Homework 8
Due: Friday, April 2

1. Let $\{f_k : S \to \mathbb{R}\}$ be a sequence of real-valued functions on S, and let $f : S \to \mathbb{R}$ be a function. Prove that $f_k \to f$ uniformly if and only if $f_k \to f$ with respec to $\|\cdot\|_\infty$, i.e., $\lim_{k\to\infty} \|f_k - f\|_\infty = 0$.

2. [F]7.1.1.

3. [F]7.1.3.

4. [F]7.1.5.

5. (a) [F]7.1.7.
   (b) What goes wrong if instead one is given an infinite collection of sets $\{S_N\}_{N\in\mathbb{N}}$?