Homework 5 - Math 142, Frank Thorne (thornef@mailbox.sc.edu)

Due Tuesday, September 24.

(a) No essay question from Thompson this week. But note that one or more will be on the midterm.

(b) Stewart, Ch. 8.1, 7-10. For each problem, before you do the calculus, draw each curve and guess its arc length. After solving the problem, verify that your guess is approximately correct. (Use a calculator or computer to check your numerical guesses if needed.)

(c) Find the volume of a sphere with radius r.

(d) Find the volume of a hollowed out sphere of radius r, with a smaller sphere of radius s removed from the center. (Hint: there is an easy way!)

(e) Find the volume of a circular cone of radius r and height h.

(f) Find the area of a square pyramid with base length b and height b.

Important. For all volume problems, please sketch the solid whose volume you are computing, and draw and label a typical slice.

(g) Stewart, Ch. 6.2, 1-10; even required, odd recommended.

(h) Stewart, Ch. 6.2, 41, 42, 51, 68, 70.

Additional problems:

(a) Stewart, 6.2, 1-10 odd

Bonus (2 points):

(a) Stewart, "Discovery Project" on p. 532. There will be no contest, but find something interesting to say.