Read:

- Handout on Differentiable Manifolds.
- Riemannian Geometry by Do Carmo, Chapter 0
- Lecture Notes.

Do:

A: Problems on Reviewing The Differential of a (Differentiable) Map.
- a) Write in your own words for a proof of Proposition 3.7 on page 13, Do Carmo.

B: Problems from Lectures
- a) Prove the fact used in the proof of the theorem regarding a manifold obtained by using a properly discontinuous action of a group. i.e. to prove the following statement: Let $G$ be a group acting on a differentiable manifold $M$, such that this action is properly discontinuous. Show that $g_1(U) \cap g_2(U) = \emptyset$ for all $g_1, g_2 \in G$ with $g_1 \neq g_2$.

C: Other Problems
- a) Problem 1, page 31, Riemannian Geometry, Do Carmo.
- b) Problem 2, page 32, Riemannian Geometry, Do Carmo.
- c) Problem 6, page 32, Riemannian Geometry, Do Carmo.
- d) Problem 10, page 33, Riemannian Geometry, Do Carmo.
- e) Problem 11, page 33, Riemannian Geometry, Do Carmo.
- f) Problem 12, page 34, Riemannian Geometry, Do Carmo.