- *Integration*
  - *Indefinite integral as anti-derivative (definition and properties)*
  - *Definit integral, the fundamental theorem of integral calculus(Newton)*
  - *Integration by substitution.*

- *Methods of Integration*
  - *Integration of certain trigonometric and hyperbolic functions with even and odd powers.*
  - *Trigonometric and hyperbolic substitutions, In tegration of quadratic from under radical.*
  - *Integration by parts, Integration of rational functions, Integration of irrational functions, Integration by z=tan(x/2) substitution.*

- *Applications of definite integrals*
  - *Area under the curves, Volume (Disk and shell methods), Arc length.*

- *Complex Numbers*
  - *Definition of the algebraic from of a complex number, conjugate modulus (absolute value)*
  - *Operation (sum,product, division), Polar from representation of the complex number, De Mover's theorem , roots of a complex numbers*

- *Infinite series*
  - *Sequence, infinite series, algebraic operations on series, Tests for convergence of infinite series, series with non-negative terms, alienating test, integral test, ratio test, Power series, interval of convergence, Taylor`s and Maclaurian series expansion of functions*

- *Matrices and determinants*
  - *Definition, type, transpose of function metrices, Matrix operations (Sum, product), Determinant of a matrix , properties , cofactor expansion, Inverse of a matrix, Matrix representation of a system of linear equations, Solution by reduced raw echelon form , Gauss-Jordan procedure, Cramer procedure, Eigen values and eigen vectors , diagnaliation of symmetric matrix, Gram-Schimidt process for determination an orthonormal set of n linearly independent eigen vectors.*

الكتب الأساسية:

Calculus and Analytic Geometry, by Thomas

المرجع المساند:

University Calculus with Analytic Geometry, by J. B. Morry