Review Sheet for 20860 midterm

Standard disclaimer: The following represents a sincere effort to help you prepare for our exam. It is not guaranteed to be perfect. There might well be minor errors or (especially) omissions. These will not, however, absolve you of the responsibility to be fully prepared for the exam. If you suspect a problem with this review sheet, please bring it to my attention.

Format: The exam will take place Tuesday 3/18 from 6:30-8:30 PM in Hayes-Healy 125. I'll hold a review session Monday 3/17 from 4:30-5:30 PM also in Hayes-Healy 125. Please feel free (also) to ask exam-related questions during our usual class on Monday. The exam will cover all the material from this term up to and including change of variables in integrals. Integrating over curves will not be covered. Types of exam questions will be similar to last semester: short answer questions of the 'state the following defintion/theorem/etc' variety; true/false questions in which false answers must be supported by counterexamples; computational and proof questions with longer solutions. At the moment, I have trouble imagining many good true false questions, so I'd guess there'll be less true/false and more long answer questions on this exam. Note that I will feel free to put old homework questions on the exam, and in particular, I fully *intend* to include one or more questions from Homework 3.

Terms you should be able to define and Theorems you should be able to state: 2nd order Taylor approximation and accompanying version of Taylor's Theorem, Hessian matrix, positive definite matrix, second derivative test for critical points, spectral theorem for symmetric matrices, step function, upper and lower integral of a bounded function, Riemann integrable function, fubini's theorem, contented subset of $\mathbf{R}^n$ and volume of a contented set, Cavalieri's Principle, change of variables theorem.