This was originally a collection of notes for abstract algebra, but it has since evolved into a textbook. We will cover the theory of groups, rings, fields as well as modules.

The main motivation for writing such a textbook was to discuss the techniques used in the study of abstract algebra, as well as the motivations behind the concepts discussed. As such, we have adopted the more ambitious approach of discussing the ideas and motivations behind the topics while leaving proofs short and concise. We hope that the reader should come away with feeling that all the concepts here are the most natural thing you could possibly think of.

The only prerequisite for this book is good mathematical maturity and the techniques for writing proofs. It would help slightly if you have had linear algebra, as some of our examples depend on linear algebra. Of course, plenty of exercises and problems are included for the reader to practice their skills. The author recommends that the reader do every exercise (even the tedious ones!) and at at least attempt every problem. In general, the average problem will be slightly harder than the average exercise.

At the end of the book, we include references to some other good abstract algebra books, for those who wish to delve deeper into the theory.

This is a work in progress. Corrections and improvements are always appreciated. Please email any corrections to robert [dot] xiu [at] mail [dot] utoronto [dot] ca.

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I'm also greatly indebted to other resources from which I've learnt this content from. In no particular order: [Gal20], [DF04], [Jac09]. Readers are greatly encouraged to check out these other books for a more thorough treatment on algebra.

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