**Investigating Graphs of Functions**

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| As you investigate functions it is important that you understand what is expected when you are asked to “sketch” a graph. To **Sketch a Graph** means to show the approximate shape of the graph in the correct location with respect to your axes, **and** to **clearly label** **all key points**. |

1. Use Desmos to graph the function .
2. **Sketch** the graph on your paper.
3. What are all the possible values of *x* that will give a result for *f(x)?* Make a table for *x* in the interval (–5, 6). Did you find any values that will not work? What is the largest value you can substitute for *x?* Why is can’t you use larger values? What is the DOMAIN for this function?
4. Does the graph ever cross the horizontal line *y = 50?* What about *y= 500?* How do you know?
5. What is the smallest possible for *f(x)*? What are all the possible values for *f(x)*? Describe the RANGE for the function *f.*
6. Does the line *y = x* intersect the graph of the function *f*? Use Desmos to estimate the point of intersection.
7. Use Desmos the graph each of the following, and sketch a graph of each, AND clearly describe the domain and the range for each.
8. Enter the function into Desmos. Then, in the next line, enter  *“s(a)”*  and then create a slider for *a* that goes from -10 to 10. As you slide along, what are the values for s(x)? Where does the value change? What happens when *a = 1?* Use this to give a domain and range for the function *s.*