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Order-incompleteness and finite lambda reduction models. (English summary)
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Summary: "Many familiar models of the untyped lambda calculus are constructed by order-theoretic methods. This paper provides some basic new facts about ordered models of the lambda calculus. We show that in any partially ordered model that is complete for the theory of β- or $\beta\eta$-conversion, the partial order is trivial on term denotations. Equivalently, the open and closed term algebras of the untyped lambda calculus cannot be non-trivially partially ordered. Our second result is a syntactical characterization, in terms of so-called generalized Mal′cev operators, of those lambda theories which cannot be induced by any non-trivially partially ordered model. We also consider a notion of finite models for the untyped lambda calculus, or more precisely, finite models of reduction. We demonstrate how such models can be used as practical tools for giving finitary proofs of term inequalities."

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Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.