

Mathematics for the Biological Sciences II: Outline

Integral Calculus

Antiderivative and Areas Under Curves
Definite Integrals
Properties of Definite Integrals
Numerical Integration
Integration Techniques
Substitution
Parts
*Partial Fractions
Definite Integrals
Advanced Numerical Techniques
Improper Integrals
Separation of Variables

Linear Algebra

*Matrix, Matrices
*Inverses of Matrices
*Determinants
*Eigenvalues
*Matrices and Differential Equations

Systems of Differential Equations

*Two and Three Compartment Problems

Numerical Methods

Euler's method
Numerical solutions for circular reactions
Numerical solutions of higher order equations

Etc.

*Michaelis-Menten Processes
Control systems
Tracer experiments- Inflow and outflow through Cell Membranes

Functions of Several Variables

Partial Derivatives
Maxima And Minima of Functions of Several Variables
Lagrange Multipliers and Constrained Optimization
Total Differentials and Their Applications

*Directional derivatives
*Gradients
Method of Least Squares
Double Integrals

Taylor Polynomials and Infinite Series

Taylor Polynomials
Infinite Series
Taylor Series
*Series Solutions to Differential Equations