

Robot Portfolio

Directions: In this portfolio, you will be graphing conic sections in order to design a robot. For all graphs that will be submitted, use graph paper.

Select the link to access graph paper.

[Centimeter Grid Paper](#)

Introduction

Congratulations! You have been selected by an engineering firm to design their newest robotic prototype. As of this moment, it is your job to come up with a purpose for the robot and incorporate various types of conic sections into its design.

Task 1

Respond to the following questions.

1. What will your robot be able to do?
2. Which conic sections do you plan on using in your design? Make sure to use at least three.

Task 2

Choose three of the four conic sections that you learned about in this unit: parabolas, circles, ellipses, and hyperbolas. Make a detailed graph of each one that you intend on incorporating into your design. For each of these graphs, be sure to label important points such as vertices, foci, axes, and directrices. Also, identify each graph with its equation. Make sure that the equation is the same one that will be used in your final design.

Task 3

Make a graph that combines all three of your conic sections from Task 2. Be sure to incorporate other aspects of the drawing that will make your robot complete. For example, you can draw a segment to have the two parts of a hyperbola connect.

Task 4

Respond to the following questions.

3. Is your robot's design structurally sound? Use features of the graph to justify your response.
4. Does your robot accomplish its stated purpose from Task 1? Justify your response by referencing the robot's overall structure, including its use of conic sections in its design.

Submission

In your submission, make sure to submit your answers to all questions in Tasks 1 and 4 and all graphs from Tasks 2 and 3.