Math 2433
Review for Final Exam

The final exam will be over all the material covered in class from Chapters 11, 12 and 13 of the text, and in Assignments 1 through 11. To review for the final you should go over the material listed on the review sheets for the three in-class exams, as well as the material in sections 13.4, 13.5 and 13.6. Here are a few comments on those last three sections.

13.4 All you need to know from this section is the definition of the cross product, so that you can do a computation like the one in Example 1 on page 823, and the fact that the cross product of two vectors is perpendicular to both of the vectors. I will not ask questions specifically about cross products on the final exam, but for a problem about lines or planes you might need to take the cross product of two vectors to find a third vector perpendicular to those two, as in Examples 5 and 7 in Section 13.5.

13.5 We covered the material from the beginning of this section up to, but not including, Example 8. You should be able to represent a line in space by its equations in vector, parametric, or symmetric form. Notice the connection between the parametric equations for a line and the type of parametric equations considered in chapter 11. This connection is developed further in Chapter 14, which will not be covered on the final (but see the note below). You should also be able to represent a plane in space by an equation of the form (5), (7), or (8) on page 834 (these are really three different forms for the same equation). Also, be able to do problems like the ones done in the examples in this section (except you can skip Examples 8, 9, and 10), and the ones assigned on the homework.

13.6 You should read the whole section (if for no other reason than that it will come in handy in Calculus IV), but as far as the final exam for this course is concerned, all I might ask is a question like the two homework problems from this section on Assignment 11. That is, I might give you the equation of a quadric surface (probably an ellipsoid or hyperboloid) and ask you to identify it, and to sketch the traces in the xy-, xz-, or yz-planes.

Chapter 14 Chapter 14 will not be covered on the final, but when you get to Calculus IV, your instructor may assume that you know a couple of things from this chapter. I went over what these were on the last day of class, but you might want to take a little time over the summer break to review them. The first thing to know is that a curve in space can be represented by parametric equations giving x, y and z as functions of a parameter t, just as in Chapter 11 curves in the plane were represented by parametric equations giving x and y as functions of t. These parametric equations can also be put in vector form, as in Examples 3, 4, and 5 on pages 854–855. The second thing to know is that the vector which is tangent to a curve at a given point can be found by taking the derivative of the vector function for the curve, as in Examples 1 and 2 on page 861. (This may remind you of something you learned in Chapter 11, namely that the slope of a curve given parametrically in the plane is given by the ratio of dy/dt to dx/dt.)