DATA130013: Homework 3

Please hand in the pdf of your solution via elearning on March 28, 2022.

1. Shumway's book (4th ed.) Problems 3.2, 3.3, and 3.4.

2. Prove that the autoregressive equations

$$X_t = \phi X_{t-1} + W_t, \qquad t = 0, \pm 1, \pm 2, \ldots$$

   where $|\phi| = 1$ and $\{W_t\} \sim \mathrm{WN}(0, \sigma^2)$, have no stationary solution. Note that we assume no initial condition like $X_0 = 0$ etc.