MA241
Final Exam Review

At least 50 percent of the material on the final exam will be drawn from material since the third exam. You may bring one standard 8.5 by 11 inch sheet of paper with notes on both sides of it (no magnifying glasses!). A calculator, ruler, and protractor may be helpful. Regarding the latest course material, you should be able to:

1. Know how to do all of the assigned problems in the teacher's guides.

2. Calculate areas and volumes of objects using the slicing and integration process.

3. Know and apply Cavalieri's principle.

4. Find an object if a certain type, such as a cylinder, with minimum surface area having a given volume.

5. Derive and use the distance formulas in two and three dimensions.

6. Know the generalization of the Pythagorean theorem for "right" tetrahedra.

7. Know how to verify formulas for Pythagorean triples and use them to generate Pythagorean triples.

8. Prove that certain numbers such as $\sqrt{2}$ and $\sqrt{3}$ are irrational.

9. Perform a specified translation, rotation, reflection, or glide reflection on a geometric figure.

10. Given a geometric figure and its image under a motion in the plane, determine the type of motion. In addition,

   (a) If the motion is a translation, determine the direction and amount of the translation.
   (b) If the motion is a rotation, determine the location of the center of rotation and the angle of rotation.
   (c) If the motion is a reflection, determine the line of reflection.
   (d) If the motion is a glide reflection, determine the line of reflection and the direction and amount of translation.

11. Fill out a symmetry "multiplication" table for a particular geometric figure (if we get to this in the course).