Name:_____

Math 301 Fall 2016

Project - Due 12/5

You may work in groups, and each group need only turn in one written report, but please include a summary of each group member's contribution in addition to the written report. Be sure to write complete explanations with each computation. Like starred homework problems, you will be graded on the correctness of the mathematical computations, as well as your written explanations. Have fun!

For this project we locate a trash dumpster in order to study its shape and construction. We then attempt to determine the dimensions of a container of similar design that minimize construction cost.

1. First locate a trash dumpster in your area. Carefully study and describe all details of its construction, and determine its volume. Include a sketch of the container.

2. While maintaining the general shape and method of construction, determine the dimensions such a container of the same volume should have in order to minimize the cost of construction. Use the following assumptions in your analysis:

- The sides, back, and front are to be made from 12-gauge (0.1046 inch thick) steel sheets, which cost $0.70 per square foot (including any required cuts or bends).

- The base is to be made from a 10-gauge (0.1345 inch thick) steel sheet, which costs $0.90 per square foot.

- Lids cost approximately $50.00 each, regardless of dimensions.

- Welding costs approximately $0.18 per foot for material and labor combined.

Give justification of any further assumptions or simplifications made of the details of construction.

3. Describe how any of your assumptions or simplifications may affect the final result.

4. If you were hired as a consultant on this investigation, what would your conclusions be? Would you recommend altering the design of the dumpster? If so, describe the savings that would result.