Assignment #8 for **Mathematics for Economists**
Economics 362M, Spring 2010

Due date: Tue. Apr. 6.
Readings: CSZ, Ch. 4.4-6

One of the crucial properties of $\mathbb{R}^\ell$ is its completeness, and for the purposes of applications, one of the important uses of completeness occurs in Banach's contraction mapping theorem, and we will examine one set of uses of this in §4.4.

For understanding continuity and compactness, we need open and closed sets. It is important to remember that there are sets that are neither open nor closed. In different circumstances, there are different equivalent formulations of the closedness of a set, and becoming familiar with these is covered in §4.5. The sequence definitions of closed sets will be of particular use.

We saw that the rational numbers are countable, and arbitrarily close to every number in $\mathbb{R}$. The existence of a countable set with this property is called "separability," and we will briefly consider it in §4.6.

From Chapter 4.4: 4.4.12, 4.4.13, and 4.4.14.
From Chapter 4.5: 4.5.2, 4.5.8, 4.5.11.