Math 671 - Assignment 8 - Due Nov. 1 or thereabouts

1. Text E4.6

2. Text E4.7

3. Let X_n be iid random variables, $K > 0$ a constant, and let $Y_n = X_n I_{[|X_n| \leq K]}$.
   Suppose that the following three series converge:

   i) $\sum_n P(|X_n| > K)$;

   ii) $\sum_n \mathbb{E}(Y_n)$;

   iii) $\sum_n Var(X_n)$.

   Then $\sum_n X_n$ converges a.s. (Hint: First, use the Kolmogorov inequality we proved in class to show that $\sum_n (Y_n - \mathbb{E}(Y_n))$ converges. Then use (ii), then use the fact that $\{X_n\}_n$ is equivalent to $\{Y_n\}_n$ from (i).)