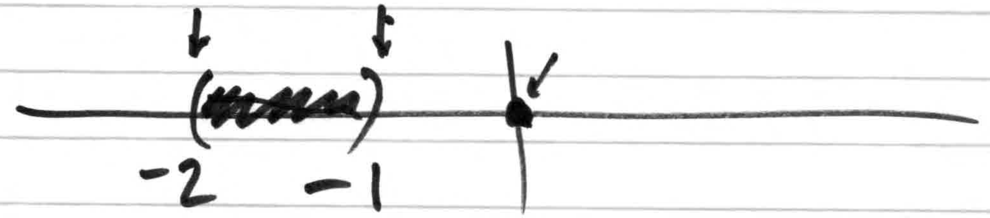
1

(X, τ)

$\underbrace{N \setminus \{x\}}_{\text{deleted nbhd of } x} = \hat{N}$

if $\hat{N} \cap S \neq \emptyset$ for all $\hat{N}$,

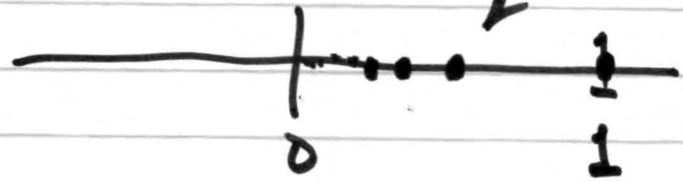
then x is called an "accumulation point or limit point (of S)".



S $\quad S'$ is "derived set"

i.e. all accum. pts

$S : \frac{1}{n} \quad n \in \mathbb{N}$



$S' = \{0\}$

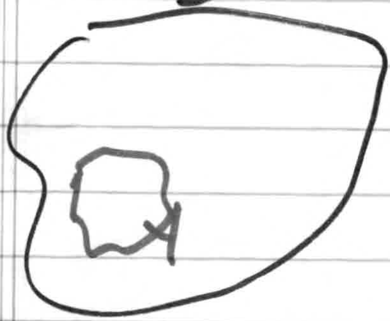
$S \not\subseteq S' \qquad S' \cap S = \phi$

$\cancel{\left(\frac{1}{n} - \frac{1}{2(n+1)}, \frac{1}{n} + \frac{1}{2(n+1)}\right)}$

$$\left|\frac{1}{n} - \frac{1}{n+1}\right| = \left|\frac{1}{n(n+1)}\right|$$

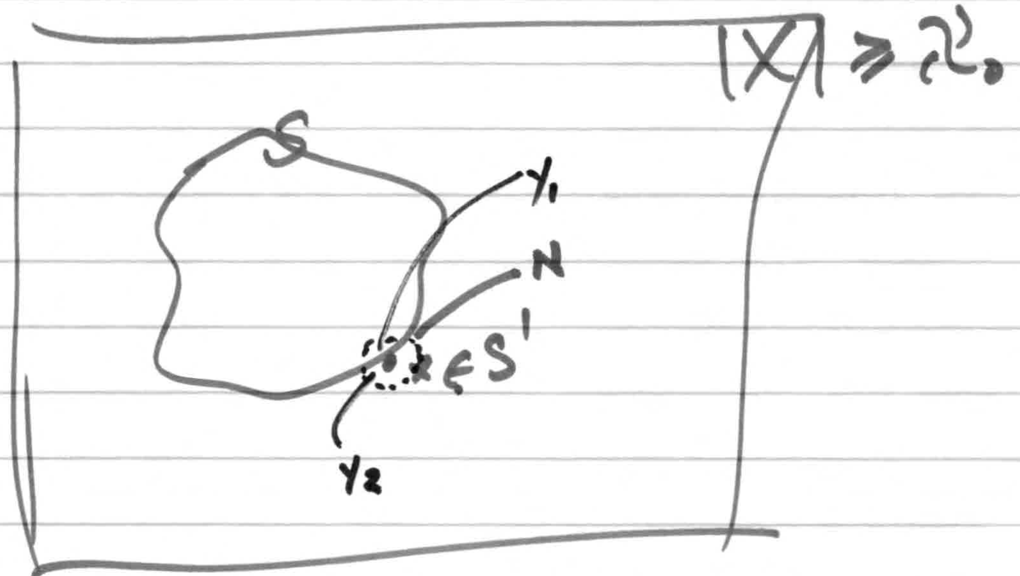
$$\left(\frac{1}{n} - \frac{1}{2n(n+1)}, \frac{1}{n} + \frac{1}{2n(n+1)}\right)$$

S



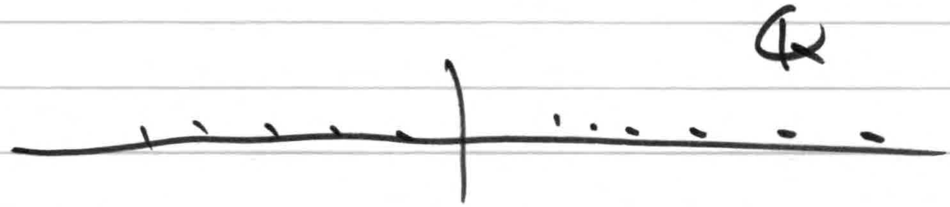
If Y perfect $\Rightarrow Y = \phi$

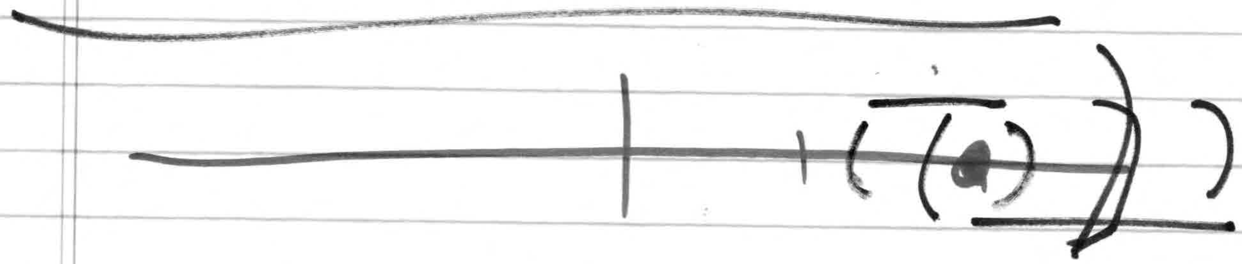
Given (X, τ) a T_1-space
and $\operatorname{card}(X) \geq \aleph_0$
and $S \subset X$ then given $x \in S'$



$\forall N \in \mathcal{N}_x \quad \operatorname{card}(N \cap S) \geq \aleph_0$

x is "ω-limit pt".





$f : X \to Y$

$\mathcal{F}$ defined on X

$\langle f(\mathcal{F}) \rangle$

If $y \in \text{adh} \langle f(\mathcal{F}) \rangle$

then y is a <u>cluster</u> point

of $\mathcal{F}$ under action f