

# Dedication

.....I dedicate this work to

.....My parents

.....My family

.....My teachers

# ACKNOLEDGMeNT

Thank to Allah who gave me health and patience to  
.accomplish this work

My deepest gratitude goes to **Dr. Iajimi Ben Amor Ben Belgacem Iajimi** my supervisor, for suggestion this work, for this encouragement and supervision over the course of this study, for his keenness to follow this project, theoretical and .practically, and his friendly guidance throughout this work

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.mathematic at Sudan University of science and technology

# ABSTRACT

In this research we study the solution of ordinary differential equations using Adomian decomposition method (ADM) and modified decomposition (MD) and we compared between the results of the two methods.

In chapter one we explained the Adomian Decomposition method and how to use it to solve ordinary differential equations (ODE) and gave some examples of linear and nonlinear ordinary differential equations with comparison of the results found by using ADM with those found by the analytic solution.

In chapter two we explained Modified Decomposition in solving ODE both linear and nonlinear, we also compare the results found to those found by ADM and we use MD to solve boundary value problem.

In Chapter three we concentrate on results obtained by using Adomian decomposition method with a new choice for the differential operator to solve Emden- Flower equation

In Chapter four we *solved* higher Order Differential Equation Using Adomian decomposition method .we also solved the sixth order and eight .order boundary value problems

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في هذا البحث تناولنا حل المعادلات التفاضلية العادية باستخدام طريقة الأدميان للتفكيك وطريقة

التفكيك المعدلة مع مقارنة نتائج الطريقتين.

في الباب الأول أوضحنا كيفية استخدام طريقة الأدميان للتفكيك لحل المعادلات التفاضلية العادية

وتم حل بعض الأمثلة في المعادلات التفاضلية الخطية وغير الخطية ومقارنة النتائج مع الحلول

التحليلية.

في الباب الثاني أوضحنا كيفية استخدام طريقة التفكيك المعدلة لحل المعادلات التفاضلية العادية

وتم حل بعض الأمثلة في المعادلات التفاضلية العادية الخطية وغير الخطية وتم مفرنتها مع

طريقة الأدميان للتحليل وتم حل مسائل القيم الحدية.

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