

Exam 1 covers the material from the first day of class through everything on Homework 3. (Well, mostly the second day through Homework 3. I won't test you on the spherical geometry we did on the first day.) The exam will begin at 12:20 but not take up the entire time. After the test we'll take a break and then continue on with our regularly scheduled material.

The exam will have a mix of problems, some of which will be very similar (or even identical...) to homework problems. There will also be a problem or two which will check if you can take definitions and propositions/theorems which we have used repeatedly and prove some other fairly straightforward result. Hence one of the best ways to study for the exam is to go back and review your homework and the solutions which are posted online. Also do other homework problems which were unassigned but similar to those that were. (I can suggest a few specific problems if you'd like.) Also scan through the text and review definitions and results, particularly those which we have used over and over. (See below.)

A few words of advice:

- (1) Don't spend too much time reviewing linear algebra. You should definitely be conversant in vectors, scalar products, matrix multiplication, and so on, but my focus is on testing your *geometry* knowledge, not linear algebra. So if I were to give you a problem which required you to solve a system of equations to get the final answer, interpreting the geometry correctly to set up the correct systems would be worth most of the points. The actual solving of the system would be worth minimal credit.
- (2) The exam will be closed book, closed notes, closed calculator, etc.
- (3) Don't trivialize any problems on the exam. For example, if I ask you to prove that, given a line ℓ and a point P , you can find a unique line through P which is parallel to ℓ , you shouldn't simply cite Corollary 1.11, or write, "We proved this on homework." I'm asking you to write a proof of this statement on your own.
- (4) Along those lines, you shouldn't try to memorize every single definition and result in the text. However, you should know definitions and results which we have used repeatedly. For example: the parametric and normal form form of a line, the "algebraic version" of the law of cosines, the fact that any vector can be written as a unique combination of two linearly independent vectors, how to find the measure of an angle given its direction indicators, and so on.
- (5) As far as isometries are concerned: you'll get feedback on Homework 3 by next Monday, so all of that material would be reasonable on the exam, including matrix formulas for translations, rotations and reflections. In recent classes we've done many, many proofs of a similar flavor, where we combine matrix formulas for various isometries, and multiply / expand / simplify / rearrange to identify the result as another isometry. Hence you should expect to do that on the exam. For example, proving that the composition of reflections across parallel lines is a translation would be reasonable, or the corresponding result for intersecting lines.

(over)

Please feel free to email me with questions!

Suggested study problems: any and all homework problems or group activities from class. Here are a few more:

Chapter 1: 1.2, 1.6, 1.7, 1.20

Chapter 2: 2.7, 2.14

Chapter 3: 3.18

Chapter 4: 4.13

Chapter 6: 6.6, 6.7, 6.18, 6.26(iii)