Global Behavior of Nonlinear Difference Equations of Higher Order with Applications

By V.L. Kocic, G. Ladas

Springer, Netherlands, 2010. Paperback. Book Condition: New. 1st ed. Softcover of orig. ed. 1993. 235 x 155 mm. Language: English . Brand New Book ***** Print on Demand *****.Nonlinear difference equations of order greater than one are of paramount impor- tance in applications where the (n + 1)st generation (or state) of the system depends on the previous k generations (or states). Such equations also appear naturally as discrete analogues and as numerical solutions of differential and delay differential equations which model various diverse phenomena in biology, ecology, physiology, physics, engineering and economics. Our aim in this monograph is to initiate a systematic study of the global behavior of solutions of nonlinear scalar difference equations of order greater than one. Our primary concern is to study the global asymptotic stability of the equilibrium solution. We are also interested in whether the solutions are bounded away from zero and infinity, in the description of the semi cycles of the solutions, and in the existence of periodic solutions. This monograph contains some recent important developments in this area together with some applications to mathematical biology. Our intention is to expose the reader to the frontiers of the subject and to formulate some...

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