FINAL EXAM: WEDNESDAY, MAY 10, 8 – 10:00 a.m.

End of Term Office Hours: Friday, May 5 – Sunday, May 7, by appointment;
Monday, May 8, 10–Noon and 2–5;
Tuesday, May 9, 10–Noon; 2–5, and 7–8:30 p.m.
Friday, May 12, 10–Noon.

The final exam will emphasize sections 10, 34, 37, and 39 of Hartshorne. You should of course also be familiar with the basics of other aspects of the course, including key propositions in Books I and III of Euclid. You will have a choice of problems to answer, and there will be a mix of more theoretical proofs and ruler & compass constructions. If you choose to answer construction problems, you must prove your constructions work to get full credit.

You will need to answer five problems on the final.

- You will do one problem relating Hilbert's approach to geometry to Euclid's, as in Section 10 of Hartshorne. This will also require you to study sections 6–9.

- You will do one problem on neutral geometry and/or Saccheri quadrilaterals, as in Section 34.

- You will do one problem involving inversion in circles, as in Section 37. You should also review your standard ruler & compass constructions.

- You will do TWO problems about the Poincaré plane, as in section 39. One of the problems in this section will be the homework problem from Homework #29.

Studying the proofs of the following Hartshorne propositions and solutions to the following exercises should make you well-prepared for the final.

Exercises 10.6–10.9
Proofs of Propositions 34.1 and 34.6
Exercises 34.1, 34.2, 34.3, 34.4, 34.5
Proofs of Propositions 37.1, 37.2, and 37.3
Exercises 37.2–37.4, 37.7–37.10, 37.14, and 37.19–23 (compass only constructions).
Exercises 39.1–39.5, 39.10, 39.11, 39.19.

Some of the above problems may be on the final, but you should not assume all the final exam problems come from the above list. Carefully writing up solutions to all the above problems is NOT a good way to study for the final. The above problems are just examples to help you get an idea of what kind of question might be on the test. Trying to write out and memorize the solutions to the above is NOT an effective way to study. A better way to use the above list is for you to study for the final, and then pick some random propositions and exercises from the above list. If you have a good idea how to prove the random proposition selected and how to start the random exercises, then you can feel confident that you have done a good job studying.

Do not forget to also review the past homework assignments.

You will be given a copy of the Hilbert Axiom sheet to refer to during the final. You will also want to bing something to write with and perhaps a ruler & compass.

If you have one of my compasses, you must return that to me during the final exam.