

Math 266B Winter 2013: Homework 1. Due 1/16 in class.

1-4. Evans p. 85. Problem 1,3,4, 5.

5. Let U be a bounded domain in \mathbb{R}^n and let $\vec{b} : \mathbb{R}^n \rightarrow \mathbb{R}^n$ and $g : \mathbb{R}^n \rightarrow \mathbb{R}$ be continuous. Show that there can be at most one solution $u \in C^2(U) \cap C(\bar{U})$ of the equation

$$\begin{cases} -\Delta u + \vec{b}(x) \cdot Du = 0 & \text{in } U, \\ u = g & \text{on } \partial U. \end{cases}$$