Math 255
Homework Set 2
Winter 2011
Due at the beginning of class, Mon, Jan. 24

The assignment consists of the following problems from the text:

- Section 13.1, Pages 833–834: #6, #12, #14, #18, #22, and #40.
- Section 13.2, Pages 841–842: #18, #20, #30, #34, and #44.
- Section 13.3, Pages 848–850: #8, #10, #41, #50, #55, and #56.
- Section 13.4, Pages 856–857, #2, #6, #36, and #42.

Note: For 6th edition users, the following problems are different in the 6th edition:

- Section 13.1: #12, #40. Problem #40 in the UM edition is the same as problem #38 in the 6th edition.
- Section 13.2 #18, #20 and #44. Problem #44 in the UM edition is the same as problem #46 in the 6th edition.
- Section 13.3: #10
- Section 13.4 #2, #36 and #42. Problem #36 in the UM edition is the same as problem #40 in the 6th edition. Problem #42 in the UM edition is the same as problem #46 in the 6th edition.

If you do not have the UM edition, you will have to copy these problems either from a friend or from the reserve copy of the UM edition in the library.

The following problems related to Computer Lab I are also part of the assignment:

- Bézier Curves, Page 705 (675 in 6th ed.). Using Maple, do problems #1 and #4.
- The Nephroid of Freeth and the Ovals of Cassini. These may sound like they refer to something right out of *The Lord of the Rings*, but they are actually the names of two kinds of curves. Use Maple to do problems #69 and #80 on Page 715 (#71 and #82 on Page 685 in 6th ed.). For #80, note that with the use of the relation between polar and Cartesian coordinates (and with the help of a double-angle formula for cosine) the equation given can be written in the form $F(x, y; a, c) = 0$. Then you can use the Maple command `implicitplot(F=0,x=xa..xb,y=ya..yb)` together with animations or superimposed plots as in the Computer Lab to understand the way the curves change as a and c vary.