

**Math 442**  
**Winter 2008**  
**Homework 4**

Read Section 2-3 in do Carmo. Then do the following exercises.

1. Exercise 14 of 2-3.
2. Let  $S_1$  and  $S_2$  be regular surfaces and  $f : S_1 \rightarrow S_2$  a continuous function. Prove that  $f$  is differentiable if and only if the composition  $f : S_1 \rightarrow S_2 \hookrightarrow \mathbb{R}^3$  is differentiable. (A function  $S_1 \rightarrow \mathbb{R}^3$  is defined to be differentiable if each of the coordinate functions is differentiable.) Use this result to do exercise 4 of 2-3.

This assignment is due Monday, February 11.