## ANALYSIS QUALIFYING EXAM GUIDELINES – JANUARY 2024

Exam Committee: Dmitry Zakharov (chair), Jordan Watts, Debraj Chakrabarti

**Exam Format:** The following instructions will be included with the exam.

- (1) The exam will have 6 problems from Real Analysis (MTH 632), and 6 problems from Complex Analysis (MTH 636).
- (2) You will be required to complete 5 problems from the Real Analysis (MTH 632) part, and another 5 problems from the Complex Analysis (MTH 636) part.
- (3) In either section, if you attempt solutions to all 6 problems, then only the first 5 problems will be graded.
- (4) Begin each problem on a separate sheet of paper, and clearly write the problem number and your name before beginning your solution.
- (5) No calculators, other electronic devices, nor collaboration are allowed.
- (6) No questions may be asked during the exam. If a problem appears ambiguous to you, interpret it in a way that makes sense to you, but not in a way that makes it trivial.
- (7) Give proper mathematical justification of all your statements.

## Exam Content:

For **MTH 632**: The exam will cover material from the textbook by Royden and Fitzpatrick, *Real Analysis, 4th Edition*:

- All of Chapters 1-3.
- Chapter 4, sections 4.1-5.
- Chapter 6: sections 6.1-3.
- Chapter 7: sections 7.1-3.

For MTH 636: The exam will cover the foundations of complex analysis. The relevant material is found in the textbook by Ullrich, *Complex Made Simple*:

• Chapters 0-5 and Appendices 1-3.

Alternatively, the material can be found in the book by Sarason, *Complex Function Theory*:

- Chapter 1, sections 1-12.
- Chapter 2.
- Chapter 3.
- Chapter 4 sections 1-12.
- Chapter 5 sections 1-16.
- Chapter 6.
- Chapter 7 sections 1-21.
- Chapter 8.
- Chapter 10 section 10.

**Exam Grade**: A grade of 70% or better on each part of the exam separately will be considered to be a passing score.