

Abstract

The aim of this thesis is Russell's analysis of Peano arithmetic. This analysis was presented by Russell and A. N. Whitehead in the book *Principia Mathematica* and then in Russell's book *Introduction to Mathematical Philosophy* which provided this approach in a more accessible form. The thesis focuses on Russell's critique of original Peano axioms and his effort to use only logical definitions instead of axioms. Another goal of the thesis is Russell's theory of classes and substitution of classes by propositional functions. Furthermore, the type theory for propositional functions is introduced and explained. All is converted into present-day logical notation. Moreover, the non-standard models of Russell's Peano arithmetic are studied. Finally, there are two particular arithmetic examples illustrating the purposes of the thesis.

Key words

Bertrand Russell, Peano Arithmetic, classes, propositional function