

Math 409, Spring 2009  
Midterm Review Information

### Things to Know

You should understand the definitions, axioms, and theorems from the list on the website. You don't need to memorize these facts word-for-word, or remember their numbers in the axiom list, but you should understand each one.

You should know how to write clear proofs. That is, when you write a proof, you should be able to explain how each statement you make follows from the preceding ones, and/or from specific definitions, axioms, and theorems. **I will provide a list of all the definitions, axioms, and theorems that you can use in your proofs on the test.**

### What to Expect

Here are the kinds of problems I'll ask you:

- Prove a geometric theorem, including a justification for each step. (For instance: Prove that the angles of a triangle add up to  $180^\circ$ . Prove that every parallelogram inscribed in a circle is actually a rectangle.)
- Fill in the missing steps or justifications from a proof that you're given.
- Explain why some Euclidean construction works. (Examples: EG #14, 19, 26.)

### Study Suggestions

- Go over previous EG homework problems you've handed in. Read the comments I've made and try to fix any mistakes of geometry or logic that I've pointed out. Think about other ways to solve the problem. Try to come up with related problems or theorems.
- Look at the proofs of theorems in the notes on the website. Try to predict each step of the proof before you read it. Be sure you understand how axioms and previous theorems are being applied to justify each step.
- Solve the EG problems that weren't assigned as homework problems. You can show me your solutions during office hours and ask me if they're correct.
- Don't study each definition, axiom, or theorem in isolation. Instead, ask yourself things like: what do we know implies that two triangles are congruent? Are similar? What implies that two lines are parallel? If two lines are parallel, what do we know? Et cetera.