Project Title

3D Modeling A Vase

Your name if you chose to share | Course Name | Teacher's name | **MATH254Calculus ProfessorLiangmin Zhu**

Problem Overview

Add a brief overview or summary of your project. (Use the Bullets button on the Home tab to remove the bullets.)

In the previous two sections we have looked at lines and planes in three dimensions and while these are used quite heavily at times in a Calculus class there are many other surfaces that are also used to take a look at those.

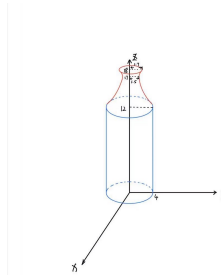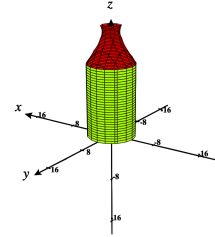Using what we learned, we chose a vase for measurement and research.

Manual Skecth

- Add your manual sketch with measurements here.

Final Figure

- Add the final figure that you plotted in CalcPlot3D here.

Original Object
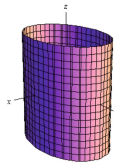
- Add a figure of your original object here.

Math Equations

- Add all the math equations that you have used to model your object here

Here is a sketch of typical cylinder with an ellipse cross section.


The cylinder will be centered on the axis corresponding to the variable that does not appear in the equation.

Be careful to not confuse this with a circle. In two dimensions it is a circle, but in three dimensions it is a cylinder.

Hyperboloid of One Sheet
Here is the equation of a hyperboloid of one sheet.

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1$$

Here is a sketch of a typical hyperboloid of one sheet.
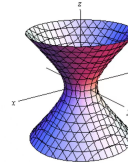
The variable with the negative in front of it will give the axis along which the graph is centered.

Hyperboloid of Two Sheets
Here is the equation of a hyperboloid of two sheets.

$$-\frac{x^2}{a^2} - \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$$

Reflection

- Summarize your reflection here.

We live in a three-dimensional world, and all kinds of objects in daily contact have three-dimensional shapes. Although we are always in touch with and experience three-dimensional forms, we use plane thinking to think and express them more. So in-depth experimental exploration can help us better understand what we have learned.