

## Homework Assignment for Week 02

1. Section 1.2: Problems 12, 15, 18, 24.
2. Section 1.3: Problems 7, 8, 15.
3. Consider the following recursive relation

$$x_1 = a, \quad x_2 = \frac{a}{2}, \quad x_n = \frac{5}{2}x_{n-1} - x_{n-2}$$

- (a) What is the exact solution?
- (b) With  $a = 1/3$ , is it stable? How fast does the relative error grow/decay in  $n$  as  $n$  gets larger? Analyze it and verify your answer numerically.
- (c) Do the same for  $a = 1$  and explain your observation.