Home Work 2

Friday, September 25, 2020 12:21 PM

(1)

a) for a Stationary AR(1)

$x(t) = a_0 + a_1 x(t-1) + \varepsilon_t$

for $L >= 2$

ACF(1) = Correlation $(x(t), x(t-1))$

$= a_1$

ACF (2) = Correlation $(x(t), x(t-2))$

$= a_1^2$

$x(t) = a_0 + a_1 x(t-1) + a_2 x(t-2)$

$x(t-1) = a_0 + a_1 x(t-2)$

$x(t) = a_0 + a_1 (a_0 + a_1 x(t-2)) + a_2 x(t-2)$

$x(t) = a_0 + a_1 a_0 + a_1^2 x(t-2) + a_2 x(t-2)$

ACF (2) = correlation $(x(t), x(t-2))$

$= a_1^2$

ACF (3) = a_1^3

ACF (4) = a_1^4

∴ False, it is correlated

(b) MA (q) is greater than 0 till q, after q Everything becomes zero

∴ False, there will be no cliff for MA (1) after $L > 1$, MA (1) = 1 for L = 1