

Advanced Placement (AP) Calculus AB
Room B-210
Mr. Miller
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2017-2018

COURSE INFORMATION & SYLLABUS

MEETING TIMES

Class will meet during the scheduled 1st period time as well as during SRT periods on Monday and Friday mornings.

TEXTBOOK:

Calculus: Graphical, Numerical, Algebraic (AP Edition) 5th ed. by Finney, Demana, Waits, Kennedy & Bressoud Published by Pearson ISBN: 0-13-331161-9

CALCULATOR:

A TI-84+ graphing calculator or equivalent (e.g. TI-83, TI-86, TI-89) is required. The TI-84+ will be used for demonstrations in class.

OTHER MATERIALS:

In addition to the calculator, it is expected that students come to every class with looseleaf paper, a notebook, pencils and erasers.

LEARNING OUTCOMES:

1. Students should develop a working knowledge of the relevant core topics of differential calculus and their application to a variety of situations.
2. Students should develop problem solving, critical thinking and analytical skills.
3. Students should develop the ability to communicate their thinking both orally and in written form.

HOMEWORK:

You should expect homework on a daily basis. When possible, I will give you time to begin the work in class. Also, homework will be discussed at the beginning of each class period. Homework will be collected and graded at the end of each section. The grade on each textbook assignment will be based partially on effort and partially on accuracy. **LATE WORK WILL NOT BE ACCEPTED!**

ATTENDANCE:

All students should attend every class period! Please try not to miss class unless it is absolutely necessary. In the event you are absent, you will receive one day to make up the work for every day you are absent.

GRADING POLICY:

Your grade will be weighted in the following way:

Tests or Projects	65%
Quizzes	20%
Homework	15%

Please note that test and quizzes will be returned and reviewed in class, however under no circumstances will test and quizzes be sent home.

Grades will be assigned according to the Bishop Noll grading scale.

90-100	A
80-89	B
70-79	C
60-69	D
Below 60	F

EXTRA HELP:

I will be available in my classroom (B-210) during SRT on **Wednesday only** or after school as needed. If you are struggling, please do not wait to get the help you need. Please see me at any time during the year if you are having any trouble.

LETTERS OF RECOMMENDATION:

Each year, I am asked to write many letters of recommendation for college applications, scholarships, etc. All letters must be requested **at least** two weeks in advance of their due date. Requests must be made in person. I will not accept an e-mailed request to write a letter. Once you request a letter, you will be given a form to fill out that will ask information about how to address the letter and various other details that may be useful to me in writing your letter. Please remember that I am under no obligation to write a letter and may refuse your request for any reason.

AP Calculus AB COURSE TOPICS:

Chapter 1: Prerequisites for Calculus

- 1.1 Lines
- 1.2 Functions & Graphs
- 1.3 Exponential Functions
- 1.5 Functions & Logarithms
- 1.6 Trigonometric Functions

Chapter 2: Limits and Continuity

- 2.1 Rates of Change and Limits
- 2.2 Limits Involving Infinity
- 2.3 Continuity
- 2.4 Rates of Change and Tangent Lines

Chapter 3: Derivatives

- 3.1 Derivative of a Function
- 3.2 Differentiability
- 3.3 Rules for Differentiation
- 3.4 Velocity and Other Rates of Change
- 3.5 Derivatives of Trigonometric Functions
- 3.6 Chain Rule
- 3.7 Implicit Differentiation
- 3.8 Derivatives of Inverse Trigonometric Functions
- 3.9 Derivatives of Exponential and Logarithmic Functions

Chapter 4: Applications of Derivatives

- 4.1 Extreme Values of Functions
- 4.2 Mean Value Theorem
- 4.3 Connecting f' and f'' with the graph of f
- 4.4 Modeling and Optimization
- 4.5 Linearization and Newton's Method
- 4.6 Related Rates

Chapter 5: The Definite Integral

- 5.1 Estimating with Finite Sums
- 5.2 Definite Integrals
- 5.3 Definite Integrals and Antiderivatives
- 5.4 Fundamental Theorem of Calculus
- 5.5 Trapezoid Rule

Chapter 6: Differential Equations and Mathematical Modeling

6.1 Slope Fields

6.2 Antidifferentiation by Substitution

6.3 Antidifferentiation by Parts

6.4 Exponential Growth and Decay

6.5 Logistic Growth

Chapter 7: Applications of Definite Integrals

7.1 Integral As Net Change

7.2 Areas in the Plane

7.3 Volumes

7.4 Lengths Of Curves

7.5 Applications from Science and Statistics

Chapter 8: Sequences, L'Hopital's Rule, and Improper Integrals

8.2 L'Hopitals Rule