

**SOLVING NONLINEAR EQUATIONS USING  
SHAH AND NOOR'S ITERATIVE METHOD**

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## ABSTRACT

Numerical root finding is the technique of approximating the roots of an equation through numerical methods. Numerical method is often chosen for solving nonlinear functions rather than analytical approach. The main purpose of this project is to compare the numerical methods chosen which are Newton's method, Steffensen's method, Shah and Noor's First method, and Shah and Noor's Second method to see which one is best for solving eight nonlinear functions, using *Maple* software, from four different types of functions which are trigonometric function, exponential function, quadratic function, and polynomial function using four different initial values with three stopping criteria. This is done by running programming code, based on the methods chosen, using *Maple* software. The comparison is based on the number of iterations, CPU time, and accuracy. The results via performance profile using *SigmaPlot* show that Newton's method is overall the best method for all the criteria for its high level of efficiency and robustness. Both Shah and Noor's First method and Shah and Noor's Second method show comparable results with each other while Steffensen's method shows the worst performance.

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