Assignment 9. Due Nov 18, 2003

Q 1. If $(X, \mathcal{B}, \mu)$ is a finite measure space , say for instance $\mu(X) = 1$, then show that

$$L_p(X, \mathcal{B}, \mu) \subset L_{p'}(X, \mathcal{B}, \mu)$$

for $p \geq p' \geq 1$.

Q 2. For a function $f \in \cap_{p \geq 1} L_p(X, \mathcal{B}, \mu)$ when is

$$\lim_{p \to \infty} \|f\|_p < \infty \ ?$$

If it is finite what is its value?