Math 251 Exam 3 information

- The Exam is scheduled as April 26 and it will be given during the regular class time.

- The exam covers sections 13.10, 14.1-14.8

- It is advised that you

  - read over the lecture notes;

  - work the quizzes;

  - work the Week In Review problems

  - work the suggested and webassign homework problems.

  - solve the Extra Practice problems (remember that it doesn't cover all the material and it is not sufficient to solve only it before the test);

- Concepts to know:

  - Spherical coordinates (13.9)

  - Triple integral in spherical coordinates (13.10)

  - Arc Length, Line integral of a scalar function, mass of a thin wire with given linear density (14.2)

  - Line integral of vector field, work done by a force field(14.2)

  - Conservative vector field, potential function (definition and how to find). (14.3)

  - Fundamental Theorem of Calculus, independence of path (14.3)

  - Green's Theorem (14.4)

  - Curl and Divergence (14.5)

  - Parametric surface and normal vector to it. (14.6)

  - Surface area of a parametric surface and surface area of a graph $z = f(x, y)$.(14.6)

  - Surface integral of a scalar function (including mass problem).(14.7)

  - Surface integral of a vector field.(14.7)

  - Stokes' Theorem(14.8)

- Formulas sheetwhich will be given on the test:

$$x = \rho \sin \phi \cos \theta, \quad y = \rho \sin \phi \sin \theta, \quad z = \rho \cos \phi$$

$$\mathrm{d}S = |\mathbf{n}(u, v)|\mathrm{d}A$$

$$\mathrm{d}\mathbf{S} = \hat{\mathbf{n}}\mathrm{d}S = \mathbf{n}(u, v)\mathrm{d}A$$

$$\oint_C \mathbf{F} \cdot \mathrm{d}\mathbf{r} = \iint_S \mathrm{curl}\mathbf{F} \cdot \mathrm{d}\mathbf{S}$$