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Sol: (i) $S = \{2, 4, 5, 7, 9\}$, upper bound = 9
lower bound = 2
$\Rightarrow$ S is bounded.

(ii) $S = \{1, 2, 3, \ldots\}$, lower bound = 1
upper bound not exist.
$\Rightarrow$ S is not bound.

(iii) $S = \{-1, -2, -3, \ldots\}$

upper bound = -1
lower bound = not exist
ie; S is bounded above but not bounded below.

(iii) $S = \{1, 2, 3, \ldots\}$

lower bound = 1
upper bound doesn't exist.
$\Rightarrow$ S is bounded below but not bounded above.

2: find the infimum and supremum of the following sets, which of these belongs to the set?

(i) $[1, 3, 5, 7, 9]$ smallest member = 1

Sol: Let $S = [1, 3, 5, 7, 9]$, $\inf S = 1$ $\sup S = 9$
= greatest member = 9 inf & sup both exist $\Rightarrow$ S is bdd

(ii) $\{-1, -\frac{1}{2}, -\frac{1}{3}, -\frac{1}{4}, \ldots\}$

Sol: Let $S = \{-1, -\frac{1}{2}, -\frac{1}{3}, -\frac{1}{4}, \ldots\} = \{-\frac{1}{n} : n \in N\}$
$\inf S = -1$ $\sup S = 0$ but $0 \notin S$, $-1 \in S$
$\Rightarrow$ S is bdd & smallest member of