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Fourth order iterative methods for solving nonlinear equations. (English) [Zbl 07491357]

Summary: In this paper, we present two new iteration methods to find the solutions of nonlinear equations, which were developed from a concept of [O. S. Solaiman and T. Hashim, “Two new efficient sixth order iterative methods for solving nonlinear equations”, Journal of King Saud University-Science, 31, No. 4, 701–705 (2019)] and Taylor’s series to estimate the second derivative. Analysis of its convergence shows that the order of convergence of the modified iterative method is four, for a simple root of the equation. Finally, to illustrate the efficiency and performance of the proposed method, we give some numerical experiments and comparison.

MSC:
41A25 Rate of convergence, degree of approximation
65D99 Numerical approximation and computational geometry (primarily algorithms)

Keywords:
onlinear equations; Newton’s method; order of convergence

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