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OSCILLATION CRITERIA OF COMPARISON TYPE FOR SECOND ORDER DIFFERENCE EQUATIONS

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Abstract. In this paper we investigate the oscillatory character of the second order nonlinear difference equations of the forms

$$\Delta(c_{n-1}\Delta(x_{n-1}+p_nx_{\sigma_n}))+q_nf(x_{\tau_n})=0, \qquad n=1,2,\dots$$

and the corresponding nonhomogeneous equation

$$\Delta(c_{n-1}\Delta(x_{n-1}+p_nx_{\sigma_n}))+q_nf(x_{\tau_n})=r_n, \qquad n=1,2,\dots$$

via comparison with certain second order linear difference equations where the function f is not necessarily monotonic. The results of this paper are essentially new and can be extended to more general equations.

1. Introduction

In this article we are concerned with nonlinear difference equations of the forms

$$\Delta(c_{n-1}\Delta(x_{n-1}+p_nx_{\sigma_n}))+q_nf(x_{\tau_n})=0, \qquad n=1,2,\dots \tag{1.1}$$

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