

# MATHEMATICS 3210. Homework 4.

September 24, 2001

In all the problems you should use the definition of limit, no *limit theorems!*

1. §7, # 7.4.
2. §8, # 8.1.
3. a) Prove that the sequence  $\{(-1)^n\}$  contains subsequences which converge and subsequences which do not converge.  
b) Find a convergent subsequence of  $x_n = n + (-1)^{3n}n$ .  
d) Prove that  $\lim_{n \rightarrow \infty} \pi - 3/\sqrt{n} = \pi$ .