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**Some systems of nonlinear difference equations of higher order with periodic solutions.**

(English) [Zbl 1098.39003](#)

Dyn. Contin. Discrete Impuls. Syst., Ser. A, Math. Anal. 13, No. 3-4, 499-507 (2006).

The paper deals with the two systems (1)  $x_{n+1}^{(m)} x_{n-1}^{(m+2)} = 1 + x_n^{(m+1)} = 1 + x_n^{(m+1)}$  and (2)  $x_{n+1}^{(m)} x_{n-2}^{(m+3)} = 1 + x_n^{(m+1)} + x_{n-1}^{(m+2)}$ . The solutions of both systems are assumed to be  $k$ -periodic in  $m$  with a fixed  $k \in \mathbb{N}$ . It is shown that all solutions are  $p$ -periodic in  $n$  with  $p = 5k$  when  $5 \nmid k$  and  $p = k$  else in the case (1), whereas  $p = 8k$  when  $k = 2^j q$  ( $0 \leq j \leq 2$ ),  $2 \nmid q$  and  $p = k$  else in the case (2).

Reviewer: [Lothar Berg \(Rostock\)](#)

**MSC:**

[39A11](#) Stability of difference equations (MSC2000)

[39A20](#) Multiplicative and other generalized difference equations

Cited in **3** Reviews  
Cited in **47** Documents

**Keywords:**

rational nonlinear difference equations; periodic solutions; systems