

## Homework Assignment for Week 04

Due Tuesday, Oct 17, 1:20PM.

1. Section 2.4: Problems 7(a), 8, 9, 10, 12, 13, 14.

Remark: Problem 13 can be derived by way of quadratic approximation of  $x = f^{-1}(y)$  at  $(y, x) = (f(x_n), x_n)$  (as shown in the slides for the linear approximation).

2. Section 2.5: Problems 12(a), 14, 16.

3. In Example 1 of section 2.5, the condition in Theorem 2.14 is not satisfied. Nevertheless, one could still get faster convergence of  $\hat{p}_n$  than  $p_n$ , but of the same order. Analyze Aitken's  $\Delta^2$  method to evaluate  $\lim_{n \rightarrow \infty} \frac{\hat{p}_n - p}{p_{n+2} - p}$ . Then verify your result numerically.