

Sections Covered on the Exam: 3.3, 5.1, 6.1, 6.2, 6.4,6.6.

Be able to:

1. Solve $A\mathbf{x} = \mathbf{b}$ in the sense of least squares.
2. Find the best fit of a set of data points by a linear function.
3. Define a cubic spline.
4. Decide whether a given function is a cubic spline.
5. Compute approximations to the first and second derivatives of a function by finite differences.
6. Compute approximations to $\int_a^b f(x) dx$ using
 - (a) The Trapezoid Rule.
 - (b) Simpson's Rule.
 - (c) The Corrected Trapezoid Rule.
7. Find the order of a numerical integration rule.
8. Know how to deal with "difficult" integrands.
9. Understand the idea of adaptive quadrature.