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 $F : M \to N$ be a smooth map such that $F_* : T_pM \to T_{F(p)}N$ 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)