

# MATH 2050B Mathematical Analysis I

2023-24 Term 1

## Problem Set 2

*due on Sep 22, 2023 (Friday) at 11:59PM*

**Instructions:** You are allowed to discuss with your classmates or seek help from the TAs but you are required to write/type up your own solutions. You can either type up your assignment or scan a copy of your written assignment into ONE PDF file and submit through Gradescope on/before the due date. Please remember to write down your name and student ID. **No late homework will be accepted.** All the exercises below are taken from the textbook.

**Required Readings:** Chapter 2.2, 2.3

**Optional Readings:** none

### Problems to hand in

Section 2.2: Exercise # 13, 18

Section 2.3: Exercise # 4, 7, 8

### Suggested Exercises

Section 2.2: Exercise # 2, 3, 5, 6, 7, 9, 10, 12, 15

Section 2.3: Exercise # 3, 5, 9, 10, 11, 12, 13, 14

### Challenging Exercises (optional)

1. (Existence of  $n$ -th root) Let  $n \in \mathbb{N}$ . Prove that for every  $a > 0$ , there exists some  $x > 0$  such that  $x^n = a$ .