Ezquerro, J. A.; Hernández-Verón, M. A.; Magreñán, Á. A.

Summary: We establish a global convergence result for an efficient third-order iterative process which is constructed from Chebyshev’s method by approximating the second derivative of the operator involved by combinations of the operator. In particular, from the use of auxiliary points, we provide domains of restricted global convergence that allow obtaining balls of convergence and locate solutions. Finally, we use different numerical examples, including a Chandrashekar’s integral equation problem, to illustrate the study.

MSC:
45G10 Other nonlinear integral equations
47H99 Nonlinear operators and their properties
65H10 Numerical computation of solutions to systems of equations
65J15 Numerical solutions to equations with nonlinear operators

Keywords:
third-order iterative process; global convergence; convergence ball; recurrence relations

Full Text: DOI

References:

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