

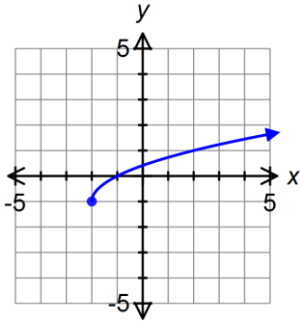
Name: \_\_\_\_\_

Period: \_\_\_\_\_

## SM2H Analyzing Functions & Transformations Review

Find the domain and range of each function.

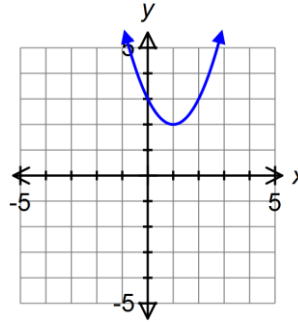
1.



Domain: \_\_\_\_\_

Range: \_\_\_\_\_

2.



Domain: \_\_\_\_\_

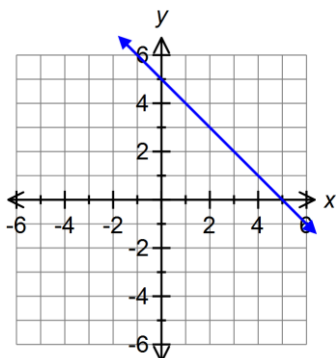
Range: \_\_\_\_\_

3. The taxi service Uber charges a base fare, which is a base fare that you are charged at the beginning of the ride, of \$2 plus 40 cents per mile, up to 50 miles. The amount charged is a function of the total number of miles driven.

- Write a function that represents this situation. \_\_\_\_\_
- What unit does the real world domain represent? \_\_\_\_\_
- What unit does the real world range represent? \_\_\_\_\_
- What is the real world domain? \_\_\_\_\_
- What is the real world range? \_\_\_\_\_

Find the intercepts of the given functions visually or algebraically. Write your answers as ordered pairs. You must show all your work for full credit.

4.



x-intercept: \_\_\_\_\_

y-intercept: \_\_\_\_\_

5.  $3x - 5y = -15$

x-intercept: \_\_\_\_\_

y-intercept: \_\_\_\_\_

Sketch a graph that matches the type of symmetry described:

6. Even; Symmetric with respect to the y-axis      7. Odd; Symmetric with respect to the origin

8. No symmetry; Neither even nor odd

Determine algebraically the type of symmetry for each of the following functions. Show all your work!

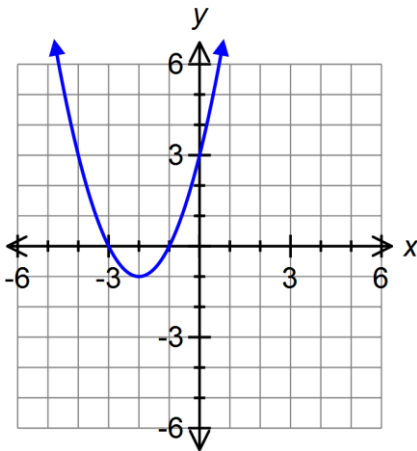
9.  $f(x) = -2|x| + 7$

10.  $g(x) = (x - 6)^2 + 2$

11.  $h(x) = 5x^3$

Use the graph to find the domain, range, intercepts, and the relative maximum or minimum of the function.

12.



Domain: \_\_\_\_\_

Range: \_\_\_\_\_

x-intercepts: \_\_\_\_\_ y-intercept: \_\_\_\_\_

Increasing: \_\_\_\_\_

Decreasing: \_\_\_\_\_

Positive: \_\_\_\_\_

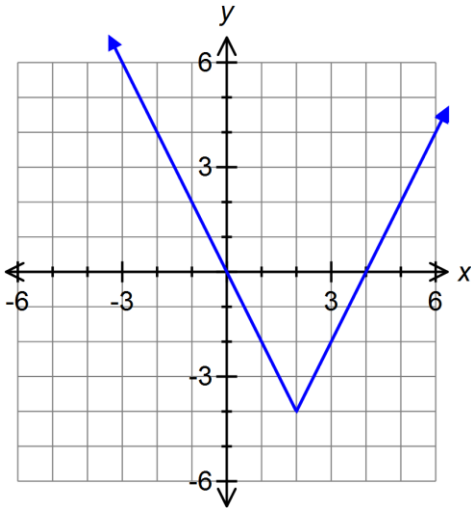
Negative: \_\_\_\_\_

Maximum/Minimum point(s): \_\_\_\_\_

Maximum/Minimum value(s): \_\_\_\_\_

Use the graph to find the intervals where the function is increasing, decreasing, constant, positive, and negative.

13.



Domain: \_\_\_\_\_ Range: \_\_\_\_\_

x-intercepts: \_\_\_\_\_ y-intercept: \_\_\_\_\_

Increasing: \_\_\_\_\_

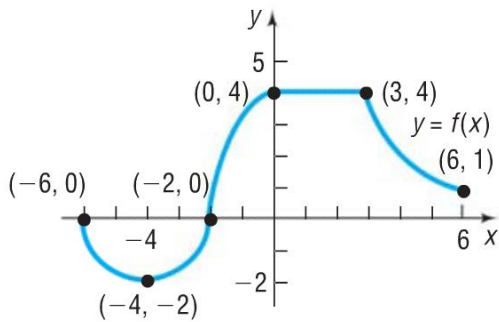
Decreasing: \_\_\_\_\_

Constant: \_\_\_\_\_

Positive: \_\_\_\_\_

Negative: \_\_\_\_\_

14.



Domain: \_\_\_\_\_ Range: \_\_\_\_\_

x-intercepts: \_\_\_\_\_ y-intercept: \_\_\_\_\_

Increasing: \_\_\_\_\_

Decreasing: \_\_\_\_\_

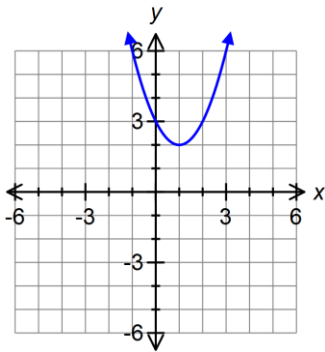
Constant: \_\_\_\_\_

Positive: \_\_\_\_\_

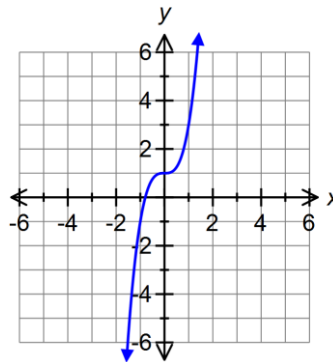
Negative: \_\_\_\_\_

Find the end behavior of each function based on its graph. Write the answers as limits.

15.



16.



For each function, identify the parent graph ( $y = \sqrt{x}$ ,  $y = x^2$ , or  $y = |x|$ ), then list the transformations needed to get from the parent graph to the final graph. Make sure to list the transformations in the order in which they should be applied.

17.  $y = \frac{1}{2}|x+2|-3$

Parent: \_\_\_\_\_

Transformations:

- 1.
- 2.
- 3.

18.  $y = -\sqrt{x-5}$

Parent: \_\_\_\_\_

Transformations:

- 1.
- 2.

19.  $y = -3|x-1|+2$

Parent: \_\_\_\_\_

Transformations:

- 1.
- 2.
- 3.

Use transformations to graph each function. Create a table that clearly shows the original points and the transformations that will be applied. Graph the final transformed function on the grid provided. State the vertex or starting point and the domain and range.

20. Graph this function:  $g(x) = -\frac{2}{3}|x-4|+3$

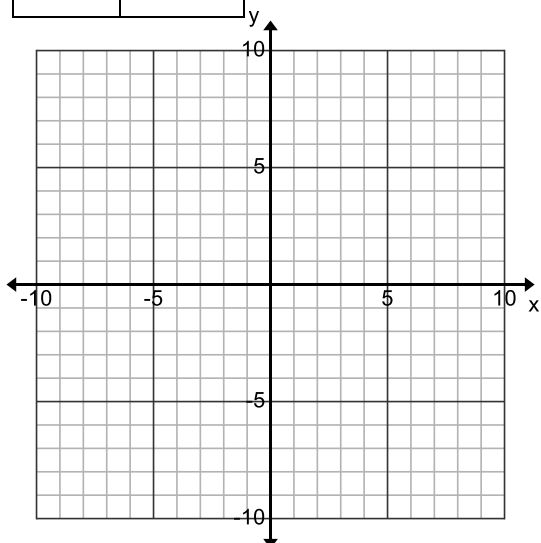
List Transformations in order here:

Tables:

**Parent Graph**

$f(x) = |x|$

$x$	$f(x)$
-2	
-1	
0	
1	
2	



Vertex: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

21. Graph this function:  $f(x) = \sqrt{-(x+4)} - 6$

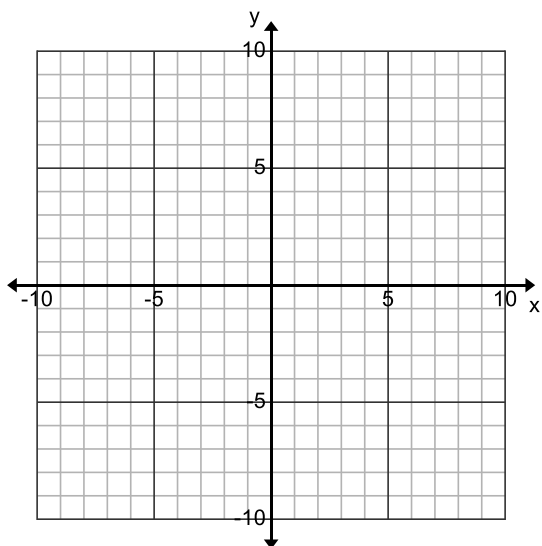
**List Transformations in order here:**

Tables:

**Parent Graph**

$$f(x) = \sqrt{x}$$

$x$	$f(x)$
0	
1	
4	
9	



Endpoint: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

22. Graph this function:  $y = -(x-5)^2 + 6$

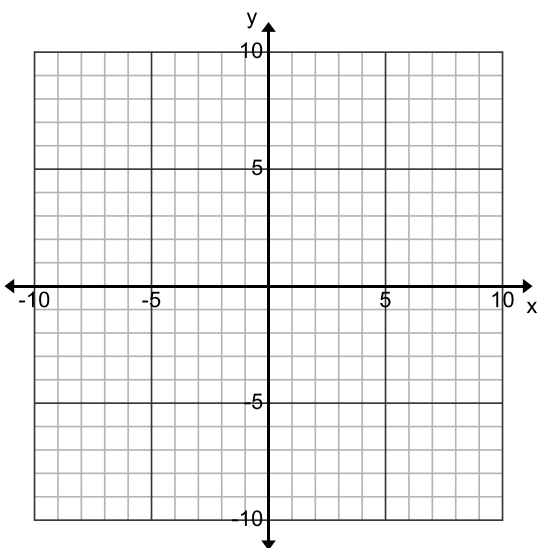
**List Transformations in order here:**

Tables:

**Parent Graph:**

$$f(x) = x^2$$

$x$	$f(x)$
-2	
-1	
0	
1	
2	



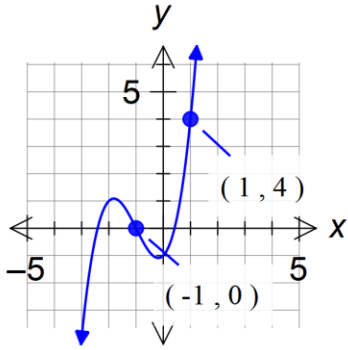
Vertex: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Find the average rate of change for each function on the specified interval. Show your work!

23.  $f(x) = x^3 + 3x^2 + x - 1$ , on  $[-1, 1]$



24.  $f(x) = |x - 3| - 2$ , on  $[-2, 4]$

25. The height of an object is shown in the table. Find the average rate of change from 1-3 seconds.

Time (seconds)	Height (feet)
0	1
1	4
2	9
3	16

26. Write a complete sentence explaining what your answer means.