**SM3 Final Project (100 points)**

**Objective:** You are going to use your knowledge of solids of revolution to solve a design problem.

A company is hosting a contest of who can create the best Mother’s Day gift for them to sell. The gift must be a 3-D object formed by revolving a set of functions around an axis on a graph. The gift can be anything that you think a mother would like (vase, pot, sculpture etc…). You and a partner will pitch an idea that you think would sell. The winning team in each class will receive a prize (extra credit).

**Requirements:**

Piecewise “function” identified (20 points)

* At least 5 pieces (2 non-linear)
* Includes domain for each piece
* Written neatly and clearly on project

Graph of piecewise function (10 points)

* Accurate
* Drawn neatly and large on project

3-D object (30 points)

* State which axis it was revolved around
* Colored
* Accurate
* Creative
* \*extra credit if presented in a more creative way than a drawing

Write the pitch to the company (20 points)

* Why should yours be picked?
* Why would moms like it?
* What materials will you use?
* What dimensions will it be?
* How much will it cost to make and how much would you sell it for?
* Professionally written and typed.

Presentation (20 points)

* Must be here on the day of the final (27th or 28th) or you will lose these points

**Example:**

Piecewise function:

$$f\left(x\right)=\left\{\begin{array}{c}x if 0\leq x\leq 1\\-x+2 if 1\leq x\leq 2\end{array}\right.$$

2-D Graph:



Gift:

 Revolved around the x-axis

Write-up:

We have created a top that mothers will enjoy everywhere. This is the perfect Mother’s Day gift because moms love to play games. It is going to be made out of wood. They cost $2 to make and I will sell them for $5 for a profit of $3 each. The top will be 2 inches tall and 2 inches wide. Each top will be hand painted for a special touch.