

**FINDING THE ROOT OF NONLINEAR EQUATIONS  
USING OPEN METHOD**

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## **ABSTRACT**

In the fields of science, engineering, and natural science, practitioners often encounter the question of determining the exact root of a function. It is relatively easier to find the exact root for simple functions compared to complicated ones. Consequently, numerical methods in the form of open methods are frequently employed to approximate the roots of functions. This research aims to approximate the roots of six functions using four different initial values. The tested functions comprise combinations of trigonometric, exponential, and cubic polynomial functions, and the open methods utilized include Newton's method, Steffensen's method, Chebyshev's method, and Halley's method. The results are based on the number of iterations, CPU times, and error analysis with three different tolerance levels. The numerical findings demonstrate that Halley's method is the most effective open method for finding the roots of functions.

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# TABLE OF CONTENTS

	Page
DECLARATION BY THE SUPERVISOR-----	i
DECLARATION BY THE CANDIDATE-----	ii
ABSTRACT -----	iii
ACKNOWLEDGEMENT -----	iv
TABLE OF CONTENTS -----	v
LIST OF TABLES -----	vi
LIST OF FIGURES -----	iix
LIST OF ABBREVIATIONS AND SYMBOLS-----	x
INTRODUCTION OF RESEARCH -----	1
1.1 Introduction -----	1
1.2 Background Study-----	1
1.3 Problem Statement -----	3
1.4 Objectives -----	5
1.5 Significance of the Project -----	5
1.6 Scope of the Project-----	6
1.7 Project Benefits -----	7
1.8 Definition of Terms and Concept-----	8
1.9 Organization of Report-----	9
LITERATURE REVIEW AND METHODOLOGY -----	11
2.1 Introduction -----	11

2.2	Fundamental Concepts for Finding The Root Of Nonlinear Function Using	
	Numerical Method.	11
2.2.1	Newton's method	13
2.2.2	Steffensen's method	15
2.2.3	Chebyshev's method	17
2.2.4	Halley's method	18
2.3	Research Step	20
2.4	Conclusion	23
	IMPLEMENTATION	24
3.1	Introduction	24
3.2	Sample of Function	24
3.3	Implementation of Numerical Methods	28
3.3.1	Implementation of Newton's method	28
3.3.2	Implementation of Steffensen's method	31
3.3.3	Implementation of Chebyshev's method	33
3.3.4	Implementation of Halley's method	36
3.4	Error Calculation	39
3.5	Conclusion	40
	RESULT AND DISCUSSION	41
4.1	Introduction	41
4.2	Numerical Result	42
4.3	Number of Iterations	42
4.3.1	Number of iterations $f(x) = x \cos(x) - x^3 + x - 2$	43
4.3.2	Number of iterations $f(x) = x^3 - e^x + 2x - 1$	44
4.3.3	Number of iterations $f(x) = 5 \sin(x + 2) + e^x + x + 1$	45
4.3.4	Number of iterations $f(x) = (x^2 - 5x + 7)e^x + x - 3$	46
4.3.5	Number of iterations $f(x) = 5 \cos^3(x - 2) - 4e^x - 3x^3 + 1$	47