Agarwal, Ravi P.

Difference calculus with applications to difference equations. (English) Zbl 0592.39001

General inequalities 4, Mem. E. F. Beckenbach, 4th Int. Conf., Oberwolfach/Ger. 1983, ISNM 71, 95-110 (1984).

[For the entire collection see Zbl 0573.00004.]

The paper is primarily concerned with n-th order nonlinear difference equations of the form

$$\Delta^n x(t) + \sum_{i=1}^{m} f_i(t) F_i(x(t), \Delta x(t), ..., \Delta^{n-1}(t)) = 0,$$

t being a nonnegative integer. Discrete analogues are presented of some known oscillation theorems for differential equations. The proofs are based on discrete versions of Taylor's formula, l'Hospital's rule and a theorem of Kneser which are derived in this paper.

Reviewer: B.Aulbach

MSC:

39A10 Additive difference equations
39A11 Stability of difference equations (MSC2000)

Keywords:

nonlinear; oscillation; Taylor's formula; l'Hospital's rule