

The first exam will be administered in class on Friday, October 25th. No makeup exams will be given. The exam will cover Chapter 16 (Sections 16.1 - 16.6). No electronic devices will be allowed including cell phones, laptops, or calculators, but you may bring one 3×5 inch notecard with notes and/or formulas on the front and back. **You must bring your student ID to the exam.** Scratch paper will be provided.

You should study old homework, worksheets, lecture notes, and these sections of the textbook. You may also find it helpful to do problems in the textbook for each section as well as the Chapter Review for Chapters 16.

Skills List

In general you are expected to know and understand all definitions and theorems covered. The following is a list of skills you will likely need to be able to apply on the exam. This list is meant to be a guide and is not exhaustive. In particular, you should be able to:

- Approximate the volume of a solid using a double Riemann sum.
- Interpret a double integral as the volume of a solid.
- Use Fubini's theorem to interpret a double integral as an iterated integral.
- Compute double integrals over rectangles.
- Compute double integrals over more general regions, interpreting the region as vertically simple or horizontally simple, or using polar coordinates.
- Use Fubini's theorem to change the order of integration.
- Use a double integral to find the area of a region in the plane.
- Compute triple integrals over rectangular prisms and more general regions in space.
- Use a triple integral to find the volume of a solid.
- Find the average value of a multivariable function.
- Evaluate and interpret triple integrals using cylindrical coordinates.
- Evaluate and interpret triple integrals using spherical coordinates.
- Find the centroid of a region in the plane or a solid in space.
- Compute the mass and center of mass of a lamina with variable density.
- Use triple integrals to find the mass and center of mass of a solid with variable density.
- Calculate probabilities for continuous random variables using probability density functions and joint probability density functions.
- Evaluate double and triple integrals using a change of variables and the appropriate Jacobian.