

Stability of Isomorphism of Functional Graphs under Composition and Arithmetic Operations

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Abstract

The paper is devoted to the study of the properties of directed graphs associated with mono-unary algebras (A, f) . In the first part, based on the types of connected components of the graph of the mono-unary algebra (A, f) , the types of connected components of the graph of the mono-unary algebra (A, f^m) are determined in the case where f is a bijection, and the relationships between the connected components of these algebras are investigated. In the second part, analogous problems are considered for certain non-bijective mono-unary algebras. In the third part, compositions of mono-unary algebras are studied, and it is shown that, in general, neither composition nor arithmetic operations preserve isomorphism of mono-unary algebras.