

Learning Activity – Section 6.2 – Symmetry and Piecewise-Defined Functions

Names: _____

1. Determine whether the graph of each equation is symmetric with respect to the y -axis, x -axis, origin, or none of these.

a. $2|x| - 5 = y^2$

Test for x -axis symmetry	Test for y -axis symmetry	Test for origin symmetry

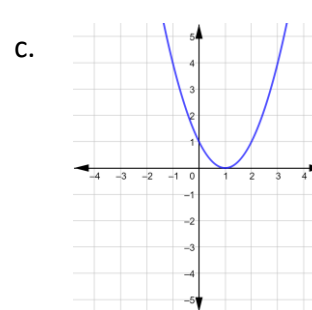
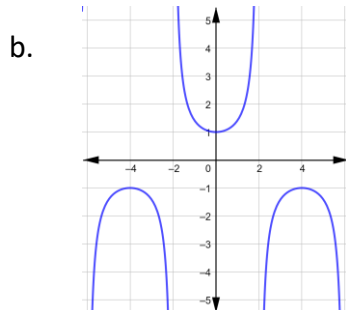
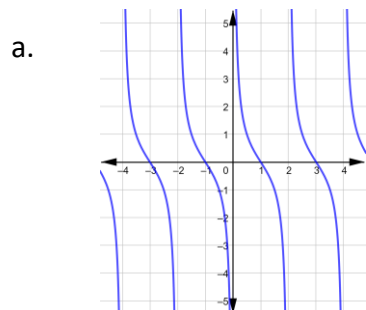
Conclusion: _____

b. $2 - y^4 = x^3 + 2x$

Test for x -axis symmetry	Test for y -axis symmetry	Test for origin symmetry

Conclusion: _____

2. Use the graph to determine if the function is even, odd, or neither.



3. a. Given $f(x) = 2x^3 - 5x$, find $f(-x)$.

b. Is $f(-x) = f(x)$?

c. Find $-f(x)$.

d. Is $f(-x) = -f(x)$?

e. Is this function even, odd, or neither?

4. Determine if the function is even, odd, or neither.

$$g(x) = 2x^3 - 5x + 12$$

5. Determine if the function is even, odd, or neither.

$$h(x) = x^4 - 3x^2 - 8$$

6. Determine if the function is even, odd, or neither.

$$p(x) = (3 - |x|)^5 + x^2$$

7. Evaluate the function for the given values of x .

$$f(x) = \begin{cases} \frac{2}{3}x + 5 & \text{for } -6 < x \leq 0 \\ (x-2)^2 & \text{for } 0 < x < 3 \\ -2 & \text{for } x \geq 3 \end{cases}$$

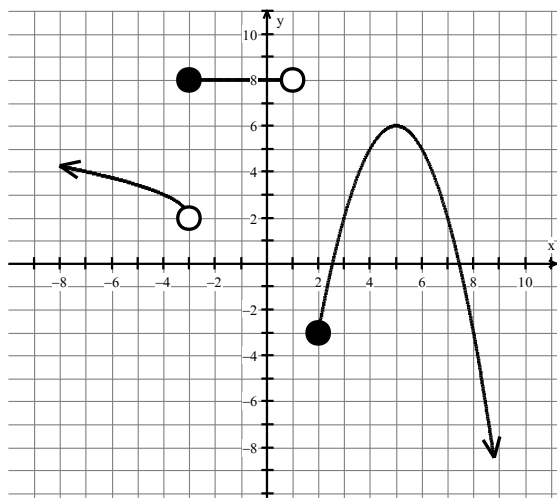
a. $f(1)$

b. $f(3)$

c. $f(0)$

d. $f(-10)$

8. Use the graph of the piecewise function $h(x)$ below to fill in the blanks in the set of function rules for $h(x)$.



$$h(x) = \begin{cases} \sqrt{-(x+3)} + 2 & \text{for } \boxed{} \\ 8 & \text{for } \boxed{} \\ -(x-5)^2 + 6 & \text{for } \boxed{} \end{cases}$$

9. Graph the piecewise function.

$$f(x) = \begin{cases} \frac{2}{3}x + 5 & \text{for } -6 < x \leq 0 \\ (x-2)^2 & \text{for } 0 < x < 3 \\ -2 & \text{for } x \geq 3 \end{cases}$$

