MAT 142
Problem Set #7

due in class on March 10, 2005

1. Apostol, section 7.17 # 2, 7, 9, 12, 19, 22
2. Apostol, section 10.4 # 1, 4, 9, 17, 26, 31
3. Given a sequence, a_n, let $f(x)$ be any function so that $f(n) = a_n$ for all positive integers, n. Prove that if $\lim_{x\to\infty} f(x) = L$, then $\lim_{n\to\infty} a_n = L$.
4. Show that the converse of the previous statement is false. Specifically, show that the sequence $a_n = \sin(\pi n)$ converges even though $\lim_{x\to\infty} \sin(\pi x)$ does not exist.