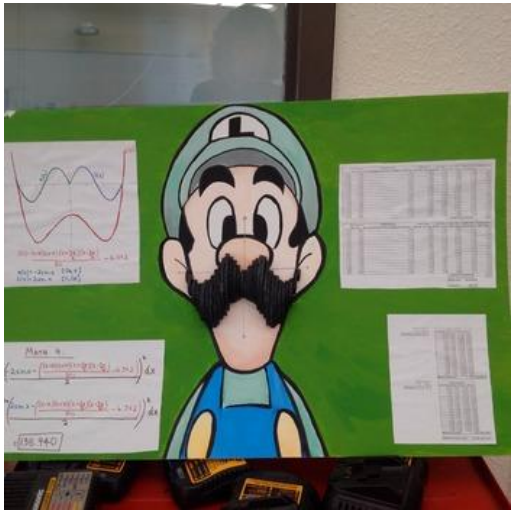
Calculus Project - Volumes of Solids with Known Cross Section

Make a physical model of a solid with a known cross section on a base with a standard function. The following guidelines apply:



1) The base function(s) can be any non-linear function except a parabola, square root, or absolute value. (If using 2 functions, the 2nd can be any of your choice).

2) The cross section can be any shape except a rectangle of constant height. If you choose a square or rectangle of changing height, your max grade will be a 90.

3) The materials can be no thicker than 0.5". Your model must be at least 6 inches long and have at least 12 cross sections.

4) Bonus points will be given for final shapes that look like a real-life object.

With your model, you must have a sheet with the following:

1. A detailed graph of your base showing the partitions.

2. The exact volume as defined by a definite integral. You must show all work that leads to your solution.

	Calculus Rubric: **Volumes of Cross Section** names:		
		PROFICIENT	**ADVANCED**
Model	**45**	• Model is mounted on a board(not poster board or butcher paper.} (5) • Material for cross sections are no more than .5" thick.(5) • Model is at least 6 inches long. (5) • At least 12 cross sections are present on model. (5) • Model is neat and shows attention to detail. (10)	In addition to PROFICIENT criteria … • Model is decorated in a creative way.(5) • Model depicts a character or object.(10)
		30	30 - - - - - - - - - - - 45
Content Calculus Information	**50**	• First base equation is nonlinear, and is not quadratic, square root, or absolute value. (5) • Base is graphed neatly on graph paper.(5) • Base area is shaded, and partitions are drawn.(10) • All work is shown clearly for the exact volume.(10) • Answers are correct.(10)	In addition to PROFICIENT criteria … • Base equation(s) and cross sections are of a higher difficulty.(5) • Work is typed using an equation editor.(5)
		40	40 - - - - - - - - - - - 50
Collaborative Work	**10**	These last ten points will be a combination of teacher and partner input on how well your time is used, and how well you work as a team.	

Comments:

Final Grade