

Positivity and convexity in rings of fractions

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Abstract

Given a commutative ring A equipped with a preordering A^+ (in a very general sense), we look for a fractional ring extension (= “ring of quotients” in the sense of Lambek) as big as possible such that A^+ extends to a preordering R^+ of R (i.e. with $A \cap R^+ = A^+$) in a natural way. We then ask for subextensions $A \subset B$ of $A \subset R$ such that A is convex in B with respect to $B^+ := B \cap R^+$. Perhaps surprisingly this study leads to hard problems.