Abstract

A functional analytic method is used to prove a theorem which establishes the existence and the uniqueness of the solution of a nonlinear difference equation in the Banach space l_1. The boundedness of the solution and the local asymptotic stability of the equilibrium points of the nonlinear difference equation under discussion, are derived immediately from this theorem. The proof of the theorem has a constructive character which allows us to obtain information about the size of the region of attraction of the equilibrium points. Some known nonlinear difference equations are studied as particular cases of the theorem.