Study guide for Chap 03

The exam problems will be closely related to your homework problems. Make sure you understand all the homework problems.

1. Section 3.1: Learn how to construct Lagrange interpolating polynomials and practice on implementing it. Direct evaluation will do, but Neville's method is encouraged (extra credit).

2. Section 3.1: Study the error formula (identity) for Lagrange interpolation (memorize the statement and go through the proof of Theorem 3.3) and how to obtain an error bound (inequality) in Example 3, 4.

3. Section 3.2: Study how to obtain $P_{0,1,\cdots,k}$ from $P_{0,1,\cdots,j-1,j+1,\cdots,k}$ and $P_{0,1,\cdots,i-1,i+1,\cdots,k}$.

4. Section 3.2: Study how to solve nonlinear equations with Inverse Interpolation.

5. Section 3.5: Study the meaning of cubic spline and how to match the coefficients at x_j (such as problems 12, 13, 14). Memorize the meaning of natural and clamped boundary conditions.

6. Section 3.5: Study how to obtain the degree of the piecewise polynomial and number of boundary condition needed for a C^k spline.