Project – Art with Conics

Conic sections are used in a wide variety of fields and are present in the world around you. You are going to use conic sections to create a work of art. This will require you to identify the presence of curves in familiar images and connect them to mathematical forms. The picture below is a very simple example. *Your picture should incorporate greater complexity and creativity.* This project is due **11/20/22**

Directions:

Go to Desmos and log in in with Google or create an account. Create your design in Desmos by typing mathematical equations in the left panel. If you wish to replicate an image, you may choose to paste it in Desmos and then create the curves to trace it. If you are not sure where to begin, start creating some graphs and see if an image emerges (see Cookie Monster example)

Your work should include at least 15 equations, with at least 2 of each type of conic section (circle, ellipse, parabola, hyperbola). You may include other types of graphs if you wish (lines, sine function, …)

Share your work of art with Ms Jackson in Canvas. In Desmos Click in the top right corner:
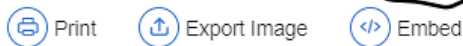
1.
Share Your Graph

Share this link:

https://www.desmos.com/calculator/aisbn   Copy

Print   Export Image   Embed

Print a pdf and attach it in Canvas
Your first name should be in the name of the file.

2.
Share Your Graph

Share this link:

https://www.desmos.com/calculator/aisbn   Copy

Print   Export Image   Embed

Paste the link in Canvas

If you have issues submitting in Canvas, email your pdf & link to Ms Jackson at msjacksoncghs.gmail.com

Simple Example (Yours should be more complex):

1. A circle makes up the outline of the face. The equation of this circle is $x^2 + y^2 = 5^2$.
2. The right eye is a circle with center at (2,2) and radius 1. The equation is $(x-2)^2 + (y-2)^2 = 1$. The left eye is a circle centered at (-2,2) → $(x+2)^2 + (y-2)^2 = 1$
3. The smile is a parabola. The vertex is (0,-4) and the point (2,-3) is on the parabola. By solving for a, you get the equation $y = 3/16 \ x^2 - 4$. Graph the smile only for values between 4 and -4 by restricting the domain (after the equation type $\{-4 \le x \le 4\}$)
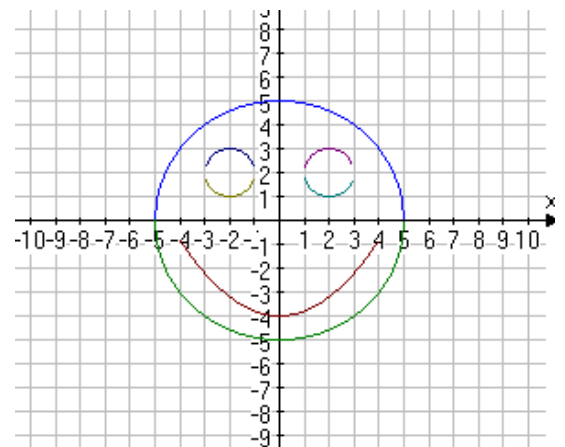
This project will be entered in the category *Quizzes, Tests, & Projects* in Infinite Campus. You may search the internet for ideas, but you will receive a 0 if you plagiarize. This includes making minor tweaks to an existing work. See Ms Jackson's website for past works by Cedar Grove students, including the Cookie Monster example referenced above (…More → Student Work)

RUBRIC

Below expectations < 70	Meets expectations 70 - 85	Exceeds expectations >85
Instructions not followed. Not all types of conic sections represented.	Instructions followed. All types of conic sections represented.	Picture includes more components than required.
Picture is insufficiently complex (was not challenging to create). Fewer curves than required.	Picture is original and has complex elements. Image contains at least 15 curves.	Remarkable complexity and/or originality.
Mathematical representations not accurate. Domain not provided where required	Equations are accurate. Following the steps provides expected results.	Deriving equations required great effort.