

HMWK 5; DIFFERENTIAL GEOMETRY, FALL 2009

NAME :

Due on Monday, Nov. 16 2009
Justify all answers in detail!!!

Problem 1. Let $A \subset \mathbb{R}^n$ be an open set and $g : A \rightarrow \mathbb{R}$ be a C^r function. Consider the graph of g , i.e. the set

$$\mathcal{G} = \{(x, g(x)) \in A \times \mathbb{R}\}$$

- Show that there exists a one-to-one C^r map $F : A \rightarrow \mathbb{R}^{n+1}$ with image \mathcal{G} , i.e. $F(A) = \mathcal{G}$.
- Can we say that $F : A \rightarrow \mathcal{G}$ is a diffeomorphism in the sense of the book's definition?

Problem 2. Work out problem 6 on page 169 in the textbook.