MA202 Problem set 11

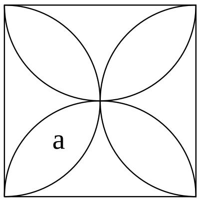
April 26, 1999

Below is our last set of problems. These problems are based on geometry.
Problems 3 and 4 from set 10 are due on Tuesday, 27 April.
The problems from set 11 will be due on Thursday, 29 April.
Our final exam is bright and early Monday morning, at 10am. Problems for the final will be based on set 11, set 10 #3,4 and the problems on the first three tests. I will be available after class on Thursday and on Friday from 1-2:30 for questions.

1. If there are 3 feet in a yard, how many square feet are in a square yard? Draw a picture to justify your answer. How many cubic feet are in a cubic yard?

2. If pine bark mulch costs \$3 for 2 cubic feet, what is the price for a cubic yard of pine bark mulch?

3. (§12.2 #25b) Four semi-circles are drawn at the midpoints of the sides of a 1×1 square. Find the area of the region labelled a. (Hint: See 25a).)



4. Show how to find the area of the regular 3, 4, and 8-gons with all sides one inch long. (Hint: The regular 3-gon is an equilateral triangle. A regular 4-gon is a square, so this is easy. The regular 8-gon will require some work.)

   The only regular n-gons that I was able to easily compute the area of were the 3, 4, 6 and 8-gons. Are there any other regular n-gons for which you can compute the area?

5. Consider the picture below and explain how it provides a proof of Pythagoras's theorem. Hint: Compute the area of the large square in 2 different ways. You may need to use a little bit of algebra.