

Dedication

To my parents

To my brothers, sister and all my friends

**To all those who encouraged me to
reach this goal**

Acknowledgments

All praise be to “Allah”, the lord of the world, the Almighty, with whose gracious help it was possible to accomplish this work May prayers and peace be upon Mohammed the last of the Messengers.

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Abstract

In this research we studied some problems in advanced complex variable theory, which include functional coincidence, analytical continuation, poles and zeros, the argument principle, and the gamma function.

In chapter one we used the theorem of functional coincidence and some theorems of analytical continuation to solve some problems.

In chapter two we have to define the concept of poles and zeros and we used their theory for solving some integrals.

In chapter three we addressed the concept of the argument principle, which covers a range of theorems and methods used in solving such issues.

And we ended this research by chapter four which talked about the gamma function and some related theorems.

الخلاصة

في هذا البحث تم دراسة بعض المسائل في نظرية المتغير المركب المتقدمة والتي تحوي التطابق الدالي، التمديد التحليلي، الاصفار و الاقطاب، مبدأ السعة، و دالة جاما.

في الباب الأول قمنا باستخدام نظرية التطابق الدالي و بعض نظريات التمديد التحليلي في حل بعض المسائل.

في الباب الثاني تطرقنا لتعريف مفهوم الاصفار و الاقطاب و استخدمنا بعض النظريات لحل التكاملات المختلفة.

في الباب الثالث تناولنا مفهوم مبدأ السعة الذي يشمل مجموعة من

النظريات و طرق استخدامها في حل المسائل.

ختمنا هذا البحث بالباب الرابع الذي تحدثنا فيه عن دالة جاما و بعض

النظريات الخاصة بها.