

1. Let f_1, f_2, \dots be a sequence in $L_1(I)$, where I is a compact interval. Suppose that there exists a $K \in \mathbb{R}$ so that $|f_n| \leq K$ for all n . Show that if $f_n \rightarrow f$ almost everywhere then $f_n \rightarrow f$ in the L_1 -norm.
2. Show that that exercise 1 is false when one of the following changes is made:
 - (a) $I = \mathbb{R}$.
 - (b) There is no such K .
 - (c) The sequence f_1, f_2, \dots converges in the L_1 norm and you are asked to prove that it converges almost everywhere.

Complete exercises 4.11 through 4.18.