UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

BANACH CONTRACTION PRINCIPLE METHOD (BCPM) FOR SOLVING SINE GORDON EQUATION

NURAIN NABILA BINTI HAMZAH –2019802176

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

In this study, the Banach Contraction Principle method (BCPM) is used to solve the Sine Gordon equation (SG). The Sine Gordon equation is a nonlinear partial differential equation which describes in solitary waves in Physics and Engineering. Obtaining the result to Sine Gordon problem is difficult than linear differential equations as it involves non structured differential equations with unknown nonlinearity initial conditions. The main objective of this study is to analyses the precision and efficiency of BCPM in solving the Sine Gordon equation with its exact solutions. Two Sine Gordon equation cases have been chosen and implemented with BCPM. The absolute errors were calculated based on the results. The results indicated that BCPM is accurate and effective when it comes to solving nonlinear equations.