AP Calculus BC Part 2
(Calculus 2, after AP Calculus AB)

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.

CONTACT: 214-907-8310(M), meimei.shengxu@gmail.com,
webchat ID: tsinghua954251 (or scan the QR code)

TO REGISTER: **https://xumath.org**

WHEN AND WHERE?

Term: June 5 – Aug. 13, 2025
Lecture Videos: Available on Canvas on Thu. & Sun
Recitation Videos: Available on Canvas on Sat. & Tue.
Live Zoom Q&A: Wed. 7-9pm CT
Format:

- 20 2-hour lecture videos + 20 1-hour homework recitation videos + 10 2-hour live zoom Q&A
- 20 homework assignments (to be graded) + 2 exams (to be graded)
- A student can request the video of a Q&A class if the student has to miss the class.

Tuition: $690 (if register and pay by March 15), $720 (after March 15)

WHO TEACHES?

Dr. Sheng Xu: Associate professor of math at Southern Methodist University

- Ph.D. from Cornell and post-doc at Princeton and Cornell
- 17 years and 15 math courses teaching experience
- Betty McKnight Spears Endowed Teaching Excellence Award in Math
- Recommendation by K12 students and parents in anonymous testimonials on https://xumath.org
- Author of an undergraduate textbook: *Introduction To Scientific Computing*, Taylor Francis

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 2 within the OpenStax project (free online or order print copies) https://openstax.org/details/books/calculus-volume-2

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: Techniques of Integration

1. Integration by parts
2. Trigonometric integrals
3. Partial fractions
4. Other integration techniques
5. Improper integrals

Unit 2: Sequences and Series

1. Sequences and series
2. Integral and comparison tests
3. Other convergence tests

Unit 3: Power Series

1. Power series
2. Representing functions as power series
3. Taylor and Maclaurin series
4. Applications of Taylor’s theorem

Unit 4: Parametric Equations and Polar Coordinates

1. Parametric equations
2. Calculus of parametric curves
3. Polar coordinates
4. Areas and lengths in polar coordinates

Unit 5: Differential Equations

1. Direction fields and numerical methods
2. Separable equations
3. The logistic equation