Math 444 (Cowen) **Homework** **Due 8 November 2010**

Text, page 135: 1, 4 (DON'T use '$\lim_{x\to\infty}$'), 5, 6, 9, 10, 11

Definition. If $I = [a, b]$ is a closed and bounded interval in $\mathbb{R}$ and f is a real valued function defined on I, we say f *is strictly increasing on* I if for each x and y with $a \leq x < y \leq b$, we have $f(x) < f(y)$.

A. Let f be a strictly increasing, continuous function on the interval $I = [a, b]$ and let J be the interval $[f(a), f(b)]$. Show that f is a bijection of I onto J.

B. Let f be a strictly increasing function defined on the interval $I = [a, b]$ and let $J = [f(a), f(b)]$. Suppose, also, that f is a bijection of I onto J.

Prove that f is continuous on the interval I.