Homework assignment, Feb. 16, 2007.

- 1. Prove that if $\{a_{n_k}\}_{k=1}^{\infty}$ is a subsequence of $\{a_n\}_{n=1}^{\infty}$ and $a = \lim_{n \to \infty} a_n$ then $\lim_{k \to \infty} a_{n_k} = a$.
- 2. Prove that if $\{a_n\}_{n=1}^{\infty}$ is a bounded above sequence, then there exists a subsequence a_{n_k} such that $\lim_{k\to\infty} a_{n_k} = \limsup_{n\to\infty} a_n$
- 3. Give an example of open sets A_k on the real line \mathbb{R} such that $\bigcap_{k=1}^{\infty} A_k$ is not open.
- 4. p. 98 # 1.
- 5. p. 105 # 6 (only questions about open sets)