

The second exam will be administered in class on Friday, November 22nd. No makeup exams will be given. The exam will cover Sections 17.1 - 17.5, and 18.1. 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 17.

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:

- Match a vector field to a plot.
- Compute and interpret curl and divergence of a vector field.
- Determine if a two-dimensional vector field is conservative.
- Determine if a three-dimensional vector field is conservative.
- Find a potential function for a conservative vector field.
- Compute a line integral of a function along a curve with respect to arc length.
- Compute a line integral of a vector field along a curve.
- Compute and interpret work done by a force field.
- Compute flux across a plane curve.
- Compute the total mass or charge of a wire with a given density or charge density function.
- Apply the fundamental theorem of line integrals to compute line integrals of conservative vector fields.
- Parameterize a surface and identify the grid curves.
- Find the tangent plane to a parametric surface at a point.
- Compute surface area of a parametric surface.
- Evaluate surface integrals of functions and vector fields.
- Find the mass and center of mass of a thin plate in the shape of a surface with variable density.
- Compute flux across a surface.
- Apply Green's Theorem to calculate a line integral or a double integral.
- Use Green's Theorem to compute area of a region in the plane.
- Apply vector forms of Green's Theorem.