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Thesis: Automated theorem proving for elementary geometry.

This study analyses automated proofs of theorems from Euclidean Elements, book VI, using the area method. The theorems we will be discussing concern Euclidean field theory about equality of non-congruent figures and similarity of the figures [1]. The proofs are generated by the program WinGCLC.

My proposed hypothesizes:

1. The way of modification of the elimination lemmas while adding the elementary constructions to extending the abilities of the area method in proving theorems from Euclidean Elements, book VI.
2. The method of extension of the axiomatic system from [5] to proving theorem for ordered geometry.

I would like to use my results to implement the prover to the programming languages in logic (Prolog, Haskell) or to the applications like Coq. My dissertation plans contain the analysis of the automated proofs of segment's field from Cartesian arithmetic using the area method by the program WinGCLC. My study is concerned with proving equality of line segments using various methods of constructions corresponding with multiplication of line segments (uniqueness) and commutative property of multiplication of line segments.

Bibliography:

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