A MODIFICATION OF IMPROVED OSTROWSKI'S METHOD BASED ON MODIFIED NEWTON METHOD FOR SOLVING ROOT OF NONLINEAR FUNCTIONS

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ABSTRACT

Solving nonlinear functions has become a main concern in numerical analysis with various applications within mathematical and engineering fields. Common numerical methods like Newton method and Ostrowski's method have been widely applied since it is simple and easy to be used. Despite that, the speed of convergence is an ongoing concern for these numerical methods. This research tries to modify the Improved Ostrowski's method by substituting Newton method with Modified Newton method in the formula to enhance their performance in finding roots of nonlinear functions. This research employed four different methods which include Newton, Modified Newton, Improved Ostrowski's, and the new Combination of Improved Ostrowski's and Modified Newton method. Comparative analysis has been done using a set of eight nonlinear functions, four different initial guesses, and three levels of tolerance. The numerical results show that the new combined method outperformed other methods by lowering the number of iterations and CPU time.

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