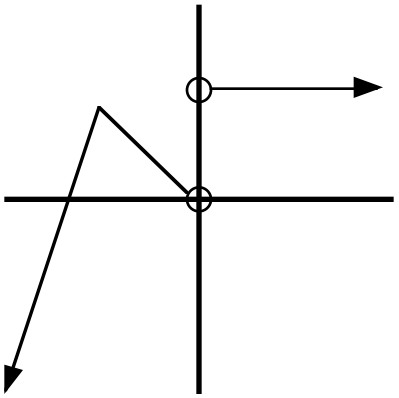
11. Find the inverse of $y = \sqrt[3]{x - 2} + 1$. Sketch the function and its inverse on the same grid.



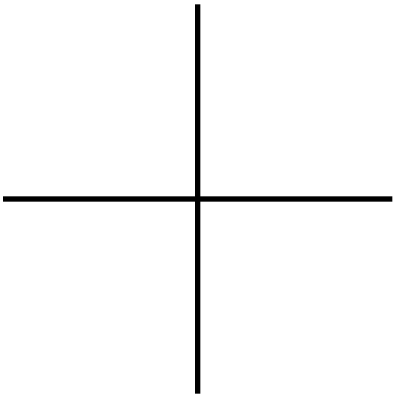
12. Find the inverse of $g(x) = \frac{3x}{x - 2}$.

13. Let $f(x) = \frac{ax^2 + 2}{x^2 - b}$. If f has horizontal asymptote y = 5 and vertical asymptotes $x = \pm 2$, then the value of a + b = _____?

Directions: Consider the graph shown at the right. On the grids below, sketch the requested shifts.

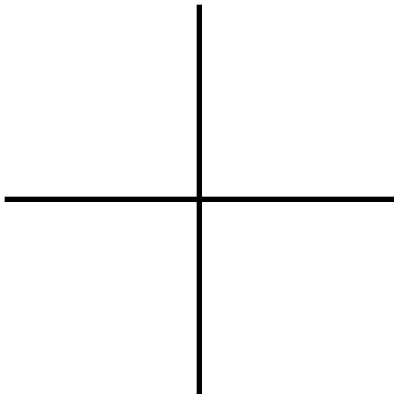


14.



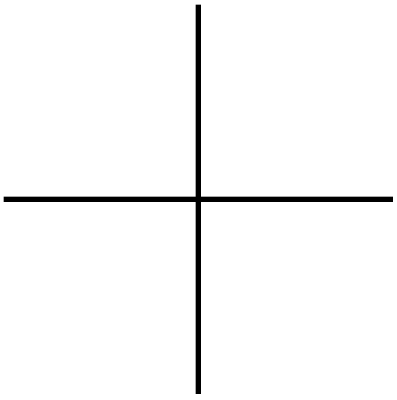
y = f(-x)

15.



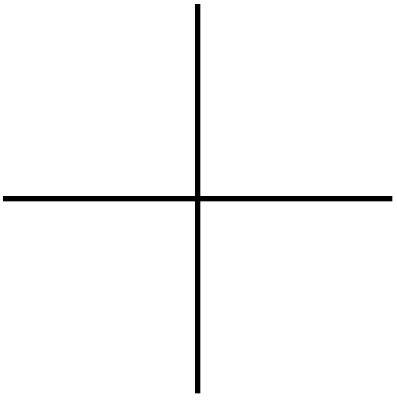
y = |f(x)|

16.



y = -f(x)

17.



y = f(|x|)

Directions: On a separate sheet of graph paper sketch each function. Make sure you number and label each graph. Plot at least 2 points for accuracy.

18. $y = |x - 4| + 2$

19. $y = \sqrt[3]{x - 5}$

20. $y = -(x-2)^2$

21. $y = \dfrac{x - 3}{x + 1}$

22. $y = \dfrac{x^2 + 2x + 1}{x + 1}$

23. $y = \dfrac{-2}{x^2 - 16}$

24. Let $w(x) = \begin{cases} 2x & \text{if } x < 0 \\ \sqrt{x} & \text{if } x \geq 0 \end{cases}$ Graph w(x), -w(x), w(-x), |w(x)|, and $w(|x|)$.