Assignment one (due 22/02/2024)

1. Find the ACF and PACF and plot the ACF ρ_k for $k = 0, 1, 2, 3, 4,$ and 5 for each of the following models:

(a) $Z_t - 0.5Z_{t-1} = a_t,$

(b) $Z_t + 0.98Z_{t-1} = a_t,$

(c) $Z_t - 1.3Z_{t-1} + 0.4Z_{t-2} = a_t.$

2. Simulate a series of 1000 observations from each of the model with $\sigma_a = 1$ in **Q.1**. For each case, plot the simulated series, and calculate and study its sample $\hat{\rho}_k$ and PACF $\hat{\phi}_{kk}$ for $k = 01, 1, \cdots, 20.$