

Conic Sections

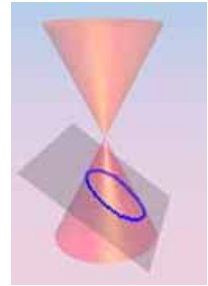
Introduction

The next unit we will be covering in class will cover a special group of curves known as conic sections. This lesson is designed to introduce you to the idea of conic sections and help you recognize uses of conic sections in the world around you. This webquest will guide you through this discovery process and help you prepare a report that will turn in at the end. To you navigate through the webquest there will always be links on the sides of the pages that can connect you to any other part of the webquest.

- Introduction
- Task
- Process
- Resources
- Learning Advice
- Conclusion

Task

There are four curves that make up the family of conic sections. It is your job to discover exactly which curves they are. But wait, what are conic sections and why are they called that? I guess that will be the first stop on your journey to preparing for the upcoming unit. I will not, however, leave you clueless. The diagram on the right is a hint to what conic sections are. But who cares about knowing just what these curves are, let's find out what they're worth and what they're good. Since this is a math class, however, we will look at the mathematical aspects of each of these curves.



- Introduction
- Task
- Process
- Resources
- Learning Advice
- Conclusion

Process

Your report on conic sections is to include the following parts:

- a) Explain your hypothesis of what conic sections are from the diagram in the “Task” section (8 pts.)**
- b) An introduction that defines *conic sections* and lists the four main curves that make up the family of conic sections (8 pts.)**
- c) An explanation of each of the four curves, including a diagram, their general equation and a graph (28 pts.)**
- d) Pictures and explanations of four real world examples of each of the different conic sections (40 pts.)**
- e) A conclusion explaining what you learned, what you found interesting and how the definition of conic sections differed and was similar to your hypothesis (16 pts.)**
- f) Bonus points for coming up with a creative story involving conic sections in your life (16 pts.)**

- Introduction
- Task
- Process
- Resources
- Learning Advice
- Conclusion

Resources

The following WebPages will help in understanding conic sections and the curves that make up the family of conic sections.

<http://www.krellinst.org/UCES/archive/resources/conics/>

http://www.xahlee.org/SpecialPlaneCurves_dir/ConicSections_dir/conicSections.html

<http://www.math2.org/math/algebra/conics.htm>

<http://mathworld.wolfram.com/ConicSection.html>

http://en.wikipedia.org/wiki/Conic_section

- Introduction
- Task
- Process
- Resources
- Learning Advice
- Conclusion

The following websites will help you locate real-world examples of conic sections.

<http://www.pen.k12.va.us/Div/Winchester/jhhs/math/lessons/calc2004/appellip.html>

<http://www.pen.k12.va.us/Div/Winchester/jhhs/math/lessons/calc2004/apphyper.html>

<http://www.pen.k12.va.us/Div/Winchester/jhhs/math/lessons/calc2004/appparab.html>

<http://britton.disted.camosun.bc.ca/jbconics.htm>

Learning Advice

This can easily turn into just another one of those boring reports that you have to do in just another boring math class. Try to make your report fun and unique. There are lots of examples of conic sections in the world around us. Make your report a story. Here's a fun way to get motivated, how have conic sections in the US Capitol Building had an influence? Try to find unique examples that you do not think any one else will be using. This is a chance to be creative and think outside the box. However, do not let yourself get bogged down by this report. There is a lot out there in the World Wide Web and it is easy to get lost and waste time. Do not let this report increase any hard feelings towards mathematics.

- Introduction
- Task
- Process
- Resources
- Learning Advice
- Conclusion

Conclusion

Now that you are experts on conic sections or at least have a strong background in them, we can enter the next unit and take a more in depth look at the mathematics surrounding conic sections. In this unit we will learn about writing equations for the different types of conics, determining shifts and translations in conics from the changes in the equations and of course more examples of conics in our own lives and in the world around us.

- Introduction
- Task
- Process
- Resources
- Learning Advice
- Conclusion