



ALLEN ACADEMY

Calculus BC
2017-2018

Course Clarification

As a continuation of AP Calculus AB, the following topics define the AP Calculus BC course. Altogether, AP Calculus is taught over the course of three trimesters, A/B/C, which are divided into sections AB / BC.

Topics Covered:	Topics Covered:	Topics Covered:
Integration Techniques, L'Hopital's Rule, Improper Integrals <ul style="list-style-type: none">- Review of basic integration methods- Integration by parts : linear factors, tabular method- Trigonometric integrals- Integration by partial fractions- Trigonometric substitution- Powers of trig functions- Logistic differential equations model- L'Hopital's Rule and using it to determine limits- Improper integrals and their convergence and divergence, with L'Hopital's Rule included	Sequences and Series <ul style="list-style-type: none">- Definition of a sequence- Convergence and divergence of sequences- Definition of a series as a sequence of partial sums- Partial sums as they pertain to convergence of a series- Nth Term test for divergence- Geometric Series Test for convergence and divergence- Integral Test and P-Series Test: relate integral test to improper integrals and also to P-Series- Direct Comparison Test , Limit Comparison Test- Alternating Series Test, Alternating Series remainder- Absolute and Conditional Convergence- The Ratio and Root Tests- Taylor polynomials and approximations: Use graphing calculator lab to introduce- Power Series<ul style="list-style-type: none">radius of convergenceinterval of convergencetesting endpoints for convergence or divergence- Taylor and Maclaurin Series for given functions- Manipulation of series<ul style="list-style-type: none">Addition of series,multiplication of series by constant or variable,	Plane Curves, Parametric Equations, and Polar Curves <ul style="list-style-type: none">- Plane curves and parametric equations- Graphing and orienting the path of a curve- Finding first and second derivatives of functions in parametric form- Parametric equations and vectors: motion along a curve, position, velocity, acceleration, speed, distance traveled- Analysis of curves given in parametric and vector form- Arc Length in parametric form- Polar coordinates and polar graphs- Arc Length in polar form- Area bounded by a polar curve- Area of a region formed by two polar curves



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	differentiating a series, integration of a series - Taylor's Theorem with the Lagrange Form of the Remainder	
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Instructional Resources:		
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| <ul style="list-style-type: none">• Textbook: <i>Calculus of a Single Variable, Eighth Edition</i> by Larson, Hostetler, and Edwards | | |
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