

Cubic Convergence for Nonlinear Differential Equations with Initial Time Difference

T. G. Melton

*Dept of Mathematics and Physical Sciences Louisiana State University at Alexandria
8100 Highway 71 South, Alexandria, LA 71302-9121, USA*

A. S. Vatsala

*Dept of Mathematics, University of Louisiana at Lafayette
P.O. Box 41010, Lafayette, LA 70504-1010, USA*

In this paper we have extended the method of generalized quasilinearization to nonlinear differential equations with initial time difference. Using natural lower and upper solutions under suitable conditions we obtained two sequences which converge uniformly and monotonically to the unique solution of the nonlinear differential equations with initial time difference. Furthermore, we prove that the rate of convergence is cubic.

→ ∞ ◇ ∞ ←