

INVESTIGATION OF DIFFERENCE EQUATIONS WITH RATIONAL
RIGHT-HAND SIDES

Klevchuk I.I.

Yuriy Fedkovych Chernivtsi National University, Chernivtsi, Ukraine

We investigate of some properties of solutions of nonlinear difference equations [1, 2]. A period doubling bifurcation in a discrete dynamical system leads to the appearance of deterministic chaos. We use permutable rational functions for study of some classes of one-dimensional mappings. Also n -dimensional generalizations of permutable polynomials may be obtained. We investigate polynomial and rational mappings with invariant measure and construct equivalent piecewise linear mappings. These mappings have countably many cycles. We applied the methods of symbolic dynamics to the theory of unimodal mappings. We use whole p -adic numbers for study the invariant set of some mapping in the theory of universal properties of one-parameter families. Feigenbaum constants play an important role in this theory. We investigate of Mandelbrot sets and Julia sets of some mappings in complex plane.

References

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2. *Klevchuk I.I.* Investigation of difference equations with a rational right-hand sides // Bukovyn. Mat. Zh. – 2020. – **8**, No. 2. – P. 71 – 82.