

## MATH 281 MIDTERM 1 STUDY GUIDE

The exam covers Chapter 12, Sections 12.1-12.6 and Chapter 13, Sections 13.1, 13.2.

### How to prepare for this exam:

1. Look over all of your old homework. Make sure that what you did still makes sense.
2. Redo the quiz. 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 Review section at the end of chapters 12 and 13.

You will not be able to use your notes, or book on the exam. You can use one note card  $3 \times 5$  inches with any formulas you wish.

### Review questions:

- True-False quizzes. Page 882: #1-22 and Page 921: #1-6;
- Page 882: 1, 3, 5, 6, 7, 9, 10, 11, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 37, 38;
- Page 921: 2, 3, 5, 6, 9.
- Assigned homework exercises

### Vocabulary:

- scalar, vector
- dot product, cross product
- parallel vectors, perpendicular vectors, angle between vectors
- area of a parallelogram and volume of a parallelepiped
- projection onto a line, unit vector
- vector equation, parametric equation, and symmetric equation of a line
- normal vector, vector and scalar equations of a plane
- distance from a point to a line
- distance from a point to a plane
- distance between planes
- distance between lines
- traces (a.k.a. cross sections)
- quadratic surfaces
- vector functions and space curves
- derivative and integral of a vector function
- differentiation rules for vector functions
- tangent vector and tangent line to a space curve