MA633 Partial Differential Equations II
Spring 2012
Problem Set 4
March 2, 2012
DUE: Wednesday, 21 March 2012

(1) Problem 1, page 305 of Evans, on the completion of the Hölder spaces.
(2) Problem 14, page 307 of Evans, on the function \( \log \log(1+||x||^{-1}) \). Show that it is in \( W^{1,n}(B(0,1)) \) but not in \( L^\infty(B(0,1)) \) for \( n > 1 \).
(3) Problem 19, page 308 of Evans, on the condition \( Du = 0 \) a. e. for \( u \in H^1(U) \) implies \( u \) is a. e. constant.
(4) Problems 20-21, page 309 of Evans, on \( H^s(\mathbb{R}^n) \), regularity and the Fourier transform.