

Numerical Methods Cheat Sheet

1 Root Finding

- 1.1 Bisection Method**
- 1.2 Newton's Method**
- 1.3 Secant Method**
- 1.4 Fixed Point Iteration**

2 Interpolation

- 2.1 Lagrange Interpolation**
- 2.2 Newton Divided Differences**
- 2.3 Error Bound**

3 Numerical Integration

- 3.1 Trapezoidal Rule**
- 3.2 Simpson's Rule**
- 3.3 Gaussian Quadrature**

4 Linear Systems

- 4.1 Gaussian Elimination**
- 4.2 LU Decomposition**
- 4.3 Iterative Methods**
- 4.4 Condition Number**

5 Ordinary Differential Equations

- 5.1 Euler's Method**
- 5.2 Runge-Kutta (RK4)**
- 5.3 Stability**

6 Error Analysis

- 6.1 Types of Error**
- 6.2 Order of Convergence**

7 Useful Formulas

- 7.1 Taylor Series**
- 7.2 Finite Differences**