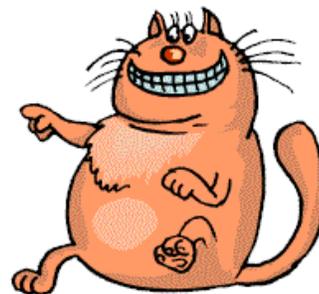


# Geometer's Sketchpad Activity Name \_\_\_\_\_

functions.gsp

## “Specialty Parent Functions”



### 1. Constant Function

Describe a constant function: \_\_\_\_\_

Write a general equation for a constant function: \_\_\_\_\_

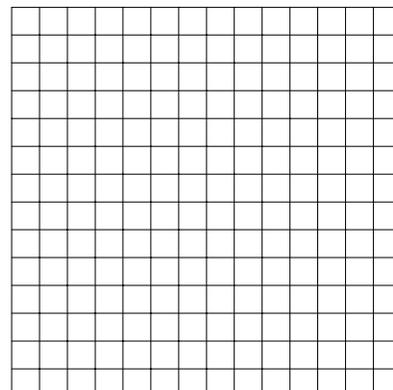
### 2. Linear Function

Describe the graph when  $m$  is positive: \_\_\_\_\_

Describe the graph when  $m$  is negative: \_\_\_\_\_

Describe what happens to the graph as  $b$  changes? \_\_\_\_\_

Under what conditions is a linear function called the Identity Function? \_\_\_\_\_



Sketch the Identity Function

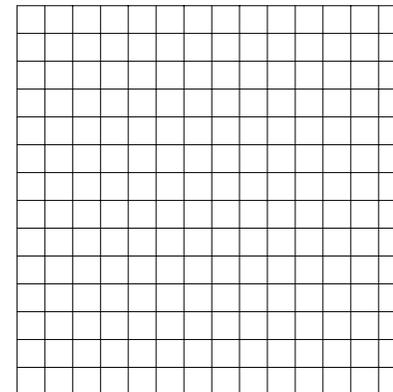
### 3. Quadratic Function

Write the equation of the parent function. \_\_\_\_\_

Describe what happens when  $a$  changes. \_\_\_\_\_

Describe what happens when  $c$  changes. \_\_\_\_\_

Does the Quadratic Function have an inverse which is also a function? Explain. \_\_\_\_\_



Sketch  $y = -2x^2 + 4x - 5$

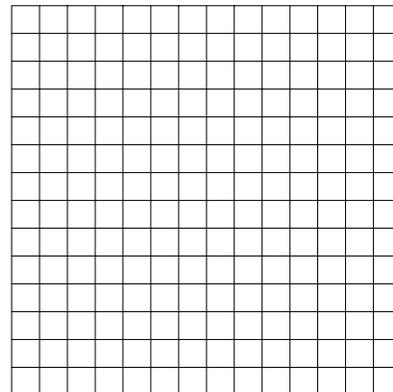
### 4. Cubic Function

Write the equation of the parent function. \_\_\_\_\_

Write the equation of the full form function. \_\_\_\_\_

Sketch the graph  $y = 2x^3 + 4x^2 + x + 6$

What is the domain of this new function? \_\_\_\_\_



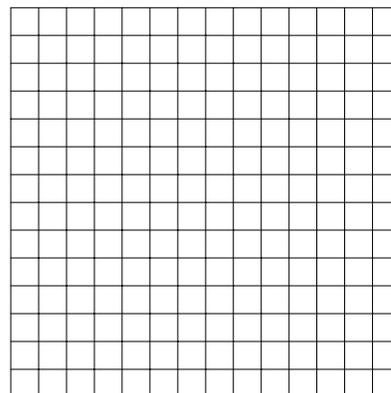
### 5. Square Root Function

Write the equation of the parent function. \_\_\_\_\_

What is the domain of the parent function? \_\_\_\_\_

What is the range of the parent function? \_\_\_\_\_

Sketch the parent function AND the function obtained when  $a = -1$ ,  $b = 0$ , and  $c = 0$ . Is this new sketch a function? Explain.



### 6. Cube Root Function and Rational Function

Which of these two functions (using the parents) has a domain covering all real numbers? Explain.

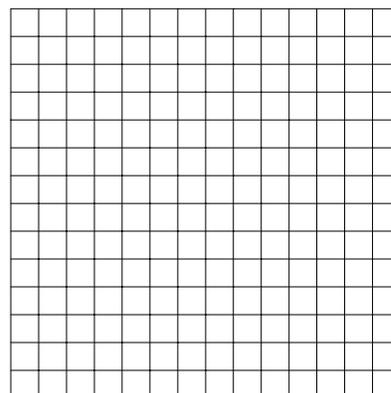
Which of these two functions (using the parents) has a range covering all real numbers? Explain.

### 7. Absolute Value Function

What is the range of the parent function? \_\_\_\_\_

Sketch  $y = 2|x - 4| + 3$ . What is the range of this new sketch?

What value in the full form equation is affecting the range of the sketches? \_\_\_\_\_



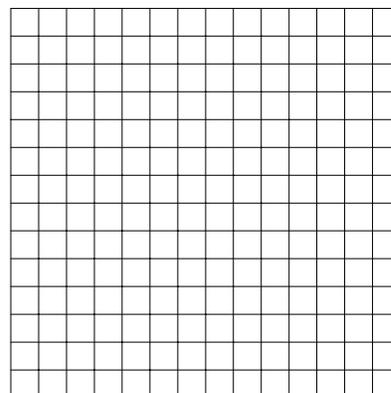
### 8. Natural Log Function

The graph may appear to stop as it nears the y-axis. Zoom in by enlarging the grid. (Grab the red dot on the x-axis and drag.) Sketch the **true** graph of the parent function.

What is the domain of the parent function? \_\_\_\_\_

What is the range of the parent function? \_\_\_\_\_

Does the parent function have an inverse which is also a function? Explain. \_\_\_\_\_



### 9. Exponential Function

What is the domain of the parent function? \_\_\_\_\_ the range? \_\_\_\_\_

Does the parent function have an inverse which is also a function? Explain. \_\_\_\_\_

Make a hypothesis as to which other function you have seen in this activity might be the inverse of the parent exponential function. \_\_\_\_\_