Homework 9
Due: Friday, April 7

1. [SS]5.2.
2. In this problem, use the fact that if $\{a_j\}$ is a sequence of numbers with $|a_j - 1| < 1$, then
$$\prod_{j\geq 1}(1+a_j)$$
converges if and only if
$$\sum_{j\geq 1}\log(1+a_j)$$
converges, where log means the principal branch of the logarithm.
   (a) Show that $\prod_{n\geq 2}(1+\frac{(-1)^n}{\sqrt{n}})$ diverges.
   (b) Show that $\prod_{n\geq 2}(1+\frac{(-1)^n}{n})$ converges.

   (HINT: *Use the first few terms in the expansion of* $\log(1+z)$.)
3. Do **Problem** [SS]5.4(a) (page 157), and read part (b).
4. Use (3) to redo [SS]5.2(a).