

Math 678. Fall 2011.

Homework #2.

Due Wednesday 09/28/11 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).

(1-2) Problems ## 3,5 from the Problem Set 2 (p.85). In problem 5(c), try to show that the result holds for any convex function.

(3) Prove that if  $v(x) \leq \int_{B(x,r)} v dy$  for all  $B(x,r) \subset U$  for some function  $v \in C(U)$ , then for every  $B(x,r) \subset U$  and every harmonic function  $u$  defined on a domain containing  $B(x,r)$  such that  $v \leq u$  on  $\partial B(x,r)$ , we have  $v \leq u$  in  $B(x,r)$ .