

MATH 141

(GQ) **Calculus with Analytic Geometry II** (4) Derivatives, integrals, applications; sequences and series; analytic geometry; polar coordinates. Students may take only one course for credit from MATH 141, 141B, and 141H.

Prerequisite: Math 140 or a score of 4 or 5 on AP Calculus AB Exam.

Required Topics

Inverse Functions

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Natural Logarithmic Function and its derivative and integral

Natural Exponential Function and its derivative and integral

General Logarithmic and Exponential Functions

Inverse Trigonometric Functions and Their Derivatives and Integrals

Techniques of Integration

Integration by Parts

Trigonometric Integrals

Trigonometric Substitution

Integration of Rational Functions and Partial Fractions

Strategy for Integration

L'Hospital's Rule and Indeterminate Forms

Relative Rates of Growth

Improper Integrals

Sequences and Series

Sequences

Series

Integral Test and p series

Comparison Tests

Alternating Series and Error Estimation

Conditional & Absolute Convergence and the Ratio and Root Tests

Strategies for Testing Series

Power Series

Representations of Functions as Power Series

Taylor & Maclaurin Series

Applications of Taylor Polynomials and Error Estimation

Parametric Equations and Polar Coordinates

Curves defined by Parametric Equations

Calculus with Parametric Curves

Polar Coordinates

Areas in Polar Coordinates