

## **DEDICATION**

,To my Father

,Mather

Brothers and

,Sisters

## **ACKNOWLEDGEMENT**

All praise is to "ALLAH", the Almighty, with whose gracious help it was possible to accomplish this work. I am gratefully thanked my supervisor, Prof. Mohammed Osman Elmekki, to the help, preparation and completion of this .research, support offered

I am deeply indebted to all those help me to finish this .study

## **Abstract**

In this thesis we talk about conformal mappings and some applications. It consists of three chapters, in chapter one we talk about the basic .theory of conformal mappings

In chapter two, some examples of conformal mappings, in particular we discuss the case of fluid flow .and airfoil problems

The last chapter is devoted to applications of conformal mappings includes, Heat Condition, Electrostatics, and Hydrodynamics. The basic idea of such applications is that a conformal mapping can be used to map a given region to a simpler region which the problem can be solved by inspection. By transforming back to the original region, the .desired is obtained

## الخلاصة

فى هذه الرسالة تحدثنا عن التحويلات الحافظة للزوايا وبعض تطبيقاتها ,وهي تحتوى على ثلاثة ابواب ,فى الباب الاول تم الحديث عن النظريات الاساسية فى التحويلات الحافظة للزوايا.

وفى الباب الثانى تم اعطاء امثلة عن هذه التحويلات خصوصا حالة جريان المائع .وبالباب الاخير خصص لتطبيقات فى نظرية التحويلات الحافظة للزوايا الفكرة الاساسية لتلك التطبيقات هى ان التحويلات الحافظة للزوايا يمكن ان تستخدم لتخطيط منطقة معطاه لمنطقه ابسط والتي يمكن ان تحل بالنظر .

## The contents

page	Subject
i	Dedication
ii	Acknowledgement
iii	Abstract
iv	(Abstract (Arabic
v	contents
1	Chapter 1: Basic Theory of Conformal Mapping
1	Sec(1.1): Basic Theory of Conformal Mapping
12	Sec(1.2):Fractional Linear and Schwarz- Christoffel :Transformations
18	Sec(1.3):Reflection in a circle
22	Sec(1.4): Schwarz -Christoffel Formula
25	Chapter 2: Examples and Problems

25	Sec(2.1):Examples
32	Sec(2.2):Fluid Flow and Airfoil Problems
43	Chapter 3:Applications of Conformal Mappings
43	Sec(3.1):Dirichlet and Neumann Problems
48	Sec(3.2):Heat Condition
52	Sec(3.3):Electric Potential
58	Sec(3.4)Hydrodynamics
63	Conclusion
64	Reference