MATH 281 FINAL EXAM STUDY GUIDE

The exam covers Chapter 12, Sections 12.1-12.6, Chapter 13, Sections 13.1-13.4, Chapter 14, Sections 14.1-14.8.

How to prepare for this exam:

1. Look over all of your old homework and exams. Make sure that what you wrote down still makes sense.

2. Redo the quizzes. Even if you did it perfectly, redoing it will remind you about the different types of problems.

3. Read over your notes. There are many subtleties that are important to understand. Once you understand these then you understand the material much better.

4. Look over the **Study Guides** for Midterms 1 and 2 and the review section at the end of chapter 14.

You will not be able to use your notes, or book on the exam. You can use two note cards 3×5 inches with any formulas you wish.

Review questions:
- True-False quiz. Page 882: #1-22 and Page 921: #1-14 and Page 1022: #1,2,4-12;
- Page 882: 1, 3, 5, 6, 7, 9, 10, 11, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 37, 38;
- Page 922: 2, 3, 5, 6, 9, 10, 11, 12, 13, 15, 17, 19, 20, 21, 22
- Page 1022: 9, 10, 13, 15, 16, 17, 19-22, 25-29, 31, 32, 35, 37, 40, 43-48, 50-56, 59-65.
- Assigned homework exercises

New Vocabulary:
- linearization of a function
- differentiable function
- differential of a function
- normal lines and tangent planes to a surface
- Chain Rule
- Implicit function
- Directional derivative
- gradient vector
- critical point
- local minimum, local maximum, saddle point
- Second Derivatives Test
- absolute minima and maxima
- closed sets, bounded sets, Extreme Value Theorem
- constrained optimization
- Lagrange multipliers