Math 234: Topics to review for the third midterm

The second midterm takes place on Monday, December 21, from 5:05PM-6:20PM. Location will be posted on the course website. The midterm covers all topics we have had homework on since the previous exam. In short, it covers topics starting with triple integrals and ending with Gauss' theorem. The exam is 6 questions, each question is worth 10 points. You will not be allowed to leave until the exam is over.

Here are some topics which I recommend you study. This list of topics is *not* an exhaustive list of topics which appear on the midterm, and you are responsible for all the material mentioned above; however, I recommend reviewing these topics first.

- Know how to compute triple integrals.

- Know cylindrical and spherical coordinates.

- Know how to compute the various kinds of path integrals: $\int_C f \, ds$, $\int_C \vec{F} \cdot d\vec{r}$ and $\int_C P \, dx + Q \, dy$ and understand their relationships.

- For what vector fields $\vec{F}$ does $\int_C \vec{F} \cdot d\vec{r}$ depend only on the endpoints? What does this have to do with the fundamental Theorem of Calculus.

- Know Green's Thoerem.

- How can we use Green's Theorem to calculate the area of a region?

- Know how to compute the surface integrals $\int_S f(x, y, z) \, dS$ and $\int_S \vec{F} \cdot d\vec{S}$.

- Know how to use Gauss' and Stokes' Theorems.