11   Lab 11 – April 28, 2022

Instead of a tutorial students have to solve homework 4 and submit solutions in Moodle

Homework 6

Example 1. Form a linear differnce equation which has the following general solution

$$\{a_n\}_{n=0}^{\infty} = \{\alpha + \beta\, n + \gamma\, (-2)^n\}_{n=0}^{\infty};\ \alpha, \beta, \gamma \in \mathbb{R}.$$

Example 2. Given a non-homogeneous linear difference equation of order 3 with $b_n = (6 - 2n^2)$. Morevoer, the characteristic equation of the associated homogeneous linear difference equation has roots $\lambda_{1,2} = 1$, and $\lambda_3 = -4$ (i.e. the root $\lambda = 1$ has multiplicity 2). What is the estimate of one solution of the non-homogeneous equation $\widehat{a}_n$?

Example 3. Solve the following difference equation

$$a_{n+2} - 3\, a_{n+1} + 2\, a_n = 6 \cdot 2^n,\ \ a_0 = 2, a_1 = 6.$$

Example 4. Solve the following difference equation

$$a_{n+2} = 5\, a_{n+1} + 6\, a_n + (4n - 5) \cdot 3^{n+1},\ \ a_0 = 6, a_1 = 9.$$