University of Essex

School of Mathematics, Statistics
and Actuarial Science

MA981 DISSERTATION

YOUR PROJECT TITLE HERE

YOUR NAME HERE

Supervisor: **YOUR SUPERVISOR NAME HERE**

August 22, 2023
Colchester

Contents

CHAPTER 1

Introduction

The introduction will usually contain an overview of what is in your project document. Typically, it will be the last section you write.

Theorem 1.1. *Sometimes, you will want to state the main results of your document in the introduction.*

Remark 1.2. LaTeX is clever, and automatically generates numbers for theorems, remarks and anything else you might want to label. You can give these an invisible name using `\label{your-key}` and referring back to it later using `\ref{your-key}`, for example the following number will be the same as the theorem above: Theorem 1.1.

Similarly, you will want to reference external sources as you write your document. The basic way to do this is to add `\bibitem{your-chosen-key}`s at the end of your document (this template has three examples), and use `\cite{your-chosen-key}` to refer to it. For instance, if I wanted to cite the example document by Noether, I can write [1].

Mathematics is added using dollar signs for in-line math, i.e. $x^2 + y^2 = z^2$, or by using open-bracket close-bracket for a displayed equation.

$$c^2 = a^2 + b^2 - 2ab\cos\theta.$$

Ordered lists are written using the `enumerate` environment:

1. Hello.

2. This is the second item in my list.

I can also write unordered lists using `itemize`:

- Hello.
- This is now the second item in my list.

You can make figures from files as you can see in Figure 1.1. For this you need to use include graphics.

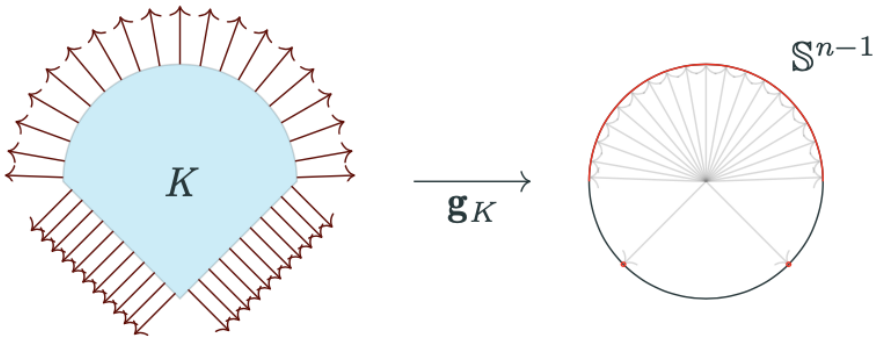

Figure 1.1: The Gauss map $\mathbf{g}_K$ takes $x \in \partial K$ to the outer normal $n_x \in \mathbb{S}^{n-1}$ at that point

While writing be clear and precise and give references whenever necessary. You may like to use theorem, definition, lemma, and example environments provided by LaTeX. For example,

Pioneering work of Emmy Noether [1] provides a connection between symmetries and conservation laws. This result, known as Noether's theorem states that

Theorem 1.3 (Noether, [1])**.** *Every differentiable symmetry of the action of a physical system has a corresponding conservation law.*

Example 1.4. This is an example.

Lemma 1.5. *This is a lemma.*

Definition 1.6. In 1950, Alan Turing published an article [2] in *Mind* titled "Computing Machinery and Intelligence" where he considered the question "Can machines think?". This is known as **Turing's Test**.

Remark 1.7. This is a very important remark.

You can also make figures using LaTeXpackages for figures (e.g. the `TikZ package`) as you can see in Figure 1.2.

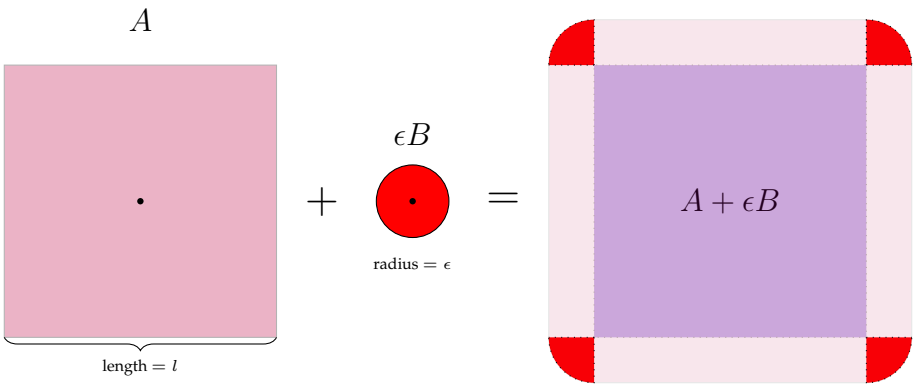

Figure 1.2: Minkowski sum of a square and ball with radius ϵ

CHAPTER 2

Your first main chapter

The text goes here ...

2.1 Your first section of the first main chapter

... goes here.

2.2 Your second section of the first main chapter

... goes here.

CHAPTER 3

Your second main chapter

The text goes here ...

3.1 Your first section of the second main chapter

... goes here.

3.2 Your second section of the second main chapter

... goes here.

CHAPTER 4

Conclusions

And here is the final chapter showing how clever you are ....

APPENDIX

A Long Proof

Text goes here

APPENDIX B

Another Appendix

Text goes here

Bibliography

[1] E. Noether. Invariante Variationsprobleme. *Nachr. d. König. Gesellsch. d. Wiss. zu Göttingen, Math-phys. Klasse, Seite 235-157*, 1918.

[2] A. M. Turing. Computing machinery and intelligence. *Mind*, 59:433–460, 1950.

[3] J. Fakename. Name of book or article goes here. *Journal name*, page numbers, year, other specific info.