

List of topics

Chapter 2

Splines

Chapter 3

Choice of h in derivatives

Poly interp for derivatives

Taylor series for derivatives

Trapezoidal rule

Simpsons rule

Piecewise approx. and
integrals

Method of undetermined
coefficients

Interpolatory quadrature

Degree of exactness

Node polynomial

Gaussian quadrature

Jacobi matrices

Jacobi matrices and
orthogonal polynomials
Eigenvalues as zeros of
orthogonal polynomials

Chapter 4

Nonlinear equation examples

Bisection

Bisection in floating point

Convergence of sequences

Rates of convergence

False position

Secant Method

Newton's method

Fixed point methods

Systems of nonlinear
equations

Convergence of Newton's
method

Exam plan

Current plan (won't change unless I truly feel it's in your best interests to change)

- 10:30am Thursday (Eastern) -> 10:29am Friday (eastern) (24hrs)
- Expect to spend multiple hours on this, 3? 6? ≤ 10
- **No collaboration** (remember, you all said you were okay with the tradeoffs here)
- If someone asks for help, tell them you'll have to email the professor if they ask again because you don't want to risk your grade!

Types of problems to expect

Like homework questions.

Like book questions.

Some discussion questions –
what topics from class are
relevant?

Some implementation
questions.

Like last time?

Some questions

Do I have to typeset my solutions?

- No, but...
- You have 24 hours, I expect *well* written solutions!
 - I'm not going to struggle to understand your answers. If I can't quickly identify where you solved the hard parts of the question, you'll lose points.
- You will have Latex for the exam (I'll release an overleaf document all setup for you...)
- Exams submitted on gradescope.
- One problems/page