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Advances in Newton’s iterative methods for nonlinear equation. (Chinese. English summary) Zbl 07448830

Summary: In this paper, we reviewed the research progress of Newton’s iterative methods for nonlinear equation. Convergence with second order, third order, fourth order, fifth order, sixth order, seventh order, eighth order and ninth order Newton’s iterative methods are given in turn, and the efficiency indices of these iterative methods are analyzed. Numerical experiments show the convergence processes of three Newton iterative methods. The results indicate that the convergence of the higher-order Newton method can be well demonstrated only when the initial point is close to the root.

MSC:
65H05 Numerical computation of solutions to single equations

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nonlinear equation; Newton’s iteration method; convergence order; efficiency index; initial point