18.950: PSET 6

1. (5 points) Do problem 1 of chapter 4 - ignore the part about geodesics on the cone.

2. (4 points) Do problem 2 of ch 4. I know we've already talked about this in class informally - but make our discussions fit our definition of geodesics.

3. (5 points) Do problem 3 of ch 4.

4. (5 points) Do problem 5 of ch 4.

5. (5 points) Suppose that $c : [0, 1] :\to M \subset \mathbb{R}^3$ is a curve in a surface, and suppose that X and Y are two parallel vector fields on c (Defn 4.9). Show that

$$\langle X(c(0)), Y(c(0))\rangle = \langle X(c(1)), Y(c(1))\rangle.$$

(i.e. the angle between the two vector fields is the same at both ends of the curve.)

Date: Assigned: 10/27/09, Due: 11/3/09.