27/8/22

Adherent point :- Let E be a subset of $\mathbb{R}$. A point p in $\mathbb{R}$ is said to be an adherent point of E if every nbd of p contains a point of E.

☆ limit point always adherent point ; but converse is not true.

Ex:- $\{1, 1/2, 1/3, \ldots\}$ or $\{1/n : n \in \mathbb{N}\}$

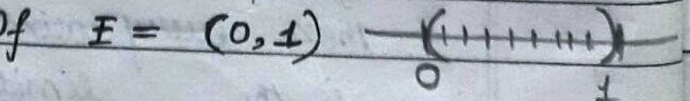
Soln:- 0 is the limit point as well as adherent but if 1 is the ~~limit~~ adherent point then it is not limit point.

⇒ All points of E can be adherent point of E but all points of E can't be adherent point of E.

Derived set :- Let E be a subset of $\mathbb{R}$. The set of all limit points of E is called the derived set of E. Denoted by $D(E)$ or E'

Ex:- Find the derived set of $E = (0,1)$

(open interval all E points are limit point)



Soln:- $D(E) = [0,1]$

Ex) Find the derived set of $E = [0,1]$

$D(E) = [0,1]$

Ex) Find the derived set of finite ~~pt~~ set $\{1,2,3\}$

Ans) $D(E) = \phi$

Ex) Find the derived set of rational no. $\mathbb{Q}$.

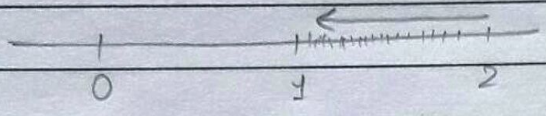
Ans) $D(\mathbb{Q}) = \mathbb{R} = (-\infty, \infty)$

rational & irrational both will lee under it point hence - Real no.

Ex) Find the derived set $E = \left\{ 1 + 1/n : n \in N \right\}$

$1 + 1 + 1 + 1/2 + 1 + 1/4$

$1 + 1/5$, $1 + 1/6$



$D(E) = \{1\}$

In mid sem