Math 117: Study Guide for Test 2

The test will cover the material in your notes from:

12.8, 15.5, 15.6, 15.7, 16.1, 16.2, 16.3, 16.4

Know how to:

Compute triple integrals in the 3 cases of simple solids
Convert points and equations between spherical and rectangular coords
Compute triple integrals in spherical coordinates (remember $\rho^2 \sin \phi$)
Find the mass and the center of gravity for solids in space
Sketch vector fields in the plane
Parametrize circles, line segments, and graphs of functions
Compute line integrals from $\int_C \vec{F} \cdot d\vec{r}$ and $\int_C f \ dx + g \ dy + h \ dz$ form
Use $\int_C \vec{F} \cdot d\vec{r}$ to compute work.
Show a vector field is conservative and find a potential function
Use the Fundamental Theorem of Work Integrals
Use Green’s Theorem

Practice Problems:

Page 1063 #16 (3 ways - simple $xy, yz, xz$), 25
Page 1074 #28
Page 855 #5d, 7a, 33b, 37b
Page 1085 #20
Page 1101 #23, 25a
Page 1110 #5, 6
Page 1126 #9b, 10b, 26b, 30, 38
Page 1137 #4,13,15,20,28
Page 1145 #9,25

Answers to Even Numbered Problems:

Page 1063: 16. $4/15$
Page 1074: 28. $M = 81/8$, $(\bar{x}, \bar{y}, \bar{z}) = (8/5, 3, 2/3)$
Page 1085: 20. $81\pi$
Page 1126: 10b. $-\frac{1}{60}$, 26b. $-25\pi$, 30. $\frac{e^2}{2} + \frac{4}{e} - \frac{9}{2}$, 38. $\frac{92}{9} + \ln 3$
Page 1137: 4. $e^x \cos y$

Proofs: The proof assigned in class, and due on Wednesday, will be 5 point on the test.