

AP Calculus AB (AP Calculus BC Part 1)

NOTE: The content of calculus proceeds in the sequence **Calculus 1,2 & 3**.

- **AP Calculus AB** is equivalent to Calculus 1.
- **AP Calculus BC** is equivalent to Calculus 1 and 2.
- **Multivariable Calculus** is equivalent to Calculus 3.

 MM www.xumath.org
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TO REGISTER: <https://xumath.org>

WHEN, WHERE AND HOW MUCH?

Term: June 7 - Oct. 18, 2026

In-Person & Live Zoom Lectures: Sun. 4-6pm CT

Homework Solving Video: Available on Canvas on Fri.

In-Person Address: PolyEducation, 4116 W Spring Creek Parkway, Suite C500,
Plano, TX 75024

Format:

- 20 2-hour lectures + 20 1-hour homework solving videos
- 20 homework assignments (to be graded) + 2 exams (to be graded)
- (1) In-person and live zoom hybrid; (2) Customized lecture notes on Canvas; (3) Videos for making up missed classes; (4) Cash awards for effort and performance in graded quizzes, homework and exams.

Tuition: \$990 (if register and pay by March 31), \$1020 (after March 31)

WHO TEACHES?

Dr. Sheng Xu:

- Recommended by K-12 students and parents in anonymous testimonials (on <https://xumath.org>)
- Math professor at Southern Methodist University with Teaching Excellence Award; 19 years and 17 math courses teaching experience; Author of the undergraduate textbook: *Introduction To Scientific Computing with Matlab and Python Tutorials* (on amazon.com); Ph.D. from Cornell and post-doc at Princeton and Cornell

COURSE INFO

Syllabus, Sample Notes and Videos: <https://xumath.org>

Required Textbook:

- [1] Customized notes by Prof. Xu (available before each class)
- [2] Calculus Volume 1 within the OpenStax project (free online or order print copies)
<https://openstax.org/details/books/calculus-volume-1>

References:

- [3] R. Larson & B. Edwards, *Calculus Early Transcendental Functions*, Edition 6e, ISBN 1-285-77977-9
- [4] J. Stewart, *Essential Calculus Early Transcendentals*, 2nd Edition, ISBN 1-133-11228-5

TOPICS

Unit 1: Limits and Continuity

1. Preview of calculus and limits
2. Calculation of limits and continuity
3. Limits and asymptotes

Unit 2: Derivatives

1. Definition of derivatives
2. Differentiation rules and derivatives of elementary functions
3. The chain rule
4. Derivatives of inverse functions

Unit 3: Applications of Derivatives

1. Implicit differentiation and related rates
2. Linear approximation and differentials
3. Maxima, minima and the MVT
4. Curve sketching
5. Optimization problems
6. L'Hopital's Rule

Unit 4: Integration

1. Antiderivatives and indefinite integrals
2. Definite integrals
3. The fundamental theorem of calculus
4. Substitution rule

Unit 5: Applications of Integration

1. Area problems
2. Volume problems
3. Solving differential equations