

Math 678. Fall 2011.

Homework #5.

Due Wednesday 11/16/11 in class.

Solutions should represent individual work, with all necessary details. Only facts discussed in class or given in the main textbook can be used without proof (except the facts known from calculus).

(1) Problem 17, p.89 Evans

(2) Problems 1, p.244 Evans

(3) Problems 3, p.245 Evans

(4) Solve the boundary value problem

$$\begin{cases} u_{tt} - u_{xx} = x \text{ in } (0, 1) \times \mathbb{R} \\ u(\cdot, 0) = x^2(1 - x) \\ u_t(\cdot, 0) = 0 \\ u_x(0, \cdot) = 0, \quad u(1, \cdot) = 0 \end{cases}$$