MA 341 Homework #3
Due Wednesday, September 12, in Class
Bring your solutions to class—there is no need to submit in Blackboard (but you may if you wish)

Reminder: Our first Exam will be Wednesday, September 19.

1. Problems 1.3.1 and 1.3.2 from the "Course Notes" on the course website.

2. Get GeoGebra installed and running on some computer. There is a link from our course website under "Other Resources." Then from our course website go to "GeoGebra Quickstart." Read this short tutorial and follow along with GeoGebra. Print out and submit a sketch showing the circumcircle of a triangle.

3. From our course website select "Euclid's Elements." Hopefully you can get the diagrams to show up—this may depend upon having Java installed.

   (a) Read the Introduction.

   (b) Then select "Table of Contents" and then "A Quick Trip Through the Elements."

   (c) Answer these questions:

      i. Which Postulate is the "Parallel Postulate?" Also, rephrase it in your own words.
      ii. Which is the first Proposition that makes use of the Parallel Postulate in its proof? (Look at the right-hand margins of the Propositions in Book I.)
      iii. What is the difference between the Pythagorean Theorem and its converse?
      iv. What does Euclid prove in Book IX, Proposition 20?
      v. Where and how does Euclid define a sphere?
      vi. In which Book does Euclid construct the five regular polyhedra? Also, what are the contemporary names of these five polyhedra?

4. Use GeoGebra to replicate the construction of an equilateral triangle described in Book I, Proposition 1 of Euclid's *Elements.* Print out and submit this sketch.