

HISTORY

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I used the following references to establish the sequence of events biven below: Basu, Pollack and Roy(2003) , Feferman, and Feferman(2004) , Schoenfeld(1967) .

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- Euclid (about 325 BC to about 265 BC) - Axiomatic method
- Early 1900's - Beginnings of Formal Logic and Model Theory
- David Hilbert
- “ Hilbert felt that only finitary mathematics was immediately justified by our intuition. Abstract mathematics is introduced in order to obtain finitary results in an easier or more elegant manner. He therefore suggested as a program to show that all (or a considerable part) of the abstract mathematics commonly accepted can be viewed in this way. ” (Schoenfeld page 3)
- Leopold Lowenheim
- Thoralf Skolem
- Charles Langford
- 1925 E. Artin and O. Schreier - theory of real closed fields
- 1927-1929 Tarski's seminar (in Poland) on eliminating quantifiers
- 1928 M. Presberger - $(\mathbb{N}, +, 0)$ is complete and decidable
- 1929 K. Goedel - First order logic is complete
- about 1930 Tarski - Completeness and decidability of elementary algebra and geometry (unpublished)
- 1931 A. Tarski, *Sur les ensembles definissable de nombres reels*, Fund. Math. 17, 210-239.
- 1931 K. Godel - Incompleteness: No sufficiently strong consistent system is complete. In particular, $(\mathbb{N}, +, 0, \cdot, 1)$ is incomplete.
- 1930's Godel, Church, Turing, Post - abstract theory of computing, decision theory
- 1937 B. Rosser - No sufficiently strong system is decidable.
- 1939 A. Tarski - French draft on elementary theory of the reals
- 1948 Tarski - RAND report on elementary theory of the reals
- 1951 Tarski - *A decision theory for elementary algebra and geometry*, Berkeley
- 1954 A. Seidenberg - *A new decision procedure for elementary algebra*, Annals of Math.
- 1956 Tarski - *Logic, Semantics, Metamathematics - Papers from 1923 to 1938* translated by J.H. Woodger
- 1957 George Collins - talk about implementing Tarski's procedure on the IBM 704 computer
- 1974 M.J. Fischer and M.O. Rabin - Presberger's arithmetic is super exponential. Consequently, no procedure for elementary algebra is computationally feasible.
- 1998 B.F. Caviness and J.R. Johnson (editors) *Quantifier Elimination and Cylindric Algebra Decomposition*, Springer