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COMPLETENESS IN TOTALLY ORDERED ABELIAN GROUPS

Such a group G has a characteristic ordinal ξ^* in terms of which ξ^* Cauchy sequences and convergence are defined. G is ξ^* complete if every ξ^* Cauchy sequence has a ξ^* limit. Dedekindean lower segments are defined – some lower segments are not Dedekindean. Order completeness is then defined. It is shown that ξ^* and order completeness are equivalent. Archimedean completeness is defined and its relation to order completeness is discussed. The three names associated with these forms of completeness are Cantor, Dedekind, and Hilbert.