$$a_n = \begin{cases} 2 + \dfrac{(-1)^{\frac{n-1}{2}}}{n}, & n \text{ is odd} \\ 1 + \dfrac{1}{2n}, & n \text{ is even} \end{cases}$$

Set of limit point of above sequence is $\{2, 1\}$

$$\lim_{n\to\infty} a_{2n} = \lim_{n\to\infty} 1 + \frac{1}{2n} = 1$$

$$\lim_{n\to\infty} a_{2n-1} = \lim_{n\to\infty} 2 + \frac{(-1)^{\frac{n-1}{2}}}{n} = 2$$

Lim sup = sup of set of limit point

Lim sup = $\sup\{2, 1\} = 2$

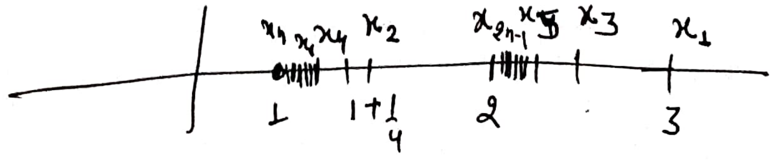
Lim inf = inf. of set of limit point

= 1

$\Rightarrow$

Suprimum of $\langle a_n \rangle$ is $\rightarrow$

$$a_n = \left\{3,\ 1+\frac{1}{4},\ 2-\frac{1}{3},\ \ldots\ 2, 1\right\}$$



Hence suprimum of $\langle a_n \rangle = 3$

infimum of $\langle a_n \rangle = L$