



**Definition**

Let  $(A, \leq)$  be a chain.

A *lower bound* for  $B \subset A$  is an element  $a \in A$  so that  $a \leq b$  for all  $b \in B$ . A set is *bounded from below* if it has a least upper bound. A *greatest lower bound* for  $B$  is an element  $c \in A$  so that  $c$  is a lower bound and  $c < a$  for all other lower bounds  $a$ .

**Proposition 1.** *If there is a greatest lower bound it is unique.*<sup>1</sup>

We call the unique greatest lower bound of a set (if it exists) the *infimum*.

**Notation**

We denote the infimum of a set  $B \subset A$  by  $\inf A$ .

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<sup>1</sup>Proof in future editions.



