

**USING NUMERICAL ANALYSIS METHOD IN SOLVING
NONLINEAR EQUATION**

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ABSTRACT

This research project explores and compares three iterative techniques, namely Newton, Halley, and Steffensen methods, for finding roots in numerical analysis. The objectives of the study were to find the root of the equation, analyse the convergence behaviour and performance of these methods, and identify the best method between these three methods. The convergence behaviour of each method was assessed by analysing the number of iterations required for convergence. The computational efficiency was also investigated by finding their CPU time. In conclusion, the research project successfully explored and compared the Newton, Halley, and Steffensen methods for finding roots in numerical analysis. The findings highlight the favourable convergence properties of the Halley method. Therefore, from the finding the best method can be determined based on the fastest convergence. However, further research is needed to validate the results across a broader range of equations and to consider other practical aspects such as computational efficiency and stability.

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