

**Math 241 Spring 2009**  
Third midterm concept review

Topics to review for the exam:

- (1) Sec. 5.1-5.2: Double integrals, volume under the graph  $z = f(x, y)$
- (2) Sec. 5.3: Changing the order of integration in a double integral
- (3) Sec. 5.4: Triple integrals
- (4) Sec. 5.5: Change of variables: the general change of variables in dimension two, and polar, cylindrical and spherical coordinate changes
- (5) Sec. 6.1: Line integrals of functions and vector fields
- (6) Sec. 6.2: Green's theorem. The work and flux versions of Green's theorem. Green's theorem for regions whose boundary consists of more than one piece.
- (7) Sec. 6.3: Conservative fields. Criteria for a field to be conservative. Finding a potential function. Computing line integrals of a conservative vector field in terms of the potential function.

Practice problems are available online. To prepare for the exam, review the topics above and make sure you can do the practice problems on your own. Please ask questions when not sure if you understand something!