UPDATED GENERAL INFORMATION — OCTOBER 16, 2009

Here are some comments regarding the first in-class examination, scheduled for **Wednesday, October 21**.

The exam will cover Sections 5.1 – 5.5 of the text, and it will consist of four problems. These will be close or identical to assigned problems from the text or problems in the supplementary exercises (files listing and describing these, and also their solutions, are in the course directory).

This exam will test the ability to evaluate iterated integrals (both twofold and threefold), the ability to express a double integrals over certain "nice" regions as iterated integrals, the ability to rewrite iterated integrals with different orders of integration (mainly for double integrals), and the ability to set up change of variables formulas for specific examples, with major emphasis on the cases of polar, cylindrical and spherical coordinates. Computation of iterated integrals assumes the ability to compute ordinary integrals; this is covered in a prerequisite course. Only the most basic formulas for indefinite integrals will be needed for the exam (only simple changes of variables, no integration by parts or lengthy trigonometric substitutions). The ability to sketch regions defined by simple inequalities will probably be helpful for analyzing problems and finding answers.

The following formula and its generalization to threefold iterated integrals is likely to be useful:

$$\int_a^b \int_c^d f(u)\,g(v)\,dv\,du \;\; = \;\; \int_a^b f(u)\,du \;\cdot\; \int_c^d g(v)\,dv$$

[For the sake of completeness, here is a derivation: The first integration with respect to v yields the integrand

$$f(u)\left(\int_c^d g(v)\,dv\right)$$

in which the second factor is a constant. If we now integrate this expression with respect to u, the result will be equal to the definite integral of f times the second factor, which we know is just the definite integral of g. It will not be necessary to know this derivation, but the formula is likely to be helpful.]

There will be no proof-like derivations on this exam. However, unless indicated otherwise, the logical steps in solving problems should be shown to ensure the maximum possible credit; partial credit will be given for incorrect answers in some cases, depending upon the extent to which the work shown on the exam is valid.

No electronic computing devices will be necessary, and none will be permitted. Likewise, no open books or notes will be permitted.