***Pre Calculus Group Project—Be sure to read ALL instructions***

***Part 1****: Working in groups of 2 or 3, for each family of curves, study the effect of* ***a*** *on the graph. Using your calculator, provide a total of 4 graphs for each family. Give a brief statement about the effect of a on the graph. Be sure to include the window used for each of the four graphs.*

1. ***Family 1: Lituus***

***Equation:*** $r^{2}= \frac{a^{2}}{θ}$

1. ***Family 2: Lemniscate***

***Equation:*** 

***Part 2:*** *Now it is time for you to get creative. Make up your own family of curves, and complete the same kind of analysis as you did in Part 1.*

*Criteria*

1. *Choose a creative name for your family*
2. *Provide an equation with a constant (a) in it. You will need the a value so that the graphs can vary.*
3. *Using your creativity and your calculator, provide a total of 4 graphs for the new family. Give a brief statement about the effect of a on the graph. Be sure to include the window used for each of the four graphs.*

***\*\*\*YOU MAY NOT USE EQUATIONS FOR ROSES, SPIRALS, LIMACONS, OR ANY OF THE EQUATIONS FROM PART 1!***

***\*\*\*IF YOU LINK YOUR CALCULATOR TO PRINT YOUR GRAPHS AS A FINAL GRAPH, YOU MUST PROVIDE A HAND DRAWN SKETCH AS WELL!!***