Due: Wednesday, September 26

1. Exercise 2.6.L in the text.
2. Exercise 2.7.D in the text.
3. Suppose that, for a sequence (a_n), there is $\lambda \in (0,1)$ so that

$$|a_{n+2} - a_{n+1}| \leq \lambda |a_{n+1} - a_n|.$$

   Show that (a_n) is Cauchy.

4. (a) Exercise 2.5.J in the text.
   (b) The sequence (a_n) has the property that for any sequence (b_n), we have $\limsup a_n + b_n = \limsup a_n + \limsup b_n$. Show that (a_n) converges.
   HINT: Part (a) can be used
5. Find $\displaystyle\sum_{n=1}^{\infty} \frac{2n+1}{n^2(n+1)^2}$.