Assignment 7 - Proving a Negative

CS 234

due April 7th, 11:59pm

0 Introduction

This assignment is to be completed individually, but feel free to collaborate according to the course's external collaboration policy (which can be found in the syllabus). *Generative AI usage must follow course guidelines to be eligible for points.*

The deliverables consist of one `.pdf` file. The deliverables should be submitted electronically to by the deadline. Put any attribution text in the `.pdf` file. You may also consider adding an experience report to the `.pdf` describing your experience with the assignment: how long did it take, how hard/fulfilling was it, etc.

Your `.pdf` file should be named like `FLast_cs234_aX.ext` where `F` is your first initial, `Last` is your last name, `X` is the assignment number, and `ext` is the appropriate file extension. For example, Liron Cohen's `.pdf` file should be given the name `LCohen_cs234_a7.pdf`. (Liron Cohen is researcher in constructive/computable logic and mathematics. When I was an undergrad, she taught me about ancestral logic!)

1 The Only Part – Proofs on Paper

Please complete the following exercises from the textbook in your `.pdf` submission. Clearly label your responses with the exercise number.

- 10.7
- 10.15
- Prove that $\mathcal{P}(\mathbb{N})$ is uncountable.
- Prove that $\mathbb{R}$ is uncountable. (Hint: Maybe consider the decimal representation of those numbers between 0 and 1.)
- 11.12
- 11.18