Assignment-7

1. A third order Autoregressive (AR) model described as follows.

$$x_t = \emptyset_1 x_{t-1} + \emptyset_2 x_{t-2} + \emptyset_3 x_{t-3} + \varepsilon_t$$

Derive equations to be used for determining the constant parameters (ϕ_1, ϕ_2 and ϕ_3 in terms of autocorrelation coefficients.

2. In ARIMA technique, we know that $X_t = (X_t - X_{t-1}) + (X_{t-1} - X_{t-2}) + (X_{t-2} - X_{t-3}).....$

   Take a time series and check whether this expression converges to zero or not. Also, determine the variance and comment on the characteristics of the variance.