

Homework Assignment 2

Due on Friday 10/11

Programming Problems:

1. Consider a sequence a_n that satisfies the recurrence relation

$$a_{n+2} = \frac{5}{2}a_{n+1} - a_n, \quad n \geq 0,$$

with the initial data $a_1 = 1/6$ and $a_2 = 1/12$.

- (i) Write a Matlab code to compute a_{10} and a_{100} .
 - (ii) Check that $a_n = 1/(3 \cdot 2^n)$ is the exact solution of the recurrence relation with the initial data.
 - (iii) Compute the relative error of a_{10} and a_{100} . Is the relative small or large? Why?
2. Write codes for the bisection method, the method of false position and Newton's method. You can use the codes for the following textbook problems. No need to submit the codes.

Writing Problems:

Do the following exercise problems in the text book by Bradie,
Sec 2.1: 5, 10, 13, 16(c), 19
Sec 2.2: 1(c), 9, 11(b), 14
Sec 2.3: 1, 6, 8, 9, 10, 15