Real Analysis

Math 310 MWF 10:30-11:25am
Fall 1996 127 Fowler

Ron Buckmire ~ 402 Fowler ~ 259-2536 ~ ron@oxy.edu ~ Mon 1:30-3:30pm Wed & Thu 1:30-2:30pm

(09/20/96)

SUMMARY Limit Theorems for Sequences

READING §9

Warm-Up
(5-10 minutes)

USEFUL THEOREMS
Now that we know how to formally prove that a sequence convergence to a particular limit, we know that we don't want to use this formal method everytime we want to find the limit of a sequence! This is why people develop theorems based on simpler results. We will be looking at Theorems **9.1, 9.2** in depth and leave the rest of the chapter up to you.
Theorem: Convergent series are bounded

Theorem: $\lim(ks_n) = k \lim s_n$
If the sequence (s_n) converges to s and $k \in \mathbb{R}$, then the sequences (ks_n) converges to ks. That is, $\lim(ks_n) = k \lim s_n$.

Theorem: $\lim(s_n + t_n) = \lim s_n + \lim t_n$
If the sequence (s_n) converges to s and (t_n) converges to t, then $(s_n + t_n)$ converges to $s + t$.

Theorem: $\lim(s_n t_n) = (\lim s_n)(\lim t_n)$
If the sequence (s_n) converges to s and (t_n) converges to t, then $(s_n t_n)$ converges to st.

Theorem: $\lim(1/s_n) = 1/(\lim s_n)$
If the sequence (s_n) converges to s and $s_n \neq 0 \forall n$, and if $s \neq 0$ then $(1/s_n)$ converges to s, then $(s_n t_n)$ converges to st.

Homework Assignment
§8, page 32: **9.1(b), 9.2(b), 9.5** and **9.6**