Homework 7 for Math 140C - Spring 2018

- (I) Ch 11, problems 8, 9, 10, 11, 14
- (II) For this question, we work with the Lebesgue measure. Let $A = [0, 1]$ and let $\{f_n\}$ be a sequence of functions with $f_n = nK_{[0,1/n]}$.
  (a) Prove that f_n is in $\mathcal{L}^1$ on A (for all n).
  (b) Find $\lim_{n\to\infty} \int_A f_n d\mu$ and $\int_A (\lim_{n\to\infty} f_n) d\mu$.
  (c) Give an example where Fatou's lemma holds with strict inequality.