Third Homework Assignment in 18.101
(Due Friday October 26)

(1) Munkres §13 #1, part b and #2. (You'll need part b of exercise 1 to do exercise 2.)

(2) Munkres §14, #8.

(3) Munkres §16, #3.

(4) Let U be an open subset in $\mathbb{R}^n$ and $A \subset U$ a compact subset. Prove

Theorem. *There exists a C^∞ function, $p : \mathbb{R}^n \to \mathbb{R}$ such that p is equal to one on a neighborhood of A, and the support of p is contained in U.* Hint: *Partitions of unity.*

(5) Let $f : \mathbb{R}^n \to \mathbb{R}^{n+1}$ be a C^1 map. Prove that the image of f is a set of measure zero. *Hint:* Munkres, Lemma 18.1.