

**SOLVING NONLINEAR EQUATIONS USING NUMERICAL  
METHODS: A COMPARISON OF NEWTON METHOD, THREE  
STEP NEWTON METHOD, YUN METHOD AND RAJNI  
SHARMA METHOD**

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## ABSTRACT

This study is about the second- and fourth-order iterative methods. Also, the comparison of the effectiveness of the chosen iterative methods, which are the Newton method (NM), Three-Step method (TSM), Yun method (YM) and Rajni Sharma method (RSM) for solving nonlinear equations. All those methods will be compared and tested with eight different types of test functions and with different tolerances. The comparisons are centered around evaluating accuracy, the quantity of iterations required, and CPU time across various methods or algorithms. These criteria's serve as the foundation for assessing how well each method performs in solving the given problems. These comparisons are crucial for determining the most effective approach to solving the problems at hand, considering both the precision of the results and the computational efficiency required. According to the investigation, the Rajni Sharma method is the most efficient method among those methods. Several numerical examples are given to illustrate the efficiency and performance of all the methods.

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