

The Archimedean Property: New Horizons and Perspectives

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Abstract

Although there have been repeated attempts to define the concept of an Archimedean algebra for individual classes of residuated lattices, there is no all-purpose definition that suits the general case. We suggest as a possible candidate the notion of normal-valued and *locally semisimple* residuated lattice — namely, a residuated lattice whose principal convex subalgebras are semisimple. We characterize the locally semisimple members in the variety of e -cyclic residuated lattices, as well as in various other cases of interest. A theorem to the effect that each Archimedean and prelinear GBL algebra is commutative (subsuming as corollaries several analogous results from the recent literature) is grist to the mill of our proposal's adequacy.