Caicedo, Andrés Eduardo
Goodstein's function. (English) Zbl 1156.03053
Rev. Colomb. Mat. 41, No. 2, 381-391 (2007).

The paper is devoted to the investigation of Goodstein's function – a fast growing recursive function introduced in 1944 and used in 1982 by *J. Paris* and *L. Kirby* [Bull. Lond. Math. Soc. 14, 285–293 (1982; Zbl 0501.03017)] to obtain a sentence of number-theoretical content independent of Peano arithmetic PA. In the paper, Goodstein's function is commuted in terms of the Löb-Wainer fast growing hierarchy of functions. It is shown how from this and standard proof-theoretic results about this hierarchy the Paris-Kirby result follows. By computing the functions of the Hardy hierarchy in terms of the Löb-Wainer functions, the author gives a new proof of a result on independence due to *E. A. Cichon* [Proc. Am. Math. Soc. 87, 704–706 (1983; Zbl 0512.03028)].

Reviewer: Roman Murawski (Poznań)

MSC:

03F30   First-order arithmetic and fragments
03D20   Recursive functions etc.

Keywords:

fast growing recursive function; Peano arithmetic; Löb-Wainer fast growing hierarchy; Hardy hierarchy

Full Text: EuDML