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$\therefore S = \{1-1, 1+\frac{1}{2}, 1-\frac{1}{3}, 1+\frac{1}{4}, \ldots, 1+\frac{(-1)^n}{n}, \ldots\}$

$= \{0, 3/2, \frac{2}{3}, 5/4, \ldots\}$

$\inf S = 0 \in S$
$\sup S = 3/2 \in S.$ } S is bdd.
smallest member = 0
greatest member = 3/2

(vii) (a, b)

Sol: Let $S = (a, b)$, $\inf S = a$, $\sup S = b$ $\notin S$

both exist $\Rightarrow$ S is bdd.

(viii) $[a, b)$

Sol: Let $S = [a, b)$ $\inf S = a \in S$.
smallest member = a. $\sup S = b \notin S$
$\Rightarrow$ S is bdd

Q(3) Which of the sets in question 2 are bounded.

Sol:- all are bdd since in all both supremum and infimum exist.

Q(4) find the smallest and the greatest members (if they exist) for sets in question 2.

Sol: The infimum and supremum of a set may or may not belong to the set but the greatest and least (smallest) points of a set must belong to the set

Defn → An element G of a set S is called the "greatest member" of S if (i) $G \in S$ and (ii) $x \leq G, \forall x \in S$

Defn → An element g of a set S is called the smallest member of S if (i) $g \in S$ and (ii) $g \leq x, \forall x \in S$