Classroom: Goldsmith 317, MW 5:00-6:20PM
Office: Goldsmith 221
Email: cbregman@brandeis.edu
TA: Abhishek Gupta
Graders: Abhishek Gupta, Alex Semendinger
Office Hours: Tuesday 9:00-11:00AM
Text: A Discrete Transition to Advanced Mathematics, by Bettina Richmond and Thomas Richmond, American Mathematical Society.

Overview: The purpose of this course is to provide an introduction to understanding, analyzing, and writing mathematical proofs. We will study basic concepts of logic and proof techniques as they arise in discrete (set theory, number theory, abstract algebra) and continuous (real analysis, topology) mathematics. Classes will consist of both lecture and discussion in groups. Because of this, attendance is crucial and will factor into your overall grade.

Mathematics at this level will not be similar to what you have probably encountered in previous math courses. Following the logic of a proof is not the same as understanding the proof as a whole, and the latter is essential to writing proofs on your own. We will learn techniques for proving theorems, but often the best way to learn is to struggle with problems and try to find your own solutions. Make sure that you spend time attempting homework problems on your own before discussing them with others. Although you may discuss problems with other students, the final write-up must be your own. You may not copy the solutions of another student.

This course satisfies the intensive writing requirement. Writing will be in the form of regular (weekly) homework. You will be graded not only on whether your solution is correct, but also on the clarity and flow of your solutions. Your answers should be written in full sentences, with precision and in a clear order. As we will see, order matters greatly for logical completeness. Homework will be graded by graduate student TAs who will also hold office hours. Graders will not give credit for work that is illegible. If you cannot write legibly, then you will need to type your homework. (I recommend TeX for this.) After the homework is returned, you will have the opportunity to submit a revised version of some of the problems for additional points.

Success in this 4 credit hour course is based on the expectation that students will spend a minimum of 9 hours of study time per week in preparation for class (readings, homework, preparation for exams, etc.).

Prerequisites: MATH 15a, 20a, or 22a

Course Requirements: This course will have regular homework assignments, a midterm and a final. The grade percentages are as follows:
Class Participation: 10%
Homework: 45%
Midterm: 15%
Final: 30%

**Accessibility Support:** It is the policy of Brandeis University that any student with a disability receive fair and equal treatment in this course. If you have a documented disability that requires academic adjustments or accommodation, please contact me and present your letter of accommodation as soon as possible. All discussions will remain confidential. You will also need to contact Beth Rodgers-Kay (x6-3470 or brodgers@brandeis.edu) in Academic Services, which may be found in Usdan Student Center 130.