MA 308

Homework #6

Due Thursday, March 3

1. Complete the Soda Can Problem. You are not required to use calculus to find an exact answer (but it would be nice if you do!). Other approaches that lead to an extremely good approximation will work and are accessible to middle school students. Be sure you carefully describe what your solution is and how you got it. Include copies of any graphs that you use.

2. *Say it With Symbols*, p. 48, #25. Make careful diagrams of your area models. In addition, include a verbal explanation for part b.

3. Draw a precise and careful drawing of a cube cut up into pieces to represent the equation $(x+1)^3 = x^3 + 3x^2 + 3x + 1$. You may have to show several different views. You may wish to learn how to do this using Google SketchUp.

4. *Say it With Symbols*, p. 58, Problem 4.2, parts A, B, and C1.

5. Below are functions described by recursive formulas. Identify which of these functions are linear, quadratic, exponential, or none of these. Justify your answer. If the function is linear, quadratic, or exponential, provide an explicit formula.

   (a) $f(1) = 5$ and $f(n) = 3f(n-1)$ for $n > 1$.

   (b) $f(1) = 5$ and $f(n) = 3 + f(n-1)$ for $n > 1$.

   (c) $f(1) = 5$ and $f(n) = 3n^2 + f(n-1)$ for $n > 1$.

   (d) $f(1) = 5$ and $f(n) = 3n + f(n-1)$ for $n > 1$.

6. Begin reviewing the Ongoing Course Notes and the homework for Exam #2, to take place on Thursday, March 10.