

UH - Math 7350 - Dr. Heier - Spring 2012

HW 2

Due 02/28/12, at the beginning of class.

Use regular sheets of paper, stapled together.

Don't forget to write your name on page 1.

1. (1 point) Give a detailed proof of Lemma 3.5 (page 66) in the textbook.
2. (2 points) Let M, N be smooth manifolds with M connected. Let $F : M \rightarrow N$ be a smooth map such that $F_* : T_p M \rightarrow T_{F(p)} N$ is the zero map for each $p \in M$. Prove that F is a constant map. Furthermore, show that this statement is false when the connectedness assumption for M is dropped.
3. (1 point) Problem 3-2 (page 78)
4. (1 point) Problem 3-3 (page 79)
5. (1 point) Problem 3-6 (page 79)
6. (1 point) Problem 3-8 (page 79)
7. (2 points) Problem 4-2 (page 100)
8. (1 point) Problem 4-4 (page 101)