

HMWK 2; DIFFERENTIAL GEOMETRY, FALL 2009

NAME :

Due on Monday, Sept. 11 2009
Justify all answers in detail!!!

Work out problems 1,2,3,6,9 on page 30-31 and problems 1,3 on page 39.

Additional problem 1. Let A be a $n \times n$ real matrix. Prove that the linear transformation $x \rightarrow Ax$ is a continuous map $\mathbb{R}^n \rightarrow \mathbb{R}^n$.

Problem 2. Consider the function $f : \mathbb{R} \rightarrow \mathbb{R}$ defined as follows: $f(x) = x$ if x is rational and $f(x) = 0$ otherwise. At which points (if any) is f continuous?

Problem 3. Consider the function $f : \mathbb{R} \rightarrow \mathbb{R}$ defined as follows: $f(x) = x$ if x is irrational and $f(x) = 0$ otherwise. At which points (if any) is f continuous?