
MATH 1077: Sequences and Series

Course Outline, Winter 2026 (WDE)

Instructor Information

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Course Description

Exponents and logarithms and their algebra; geometric progressions; binomial coefficients and the binomial theorem; mathematical induction; sequences and their limits; the exponential and natural logarithm functions; infinite series; and tests for convergence of infinite series.

Course Textbook

This course uses the free online textbooks *Algebra and Trigonometry 2e* by Jay Abramson (2021), available at <https://openstax.org/books/algebra-and-trigonometry-2e/>, and *Calculus Volume 2* by Gilbert Strang and Edwin Herman, available at <https://openstax.org/details/books/calculus-volume-2>.

Course Format (Asynchronous Learning)

- This course is **asynchronous**, meaning weekly lessons, assignments, and discussion boards are completed independently.
- Homework assignments are completed through the **discussion board**, where typed solutions and peer interaction are expected. There will also be a written assignment that will be due at the end of the term.
- Two recorded video presentations will be submitted during the course to demonstrate understanding.
- Students are encouraged to progress steadily and reach out for help whenever needed.

Course Learning Outcomes

By the end of this course, successful students will be able to:

- Understand exponents and logarithms and correctly apply their algebraic properties.
- Solve exponential and logarithmic equations and graph exponential and logarithmic functions.
- Recognize and work with geometric progressions, including computing terms and sums.
- Compute binomial coefficients and apply the binomial theorem in expansions.
- Use mathematical induction to prove results about integers, sequences, and series.
- Analyze sequences and determine their limits.
- Work with the exponential and natural logarithm functions in symbolic and graphical contexts.
- Analyze infinite series and express them using appropriate notation.
- Test infinite series for convergence or divergence using standard convergence tests.

Assessments & Grading Breakdown

- **Discussion Board Homework & Participation:** 25%
Weekly typed homework posts and active class discussion.
- **Video Presentations (2 total):** 25% each (50 % total)
Two brief videos demonstrating mastery of course concepts. More information will be provided to you on D2L (including due dates).
- **Written Assignment (Sequences and Series):** 25%
This assignment will cover topics such as limits of sequences, infinite series, tests for convergence or divergence using standard convergence tests.

Schedule of Textbook Sections and Due Dates

Due Date	Sections
January 20, 2026	6.1, 6.2
January 27, 2026	6.3, 6.4
February 3, 2026	6.5, 6.6
February 10, 2026	6.7
February 24, 2026	13.1, 13.2
March 3, 2026	13.3, 13.4
March 10, 2026	13.5, 13.6
March 17, 2026	5.1, 5.2, 5.3
March 24, 2026	5.4, 5.6

Instructor Availability

Although this course is designed for independent learning, you are not alone:

- Please post questions on the discussion board to receive peer support.
- Contact me directly through email to discuss questions or concerns.
- I am available to set up one-on-one Zoom meetings to assist you as needed.

Accommodations

Lakehead University is committed to achieving full accessibility for persons with disabilities, including arranging academic accommodations. If you have a disability or medical condition that requires accommodations, you are encouraged to contact Student Accessibility Services (SAS) and register as early as possible to ensure equitable participation in academic activities.

For more information, please visit: <http://studentaccessibility.lakeheadu.ca> or contact SAS at SC0003, phone 343-8047, or email sas@lakeheadu.ca.