HOMEWORK ASSIGNMENT 4

Due in class on Wednesday, September 24.

Page 36, Exercise 7.4, Pages 42–43, Exercises 8.3, 8.9, 8.10, plus Exercises E and F below.

E. Let \((s_n)_{n=1}^{\infty}\) be a convergent sequence of positive numbers whose limit, \(s\), is also positive. Prove that \(\lim_{n \to \infty} \sqrt{s_n} = \sqrt{s}\).

*F. Let \((s_n)_{n=1}^{\infty}\) be a convergent sequence with limit \(s\). Let the sequence \((t_n)_{n=1}^{\infty}\) be defined by

\[
t_n = \frac{1}{n} (s_1 + s_2 + \cdots + s_n) \quad (n \in \mathbb{N}).
\]

Prove that \(\lim_{n \to \infty} t_n = s\). (Suggestion: Start by reducing to the case \(s = 0\).)