Definition 3.285. [1Z2](Solved on 2022-11-29) *Given $A_1, A_2 \ldots$ sets , for $n \in \mathbb{N}$, we define*

$$\limsup_{n\to\infty} A_n \stackrel{def}{=} \bigcap_{n=1}^{\infty} \bigcup_{k=n}^{\infty} A_k \tag{3.286}$$

$$\liminf_{n\to\infty} A_n \stackrel{def}{=} \bigcup_{n=1}^{\infty} \bigcap_{k=n}^{\infty} A_k \tag{3.287}$$

(3.288)