- Covers: 15.3 (Curvature), Chapter 13, 15.4 (Lagrange Multipliers), and 14.1 (Mult. Ints.).
- You may have a $3 \times 5$ card with formulas.
- When reviewing the test it's always good to look over your notes and especially old quizzes.
- Here is a list of a few review problems from pages 771-774 (chapter 13's summary section): 4–13, 21, 24, 26, 28, 33, 36, 37, 44, 55–57, 59, 67, 69, 75–78 As before, not everything is well represented by this list (and some things are WAY over represented – there are a lot of directional derivatives in this list). In particular, make sure you look over the other Chapter 13 suggested homework problems.
- Look over a few curvature problems and don't forget the supplemental Lagrange multi. problems.

Stuff to know...

- Know how to compute curvature.
- What is the curvature of a line? a circle?
- What is a "trace"? level curve? level surface?
- What is a "contour map"? Know how to read such a graph.
- What is the "domain" of a function?
- Know how to compute partial derivatives.
- Know how to interpret partial derivative – you should be able to tell whether partials are positive, negative, or zero by looking at a contour map.
- Know how to find linear and quadratic approximations of scalar valued functions.
- Know how to compute directional derivatives, gradients.
- In which direction is the directional derivative maximized? minimized? zero? What are those maximal and minimal values?
- Know how to find the equation of a line tangent to a level curve.
- Know how to find the equation of a plane tangent to a level surface.
- What is the Hessian matrix?
- Know that if second partials are continuous, then $f_{xy} = f_{yx}$.
- What are critical points (i.e. stationary points)?
- Know how to find and classify critical points.
- Know how to maximize, minimize a function subject to a constraint (Lagrange Multipliers).
- What is the Jacobian of a function?
- Know how to find linearizations of multivariate vector valued functions.
- Know what the chain rule says and how to apply it.
- Know how to interpret double integrals.
- Know how to interpret single, double, and triple integrals over $f(x, y) = 1$.
- Know how to approximation multiple integrals (using, for example, the "midpoint" rule).