THE ISOPERIMETRIC PROBLEM

Dissertation submitted at the University of Leicester
in partial fulfilment of the requirements for
the degree of Bachelor of Science of Mathematics

by

Steven Cheung
Department of Mathematics
University of Leicester

May 2024

Contents

Declaration

All sentences or passages quoted in this project dissertation from other people's work have been specifically acknowledged by clear cross referencing to author, work and page(s). I understand that failure to do this amounts to plagiarism and will be considered grounds for failure in this module and the degree examination as a whole.

Name: Steven Cheung

Signed:

Date:

Abstract

In general, we want the maximum area whose boundary has a specific length.

For the 2-dimensional case.

For the 3-dimensional.

For the n-dimensional.

Manifolds?

Introduction

The isoperimetric problem,

Historical Notes

Something about historical notes. In the 2 dimensional case, a proof was given by Jakob Sternier, who was Riemann's teacher.

Important Preliminaries

imp prelims

The Isoperimetric Theorems for 2D, 3D and nD Cases

1.1 2 Dimensional Case (Plane)

1.2 3 Dimensional Case (Sphere)

1.3 n Dimensional Case ($\mathbb{R}^n$)

Manifolds