Regarding AR(1) models, which of the following statements are true?

(a) For a positive value of ϕ, the ACF exponentially decrease to zero as the lag h increases.
(b) (c) For a positive value of ϕ, the ACF exponentially converges to zero as the lag h increases.
(c) (d) ϕ is the slope in the AR(1) model and the lag 1 autocorrelation.

The Ljung-Box statistic, Q(m), is a function of the accumulated sample autocorrelations, rj , j = 1, 2, ..., m, up to any specified time lag m. Which of the following sentence(s) is(are) true?

a. When applied to xt, the sample raw data, the null distribution of Q(m) is approximatelly a χ 2 distribution with df = m.
b. When applied to wt, the residuals of a time series model, under the null hypothesis, the distribution of Q(m) is approximatelly a χ 2 distribution with df = m − p, m > p, where p is the number of coefficients in the model.

Please consider the following ARIMA model, ARIMA(1,0,1)(1,0,0)12. Which of the polynomials below is correct?

(a) $(1 - \phi B)(1 - \Phi B12)(xt - \mu) = (1 + \theta B)wt$

Consider the following model: $(1 - \phi B)(1 - B)xt = wt$,

(a) ARIMA(1,1,0)

The Ψ-weights are needed to calculate the confidence intervals of a forecast. From the sentences below choose the one(s) that is(are) true.

(a) The Ψ-weight$\Psi 0$, is used to determine the standard error of the one-step ahead prediction.
(b) If our forecast is for periods very far out the end of the time series the total variance of the time series will be incorporated in the forecast.

For a time series the partial autocorrelation function, or PACF, between xt and xt−h is defined as:

(c) the conditional correlation between xt and xt−h, conditional on xt−h+1,. . . , xt−1, the set of observations between the time points t and t − h, h = 0, ±1, ±2, . . .

Which of the following is the one that better allows you to determine if the residuals of a model are normally distributed?

(a) The q-q plot of the time series.

Consider the usual algebraic representation of the AR(1) process:

a. An interesting property of a weak stationary time series is that theoretically it has the same structure forward as it does backwards.
b. A requirement for a stationary AR(1) is that the absolute value of ϕ is: below 1