STA 137 Homework 4

Due May 16th 12:00 pm PST. Please upload your assignment to Canvas.

1. Using the difference equation approach to compute the ACF for the ARMA(1,1) model

$$x_t = \phi x_{t-1} + w_t + \theta w_{t-1},\ |\phi| < 1, \theta \neq 0.$$

   I have gone through this class. Please repeat it in your HW.

2. When $\theta = 0$, we get the ARMA(1,0) model which is the AR(1) model. Check whether your solution matches that of equation (3.8) of the textbook

3. When $\phi = 0$, we get the ARMA(0,1) model which is the MA(1) model. Check whether your solution matches that of Example 3.5 of the textbook

4. Plot the sample ACFs when $\theta = 0.9$ and $\phi = 0.6$ using R for a few lags $h = 0, 1, 2, 3, 4, 5$. Check whether they are close to your theoretical derivations.