Preparation guide for Quiz 02

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

1. Section 1.3: Read the Illustration on page 32 and 33 and the example in homework 02 carefully. Understand the cause of instability for recurrence formula.

2. Section 1.3: Review the definition of 'rate, or order, of convergence $O(\beta_n)$' on p37. Note the difference with 'converge to p of order α' on page 78.

3. Section 1.3: Study how to obtain rate of convergence numerically by means of scaled plot and/or finding relevant constants as in homework 02.

4. Section 2.1-2.2: Study how to estimate number of iterations needed for linearly convergent methods such as bisection and fixed point iteration.

5. Section 2.2: Study the convergence proof and error estimate (Theorem 2.3, 2.4, Corollary 2.5) for fixed point iteration.

6. Section 2.2: Study how to modify (generalize) the fixed point iteration when it does not converge.

7. Section 2.3: Study the secant method and method of false position. In particular, how to get p_{n+1} from previous p_n's.

8. Section 2.1-2.3: Review programming for bisection, fixed point iteration, Newton's method and secant method.