

Math 241 Spring 2009
Second midterm concept review

The topics to review for the exam are:

- (1) Sec. 2.5: The chain rule
- (2) Sec. 2.6: Directional derivatives, the gradient vector. Finding tangent planes and normal lines to level sets. Derivatives of functions defined implicitly.
- (3) Sec. 3.1, 3.2: Arc length of curves, the unit tangent vector (no curvature). Finding the equation of a trajectory from knowing the acceleration.
- (4) Sec. 3.3: Vector fields, gradient fields, flow lines (Sec. 3.4 will not be tested on this exam.)
- (5) Sec. 4.1: Differentials (no second degree Taylor's polynomial)
- (6) Sec. 4.2: Extrema of functions: the second derivative test for functions of two variables, global extrema on compact sets
- (7) Sec. 4.3: Lagrange multipliers

Practive problems with solutions 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!