Due: Thurs. Oct. 6

HMC Math 142 Fall 2005

Prof. Gu

Problem Set 4

Start this assignment before Sunday night!

Read:

- Baby Do Carmo, Differential Geometry of Curves and Surfaces: Sections 2-1, 2-2, Chapter 2
- Handout 5
- Lecture Notes

Do:

A: Problems on Reviewing of Rigid Motions in R^3.

- a) Show that the set of rigid motions $E(3)$ forms a group. (Later, we will see that $E(3)$ is in fact a Lie group.)

B: Problems from Lectures

- a) Show that of all simple closed curves in the plane with given length l, a circle bounds the largest area.

C: Other Problems

- a) Problem 2 on page 29, Section 1-6, Baby Do Carmo.
- b) Problem 1 on page 47, Section 1-7, Baby Do Carmo.
- c) Problem 2 on page 47, Section 1-7, Baby Do Carmo.
- d) Problem 3 on page 65, Section 2-2, Baby Do Carmo.
- e) Problem 5 on page 65, Section 2-2, Baby Do Carmo.
- f) Problem 10 on page 66, Section 2-2, Baby Do Carmo.
- g) Problem 16 on page 67, Section 2-2, Baby Do Carmo.

D: Extra Credit Problems

- Give a different solution to B a).