

Homework VIII Due in section Thursday, May 21, 2009

Read pages 185 through page 214. In particular you should know integers the Eratosthenes method of finding the circumference of the earth and the statement and proof of Ptolemy's theorem.

You should know the regular solids also called the Platonic solids as shown on page 539 of the text. The names, the number of faces, a proof that there are no more,

1. Page 194 #1.

2. Page 196 #6. (There is a formula for a general plane quadrilateral with sides of length a, b, c, d consecutively about the figure and with opposite interior angles of θ, φ . Let s be the semi-perimeter. The area of the quadrilateral equals is

$$\sqrt{(s-a)(s-b)(s-c)(s-d) - abcd \cos^2 \frac{\theta + \varphi}{2}} .)$$

3. Page 211 #2ab.

4. Page 212 Look at #4 and then do #5. And use a calculator to find the values of $S_6, S_{12}, S_{24}, S_{48}, S_{96}$. --- Look at page 204 Proposition 3 to understand that Archimedes found an upper and lower bound on π . (The use of symbol π for the length of the circumference divided by the length of the diameter came much later.)

The Second Midterm Examination

will be in the lecture room at the lecture time on Friday, May 22, 2009.
It will cover material through Homework VIII.