Midterm1 contents:

Chapter 1:

the concept of round-off errors, chopping/rounding with decimal machine numbers.

Chapter 2:

how to find the root of a nonlinear equation by applying bisection method, fixed point iteration, Newton's method, secant method.

justify that the fixed point iteration converges using the Fixed-Point Theorem (Theorem 2.4), for a given function, and give error estimate (Corollary 2.5).

knowing that the convergence rates of bisection method, fixed point iteration, Newton's method (linear or quadratic).

Chapter 3:

the definition of Lagrange interpolation and Lagrange interpolating polynomials.

how to compute the Lagrange interpolation of a given function at given base points, using Lagrange interpolating polynomials, Neville's method, and divided differences.

use Theorem 3.3 to estimate the error of the Lagrange interpolation at a given point.