You are welcome/encouraged to work with others. Please say with whom you collaborated. You must justify your work completely for full credit. Do what you have time for.

Problem 1. do Carmo exer. 5.7
Problem 2. do Carmo exer. 6.4
Problem 3. do Carmo exer. 7.2
Problem 4. do Carmo exer. 7.5
Problem 5. do Carmo exer. 7.12 (optional, but fairly easy)
Problem 6. do Carmo exer. 9.1 (Look also at problem 9.5’s generalization of this)
Problem 7. do Carmo exer. 9.4. (Optional, but again, I think this should be fairly easy. This is in strong distinction to the case for compact, negatively curved manifolds. In the negative curvature case, any homotopy class has a unique geodesic representative of minimal length. Try proving this.)