18.099b Problem Set 4a
Due: Thursday, March 11th (in class or before).

Let $E \subset \mathbb{R}$ be a subset of the real numbers. A point $x \in E$ is *isolated* if there is an open interval containing x but containing no other point of E. That is, there is $\delta > 0$ such that $(x - \delta, x + \delta) \cap E = \{x\}$. The set E is called *discrete* if every point in E is isolated.

Write a short exposé that:
- defines discrete sets,
- gives an example (with proof) of a set that is discrete and a set that is not discrete, and
- describes (with proof) which sequences of points in a discrete set are convergent.

You are free to organize the material in whatever way you think best. Think of it as a tiny mathematical essay; it should be self-contained and flow smoothly. The exposé must be typeset in Tex.