

**Due:** Wednesday, 11/28/18 at the *beginning* of class.

In general, answers to homework problems should include any computations necessary to get the final answer and an explanation of your work. Some problems may be entirely computational, with very little writing, whereas others are proofs or explanations with little computation. If you're in doubt about what's required for a particular problem, ask me. As a rule of thumb, common sense prevails. This is a 5000 level course, not college algebra, so I don't need to see your work in excruciating detail. If you need to solve a system of equations as part of a problem, just tell me what the solution is; don't include a page of work showing every step of the Gauss-Jordan reduction of an augmented matrix.

When you write explanations, you should write in complete sentences with (reasonably) correct grammar. Granted, this is not a writing intensive course, but it is a 5000-level mathematics course, and at this level you're expected to be able to explain your work in a coherent, organized and logical manner.

Starred exercises in the textbook have answers in the back, ranging from quick hints to full solutions. If I assign any of those, explaining your reasoning becomes even more important; you should enhance, and not just transcribe, the solution in the back. In other cases it might be a good idea to do those problems and check your answers before working on the assigned problems, as a way to check your understanding.

In this course, vectors and points are always two-dimensional unless otherwise specified.

Many of these problems are relatively short and fairly computational. You can expect the grading to be a little different – generally 3 points per problem instead of 5, other than problem A.

**Chapter 10:** 10.24, 10.25, 10.26

**Chapter 11:** 11.3, 11.5, 11.7, 11.8 (simplify to an angle, not a trig expression)

**A:** Find and prove the formula for the area of a triangle on a sphere of radius 1. Also solve the formula for the sum of the angles.

Here's a brief overview of spherical geometry for those who missed the relevant material on 11/21. It includes a proof of this result, which is known as *Girard's Theorem*, but you should write the solution in your own words (and with a good illustration). The goal is to see if you can write your own explanation, not transcribe a proof from somewhere else.

<https://math.rice.edu/~pcmi/sphere/index.html>.

You might prefer this page for finding the area of a (single) lune. Multiply by two for the area of a double lune:

<http://mathworld.wolfram.com/SphericalLune.html>.

You should explain that area formula as part of your solution, but don't spend more than a sentence or two on it.