## Mathematics 446 — Spring 2005 — fifth assignment

This is due next Monday, February 7.

1. Finish the proof that if $A < K$ then for large $n$ the circumscribed polygons of $2^n$ sides are less than $K$,

2. Finish the proof of Archimedes claim about two concave polygonal paths from $P$ to $Q$. Be careful about what you mean by 'concave' and its consequences. I'll give you this hint: use induction on the number of segments in the bottom curve.

3. Translate the table from Ptolemy. The first column is made up of angles, the seconmd is proportional to the **chord** of the angle. What is the constant of proportion, and what is the third column?

4. Read the proof of Euclid XII.2 and write it your own words, being careful about the use of XII.1

5. I didn't talk enough about it in class, but this week I will. Do the question from last time:

How many sides of the hexagon would you need to get the difference between inner and outer perimeters to be less than $10^{-8}$? $10^{-16}$?