

GREATEST LOWER BOUNDS

Why

1

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.²

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.

¹To be given in future editions.

²Proof in future editions.

