

MATH 2050A - HW 1

Due Date: 22 Sep 2020, 23:59

(Please submit assignments to Blackboard and follow the instructions there.)

Problems: P.39 Q4, 10, 12

(3 Questions in total)

Textbook: Bartle RG, Sherbert DR(2011). Introduction to Real Analysis, fourth edition, John Wiley Sons,Inc.

We type here all the required problems *for your convenience only*. The presentation of the problems here may be different from the original one but the respective solution should be unaffected.

1 (P.39 Q4). Let $S_4 := \{1 - (-1)^n/n | n \in \mathbb{N}\}$. Find $\inf S_4$ and $\sup S_4$.

2 (P.39 Q10). Let $A, B \subset \mathbb{R}$ be bounded subsets. Show that

(i) $A \cup B$ is a bounded set.

(ii) $\sup(A \cup B) = \sup\{\sup A, \sup B\}$

3 (P.39 Q12). Let $S \subset \mathbb{R}$. Suppose $s^* := \sup S \in S$. Show that $\sup(S \cup \{u\}) = \sup\{s^*, u\}$ for all $u \notin S$,