

Math 42
Differential Geometry
Winter 2002
Oral Exam Topic

One of the topics that we will not cover during class this quarter is surface area and volume. However, since it is an important topic and a nice application of the material we covered in Chapters 14 & 15, I think it would be a nice topic for our oral exam. So here's what I'd like each of you to do. Read p. 139-145 of your text; that is, read Chp. 17 through the portion that discusses the connection with Gauss-Kronecker curvature, and come up with a 30 minute lecture on the material covered in those pages. In coming up with your presentation keep the following in mind.

1. **Conceptual Understanding:** Attempt to convey what the definitions and theorems mean "spiritually". Can you relate the material to things you've seen in your previous math classes?
2. **Examples:** Work out some of the exercises at the end of the chapter and present them to demonstrate the process.
3. **Questions:** Try to anticipate places where a fellow student might have questions.
4. **Proofs:** Give proofs where appropriate and focus on giving the big picture.
5. **Be Prepared:** Although you are giving a talk on volume other topics we've covered may come up.

If you have questions about the material feel free to stop by and see me.