Partial Differential Equations Home Work（1）

Note: Turn me the answers (with your name and student number) to the problems below before October 9.

1. Adopt the proof of Theorem 3 in §5.3.3 to show that, if U is bounded with C^1 boundary, then for $u \in W^{1,\infty}(U)$ and $1 \leq p < \infty$, there are $u_m \in C^{\infty}(\bar{U})$ such that $u_m \to u$ in $W^{1,p}(U)$ as $m \to \infty$, and $||u_m||_{W^{1,\infty}(U)} \leq ||u||_{W^{1,\infty}(U)}$.

2. Write down the statement of the theorem on partition of unity and its complete proof.

3. P. 290, problem 3 and 7.