

**A COMPARATIVE STUDY OF REGULA FALSI'S METHOD,  
NEWTON'S METHOD, AND STEEPEST DESCENT'S METHOD  
FOR SOLVING NONLINEAR EQUATION**

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## **ABSTRACT**

This study presents a comparative analysis of numerical methods which is the Regula Falsi method, Newton's Method, and Steepest Descent method. These methods are employed for solving nonlinear equations. To compare the methods, eight different types of functions were tested with these three methods, the Regula Falsi method, Newton's Method, and Steepest Descent method also will be tested with differences in tolerance and initial guess. The performance of these methods was analyzed by using performance profiles based on the number of iterations and CPU time. The results show that Newton's Method surpasses the other methods, achieving the fastest convergence and the least CPU time. Regula Falsi shows moderate performance, while Steepest Descent lags in efficiency due to its higher number of iteration and CPU time. With possible applications in a variety of scientific and technical fields, the results highlight the importance of using the right numerical approaches to maximize computational efficiency.

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