**ETC2410 Tutorial 12**

2018 Sem 2

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**Question 1.**

Assume that is a stationary process given by,

where,

(a) Show that,

Since is stationary this implies,

Therefore taking the expectation of we get,

since , ,

are constants so we can take it out of the expectation operator,

is stationary ,

This means that if our model of does not have an intercept,

then the will equal to 0,

This results generalises for the cases of an model.

(b) Show that,

Taking the variance of we get,

is a constant so we can remove it from the variance operator,

we can expand using the variance formula,

Expand ,

from , ,

is stationary, ,

is uncorrelated with regressor ,

Therefore,

(c) Show that can be written in mean deviation form as,

From (a),

Through substitution the AR(1) model can be rewritten as,

(d) Use to show that,

Multiplying both sides of by ,

Taking the expectation on both side,

is stationary,

Therefore,

(e) Show that,