Formalization of Mathematics, with Lean4

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September 7, 2023

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1 Introduction

The main focus of this is the digitalization of mathematics, we won't be going too deep into the programming topics. In this course we will be using the formal proof assistant Lean4.

1.1 Recommended Textbooks

- Theorem proving in Lean4
- Mathematics in Lean
- Hitchiker's guide to logical verification

Note that the Hitchiker's guide is written in Lean 3 but the content is still useful.

2 Basics in Dependent Type Theory

Lean uses Dependent Type Theory (DTT), a flavour of type theory. In DTT everything is a term and every term has a type. We can think of types as analoguous to sets in traditional set theory