Proposition 6.24. [20B] *Let $A \subseteq \mathbb{R}$ not empty, let $l \in \mathbb{R} \cup \{-\infty\}$; the following properties apply:*

$\inf A \geq l$	$\forall x \in A, x \geq l$
$\inf A < l$	$\exists x \in A, x < l$
$\inf A > l$	$\exists h > l, \forall x \in A, x \geq h$
$\inf A \leq l$	$\forall h > l, \exists x \in A, x < h$

If $l \neq -\infty$ then also we write (substituting $h = l + \varepsilon$)

$\inf A > l$	$\exists \varepsilon > 0, \forall x \in A, x \geq l + \varepsilon$
$\inf A \leq l$	$\forall \varepsilon > 0, \exists x \in A, x \leq l + \varepsilon$