HOMEWORK 3 – AP SOLUTIONS

AP:

(a) Let $s = \lim_{n\to\infty} s_n$.

Claim: $\lim_{n\to\infty} s_n = |s|$

Let $\epsilon > 0$ be given, then there is N such that if $n > N$, then

$$|s_n - s| < \epsilon$$

With that same N, if $n > N$, then by the reverse triangle inequality,

$$||s_n| - |s|| \leq |s_n - s| < \epsilon\checkmark$$

(b) Let $s_n = (-1)^n$, then s_n does not converge, but $|s_n| = |(-1)^n| = 1$ converges to 1.

Date: Friday, September 17, 2021.