Preparation guide for Midterm 02

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

1. About 20 extra points are contents of quiz 01, quiz 02 and midterm 01. Make sure you understand all the problems in these exams.

2. Review study guide for quiz 03 and quiz 04.

3. Section 3.5: Review the meaning and matching conditions for not-a-knot spline.

4. Section 4.4: Practice programming for composite numerical integrations.

5. Section 4.4: Study the relation between 'degree of precision' and 'order of accuracy' of numerical quadratures.

6. Section 4.4: Study the overall error formula for composite numerical integrations. Both in the form of intermediate value and in the form of integration of higher order derivative.

7. Section 4.7:

   Study the derivation of Gaussian quadrature, how to derive the equations for x_i and c_i from precision requirements, and how to solve x_i, by means of Legendre polynomial (and how to construct Legendre polynomials), and how to solve for c_i through Lagrangian interpolating polynomials or from the resulting linear system obtained from precision requirement.