

高微第七週作業

Rudin : p.78 # 3, 4, 5, p80 # 14 (a), (b).

Extra problems

1. Let $\{a_n\}$ be a bounded sequence of real numbers, consider

$$s_n = \sup\{a_m \mid m \geq n\} \quad \text{and} \quad t_n = \inf\{a_m \mid m \geq n\}$$

(a) Prove that $\{s_n\}$ converges and $\lim_{n \rightarrow \infty} s_n = \limsup a_n$.

(b) Prove that $\{t_n\}$ converges and $\lim_{n \rightarrow \infty} t_n = \liminf a_n$.

2. Let $\{a_n\}$ and $\{b_n\}$ be sequences of real numbers. Prove that

$$\liminf a_n = -\limsup(-a_n).$$