Problem set 8

Do for Tuesday, June 6

p. 332: #4, #11 (The hard part is to prove completeness. For this, imitate part of the proof of Theorem 11.42, which is harder than this problem), #16 (hard!).

Also:

1. Give an example of a doubly index sequence \( \{ a_{nj} \} \) of positive real numbers such that

\[
\lim_{n \to \infty} \sum_{j=1}^{\infty} a_{nj} \neq \sum_{j=1}^{\infty} \lim_{n \to \infty} a_{nj}
\]

2. Prove that if \( f \) and \( g \) are real-valued measurable functions, then so is \( \max(f, g) \). If \( f \) and \( g \) are integrable, is \( \max(f, g) \) also integrable?