Chapter 1

Introduction

1.1 What Is Analysis?

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- **Analysis**: "The rigorous study of [mathematical] objects, with a focus on trying to pin down precisely and accurately the qualitative and quantitative behavior of those objects" (Tao, 2016, p. 1).
- **Real analysis**: "The analysis of the real numbers, sequences and series of real numbers, and real-valued functions" (Tao, 2016, p. 1).
- Real analysis is the theoretical foundation for **calculus**.
- **Calculus**: "The collection of computational algorithms which one uses to manipulate functions" (Tao, 2016, p. 1).
- Lists questions that can be answered with real analysis (motivation for studying it).

1.2 Why Do Analysis?

- Lists examples of contradictions in naïve calculus that must be resolved (and can be resolved with real analysis).