

**UPDATED GENERAL INFORMATION — JUNE 6, 2016**

*Starting time for the final examination*

**IMPORTANT.** As indicated previously, **the starting time is 9:00 A.M.**, and you will have two hours to complete an exam which is 50% longer than the midterm exam. I will not be on campus until shortly before that time, and if you go there at 8:00 the room will probably be empty, so do not be alarmed if you arrive well before 9 and no one else is there.

*Additional office hours on Monday, June 6*

I will be in my office (Surge 221) from 1 to 3 P.M., and possibly a little longer on either end if necessary (please contact me in that case).

*A few higher priority items*

You should be familiar with the construction of a product atlas for the topological product of two smooth manifolds, the construction of the induced covering space atlas for a (Hausdorff) covering space of a smooth manifold, and the construction of a smooth, real valued proper map on a smooth noncompact manifold. In the first two cases, you should also be familiar with the formal properties of these constructions with respect to smooth mappings such as recognizing when a continuous mapping into such a construction is smooth.

Corrections are needed for Additional Exercise 5.1. First of all throughout the discussion  $f$  should be a smooth function into  $\mathbb{R}$  and not  $\mathbb{R}^n$ . Also, the equation for  $\nabla f$  above the displayed formula should read  $\nabla f = - \sum_j \lambda_j \cdot \nabla g_j(x)$ .

*Numerous low priority items*

We shall only list low priority exercises from the last four chapters which are for some reason less important to try or to solve. For Chapter 5, these are 3, 11, 17, 19 in Lee and 2, 5, 9 – 14 in the Additional Exercises. For Chapter 6, these are 1, 3 in Lee and the “only if” direction for 2(ii) in the Additional Exercises. For Chapter 7, these are 1, 2, 4, 20, 21, 24 in Lee and 5, 6 in the Additional Exercises. For Chapter 8, these are 1, 11 in Lee and 8, 9 in the Additional Exercises. All exercises in Lee not cited in the exercise files are also low priority.

Going backwards slightly, problems 3.2–3.4 and 4.10–4.15 from the Additional exercises are also low priority, but **none** of the Additional exercises for Chapters 1 and 2 are low priority.

*Final exam results*

These should be available by the end of the week. You are welcome to view and keep your exam; we can make arrangements for doing so by electronic mail. Questions about grading should be submitted by some time early in the Fall 2016 Quarter.