Conics Art Project

Create by hand an original work of art that can be represented by equations of lines and conic sections. The artwork must be in color. NO equations from the other project may be used.

Your picture MUST include at least the following:

1. ten (10) conics, to include a minimum of
   a. 2 hyperbolas
   b. 2 ellipses
   c. 2 circles
   d. 2 parabolas
2. five (5) lines, at least 2 of which are neither vertical nor horizontal.

Your project must include the following:

1. **Technical version of picture**. This is a detailed graph with each line and conic clearly labeled on graph paper (8.5" x 11"). Clearly identify the x and y axis. Each conic and line should be numbered and the number highlighted and color-coded by conic. For example, circle numbers could be highlighted in blue, parabola numbers in yellow, etc. Do not include anything else on this paper. It must be neat, accurate, and easy to read.

2. **Equation sheet(s)**

a. Your work needs to be organized in sections by conic/line type. Each equation should be numbered to match the number highlighted on the technical drawing.

b. Write the equations as shown and find the following:

   1. Circle $x^2 + y^2 = r^2$ center, radius
   2. Ellipse $\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$ center, vertices, foci
   3. Hyperbola $\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$ center, vertices, foci, asymptotes
   4. Parabola $(y-k)^2 = \pm 4p(x-h)$ vertex, foci, directrix, axis of symmetry
   5. Line $y = mx + b$ slope, y- intercept

c. You must include the restricted domain or range (to nearest hundredth, if not an integer)

d. All work must be shown neatly, and in an organized manner.

3. **Artistic rendering of picture.**

a. This is a tracing of the technical version, colored using the medium of choice. There are no labels, just the completed color picture.

b. Use 8.5" x 11" paper.

c. Be creative in your coloring.

This is worth 180 points, similar to the other conics project. It is due Tuesday, Sep. 9th. I will accept it early, but I will NOT accept it late.

Conics Art Project Rubric

Please include this as the first page of your project packet

Name: _____   Period _____

Accuracy of Mathematics All equations are accurate. Work shown neatly. All domains/ranges correctly stated	80 points	_____ / 80 points
Minimum requirements Met: 2 cirlce, 2 ellipses, 2 hyperbolas, 2 parabolas, 5 lines, 2 additional conics of your choosing All sections included on equation sheet	50 points	_____ / 50 points
Creativity Design colored neatly, design appeal, creativity	30 points	_____ / 30 points
Degree of Difficulty	20 points	_____ / 20 points
Total Score		_____ / 180 points