

$\{a_n\}_{n=1}^{\infty}$ - bounded sequence

• $L = \lim_{n \rightarrow \infty} a_n \in \mathbb{R}$

$a_n = (-1)^n$

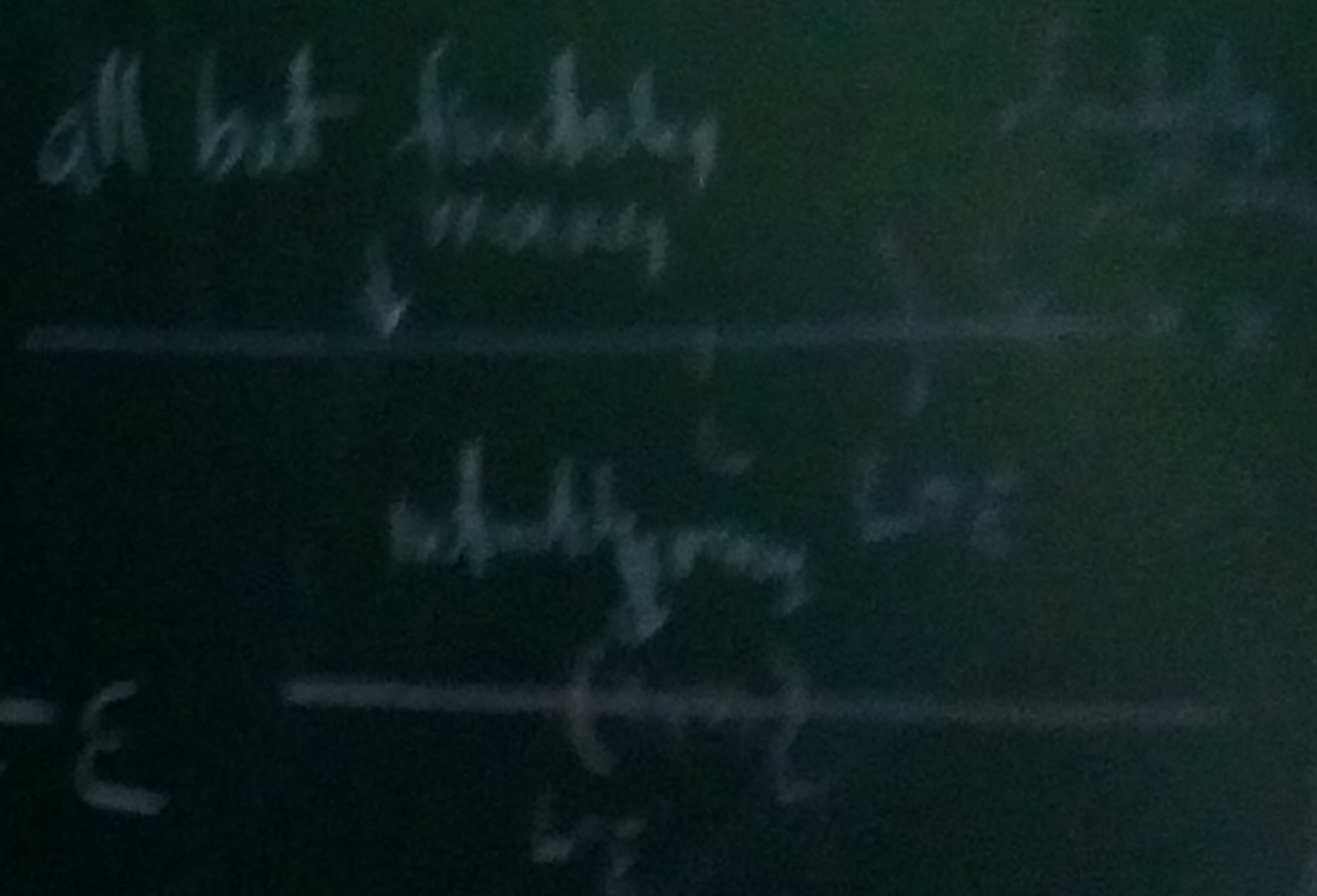
$L = 1$ is *lim sup* as $n \rightarrow \infty$

(b) $M_n = \sup \{a_k \mid k \geq n\}$ $L = \inf_{n \geq 1} M_n$

(i) $A = \{x \in \mathbb{R} \mid x \text{ is limit point of } \{a_n\}_{n=1}^{\infty}\}$
 $L = \sup(A)$

(ii) $\forall \varepsilon > 0 \exists N > 0 \forall n > N \Rightarrow 0 < a_n < \varepsilon$

$\forall M > 0 \exists n \in \mathbb{N} \text{ s.t. } a_n > M$



$\{a_n\}_{n=1}^\infty$ - bounded sequence

$$l = \lim_{n \rightarrow \infty} a_n \in \mathbb{R}$$

$$(i) \quad t_n = \inf \{a_k \mid k \geq n\} \quad l = \sup_{n \geq 1} t_n$$

$$(ii) \quad A = \{x \in \mathbb{R} \mid x \text{ is limit pt of } \{a_n\}_{n=1}^\infty\}$$

$$t = \inf(A)$$

$$(iii) \quad \forall \varepsilon > 0 \quad \exists N \in \mathbb{N} \quad \forall n \geq N \quad 0 < a_n - l < \varepsilon$$

$$\forall M > l \quad \exists n \geq M \quad a_n < M$$

