

## Why using symbolic computation for proving the convergence of iterative methods?

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### ABSTRACT.

In [YoonMe Ham et al., *Some higher-order modifications of Newton's method for solving nonlinear equations*, J. Comput. Appl. Math., **222** (2008) 477–486], some higher-order modifications of Newton's method for solving nonlinear equations are presented. In [Liang Fang et al., *Some modifications of Newton's method with higher-order convergence for solving nonlinear equations*, J. Comput. Appl. Math., **228** (2009) 296–303], the authors point out some flaws in the results of YoonMe Ham et al. and present some modified variants of the method. In this paper we point out that the paper of Liang Fang et al. itself contains some flaw results and we correct them by using symbolic computation in Mathematica. Moreover, we show that the main result in Theorem 3 of Liang Fang et al. is wrong. The order of convergence of the method is not  $3m+2$ , but is  $2m+4$ . We give the general expression of convergence error too.

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