The exam in Math 202 takes place on Wednesday, May 7 from 8 - 10 am in our regular classroom. Please plan to arrive on time, so that the exam can begin promptly at 8:00. You should also remember to bring your last homework assignment to the exam and I will check it during this period.

The final exam will be cumulative, with an emphasis on chapters 14, 15, and 16 (differentiation, integration, and vector fields). You should expect to be tested both on technical skill and theory. You are guaranteed to have problems involving

1. optimization (with Lagrange multipliers and/or by finding all critical points and using the second derivative test)

2. directional derivatives; interpretations of directional derivatives

3. ∇f and its interpretations

4. finding the best linear approximations to functions of 2 or 3 variables

5. finding equations of tangent planes, giving parameterizations of spheres (or other simple surfaces S) and space curves C

6. finding equations of planes, finding normal vectors to planes

7. integrals of functions of 2 and 3 variables in rectangular coordinates, polar coordinates, cylindrical coordinates, and spherical coordinates

8. integrals of vector fields $\mathbf{F}$ along curves C and over surfaces S

9. Green's Theorem, Stoke's Theorem

10. applications like determining the work done by a force field along a path, interpreting curl $\mathbf{F}$ and div $\mathbf{F}$, determining if a vector field is conservative and using potential functions to evaluate integrals, finding a potential function for a gravitational field or an electric field

To study for this exam, you should be sure to complete the practice final exam available on the class website and redo your old tests and quizzes. If you find that you are rusty on some topic ($\iint_S \mathbf{F} \cdot d\mathbf{S}$ or the statement of Green's theorem, for example), then go back to that chapter and do *more problems*.

I will aim to make the exam about one hour and fifteen minutes in length, for the student completely on top of the material. Any remaining time should be used to check answers and computations and to work through problems that you may have not initially known how to solve.

Good luck.