AP Calculus AB
Syllabus 2023 - 2024

Description

Differential Calculus is the mathematical study of change. It uses the concept of "limits" to take a sequence of approximations called average rates of change, over smaller and smaller intervals, and analyzes if this sequence is approaching a specific definite value; if so, this value is defined to be the "instantaneous rates of change". This process is known as differentiation, and is critical in the study of Physics, Engineering, Economics, Finance, and many other fields.

Integral Calculus is the mathematical study of continuous accumulation. It uses the concept of "limits" to take a sequence of sums of increasing numbers of average values over smaller and smaller intervals, and analyzes if this sequence is approaching a specific definite value; if so, this value is defined to be the "definite integral". This process turns out to be the inverse of the operation of differentiation.

Course Information

Teacher: Dr. Paul Bailey

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Website: http://plbailey79.github.io/portal

Text: *Thomas' Calculus*, Weir, Hass, Giordano, 11th edition

Grade Components

Classwork:	20%
Homework:	10%
Quizzes:	20%
Examinations:	50%

Classwork consists of attendance and participation in discussion, and activities such as team quizzes, worksheets, and other group work. Classwork activities are normally be graded on a scale of zero to ten.

Homework consists of reading checks. These are short (ten minute) assessment wherein students demonstrate that they have done the reading.

Quizzes are about twenty minutes long and occur weekly on Friday, and may cover recent or accumulated material. These will be graded on a scale of zero to ten.

Examinations are an hour long written assessments. As the year progresses, these will become increasingly similar to actual AP exams. They will be graded on a scale of zero to one hundred points. Examinations may be categorized as tests or projects.

Tests (30 %) will not allow calculators. *Projects* (20 %) will be calculator active. A graphing calculator is required for the course and for the AP examination. We recommend the TI NSpire CAS.

Course Outline

This course outline is an approximation and is subject change as we proceed.

Semester	Week	Monday	Topic	Section
1	1	07/31/23	Sets and Numbers	Notes
1	2	08/07/23	Real Line and Cartesian Plane	1.1, 1.2
1	3	08/14/23	Real Valued Functions	1.3 - 1.5
1	4	08/21/23	Trigonometry and Calculators	1.6
1	5	08/28/23	Limits	2.1 - 2.3
1	6	09/04/23	Infinite and Sided Limits	2.4 - 2.5
1	7	09/11/23	Continuity and IVT	2.6 - 2.7
1	8	09/18/23	Derivatives	3.1 - 3.3
1	9	09/25/23	Trigonometric Derivatives	3.4
1		10/02/23	Fall Break	
1	10	10/09/23	Chain Rule	3.5 - 3.6
1	11	10/16/23	Related Rates	3.7
1	12	10/23/23	EVT and MVT	4.1 - 4.2
1	13	10/30/23	Monotonicity and Concavity	4.3 - 4.4
1	14	11/06/23	Optimization and L'Hopital's Rule	4.5 - 4.6
1	15	11/13/23	Antiderivatives	4.8
1	16	11/20/23	Thanksgiving Short Week	
1	17	11/27/23	Sums and Sigma Notation	5.1 - 5.2
1	18	12/04/23	Definite Integral	5.3
1	19	12/11/23	Fundamental Theorem of Calculus	5.4
		12/18/23	Winter Break	
		12/25/23	Winter Break	
		01/01/24	Winter Break	
2	1	01/08/24	Substitution	5.5
2	2	01/15/24	Area between Curves	5.6
2	3	01/22/24	Volumes	6.1 - 6.2
2	4	01/29/24	Arclength and Work	6.3, 6.6
2	5	02/05/24	Inverse Functions	7.1
2	6	02/12/24	Natural Logarithms	7.2
2	7	02/19/24	Exponential Functions	7.3 - 7.5
2	8	02/26/24	Inverse Trigonometric Functions	7.7
2	9	03/04/24	Hyperbolic Functions	7.8
2		03/11/24	Spring Break	
2	10	03/18/24	Integration by Parts	8.1 - 8.2
2	11	03/25/24	Partial Fractions	8.3
2	12	04/01/24	Slope Fields and Separable Diff Eqs	9.1
2	13	04/08/24	First Order Linear Diff Eqs	9.2
2	14	04/15/24	Review	
2	15	04/22/24	Review	
2	16	04/29/24	Review	
2	17	05/06/24	Review	
2	18	05/13/24	Review	
2	19	05/20/24	Short Week	