Exploring Transformations Review from Math 3 Activity

Directions: Using desmos (<u>www.desmos.com</u>), explore the different transformations of the parent function $y = x^2$.

- **Step 1:** Plot the function $y = x^2$ in the top #1 spot. (This function will stay here. The rest of the functions will be plot in the #2 spot.)
- Step 2: Keeping $y = x^2$ in the first spot, graph the function $y = x^2 + a$. Add a slider to a and move it around to see what happens to the graph

What do you notice happens to the graph when a is positive? When a is negative?_____

Name of Transformation:_____

• Step 3: Graph the function $y = (x + a)^2$. Add a slider to a and move it around. What do you notice happens to the graph when a is positive? When a is negative?

Name of Transformation:_____

 Step 4: Graph the function y = (ax)². Add a slider to a and move it around. What do you notice happens to the graph when a is between -1 and 1? When a>1 and a<-1?

Name of transformation:

• Step 5: Graph the function $y = -ax^2$. Add a slider to a.

What do you notice happens to the graph when a is negative?

Name of transformation:_____

Step 6: Graph the function y = a(x)². Add a slider to a and move it around.
What do you notice happens to the graph when a is between -1 and 1? When a>1 and a<-1?

Name of transformation:_____

Describe the transformations of the following functions from left to right:

- 1. $f(x) = -3\left(\frac{1}{2}x + 2\right)^2 6$
- 2. $a(x) = \frac{1}{2}|2x+1| 3$

3.
$$g(x) = -4\sqrt{4x+1} - 4$$

4.
$$f(x) = 8\left(\frac{2}{3}(x-4)\right)^3 + 5$$

5.
$$f(x) = -\frac{1}{3}\left(4x + \frac{1}{2}\right)^2 - 9$$