

Homework Assignment for Week 13

Assigned Dec 10, 2010.

1. Section 4.4: Problems 10, 14, 16, 17, 19.
2. Section 4.4: Problem 26. Do either (a) or (b).

In order to guarantee that $|x_k - x^*| < 10^{-5}$ for this problem, you need to

- Estimate $|x_k - x^*|$ in terms of $f(x_k)$.
- Given x_k , estimate n (the number of nodes) or h it takes so that the $|f(x_k) - f_h(x_k)|$ is bounded by a given tolerance (for example, $\frac{1}{2} \cdot 10^{-5}$), where $f_h(x_k)$ is the numerical approximation of $f(x_k)$ using composite trapezoidal rule or composite Simpson's rule.

The two questions above are essential to the estimate of $|x_k - x^*|$. The answers are not unique and you don't need to find the best answer. You can also use matlab to assist you to get the estimates.

Hand in by Dec 21 in class your analysis and numerical answer. Also hand in your code to the homework email account by Dec 21.

Note that you still need to start working on it immediately, especially the analysis and numerical implementation of the quadrature rules, since they are within the coverage of quiz 5 on Dec 17.