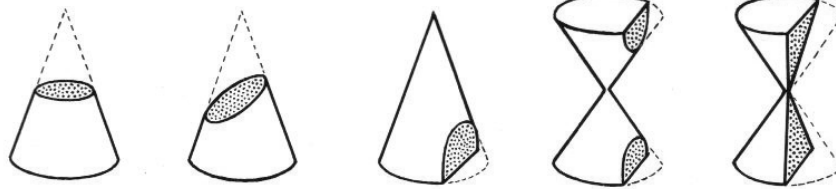


## Conic Sections Project

Introduction: The next unit we will be covering in class is about special curves called Conic Sections. This project is to help you start to discover the beauty of conic sections, where they are located in every day life, their equations, and other such uses. By completing this project you will have a better understanding and therefore will have a much happier time studying these curves.

Task: Your job is to write me a research paper about conic sections. It may sound hard but I will break it up into parts for you. You will have the next 3 classes to research and write your paper before you turn it into me next week. Please make sure you are working as this is going to be worth a hefty amount of points.

Step 1: Conic sections are important and they show up a lot in real life. But what exactly are conic sections? Well, that is left up to you to find out, but here is a hint for you:



The first step in this project is to come up with a hypothesis, a guess, as to what conic sections are, how we make them, etc. Use about a paragraph or two to give your guess on it. Think about what these pictures are showing; think about the word conic, what do they look like/sound like? Write this beginning of your paper before moving on.

Who cares about what they are and how we get them. This project is about discovering how they relate to the real world. You can make this project into two things. You can make this the same dumb math project you have done before, where you just do it to get it done, or you can really dive into this, find examples that may or may not be obvious, make guesses, conjecture, and find how they relate to you. To get started think about how these appear in architecture, maybe the capital building in DC or ancient Roman and Greek buildings.

Step 2: Do some research and define what a conic section is. List the four main curves that make up the conic sections, briefly explain here.

Step 3: Devote a paragraph to each conic section. Find their general equations and any other equations you may see them take. Describe the curves, are they functions, what are the domain and range like, etc. Be creative, don't limit yourself, look for defining characteristics. Then find four examples of each conic section, giving 16 total. Where do you find them, are they better to use than others? Be creative here too; don't limit yourself to what I asked.

Step 4: Write a conclusion. What did you find interesting? Is there a way this relates to you that you never knew? How does your hypothesis line up with what actual conic sections are?

Note: This is a very open ended assignment. Many people may approach each step a little different. If you think you may be headed down the wrong direction just ask.

Points breakdown:

- Introduction, including providing a hypothesis and reasoning for hypothesis (6 points)
- Introduction to conic sections, including providing a definition and brief description (6 points)
- Description of each conic section including its general equation, description of a graph or shown graph, and 4 real world examples (32 points, 8 points each)
- Conclusion, closing thoughts and comparing hypothesis (6 points)

Total: 50 points

This paper does involve research so I expect there to be works cited. I don't care what format you use: MLA, Chicago or APA, just keep it consistent. Have trouble citing things? Visit <http://www.calvin.edu/library/knightcite/> which conveniently sites things for you.

While this project is very heavily research oriented, we do need to advance on so all websites will be accepted. Feel free to use wikipedia, purplemath, kahn academy, etc. Google will be your friend, let it guide you to your finished project. I will also bring my own textbooks and other resources as I find them. You should have at least 3-4 sources for this paper.

Papers will be submitted electronically via email, and returned electronically as well. Submit them to my email [weberzac@allendale.k12.mi.us](mailto:weberzac@allendale.k12.mi.us) When I receive your paper I will send a confirmation back to let you know I have it.