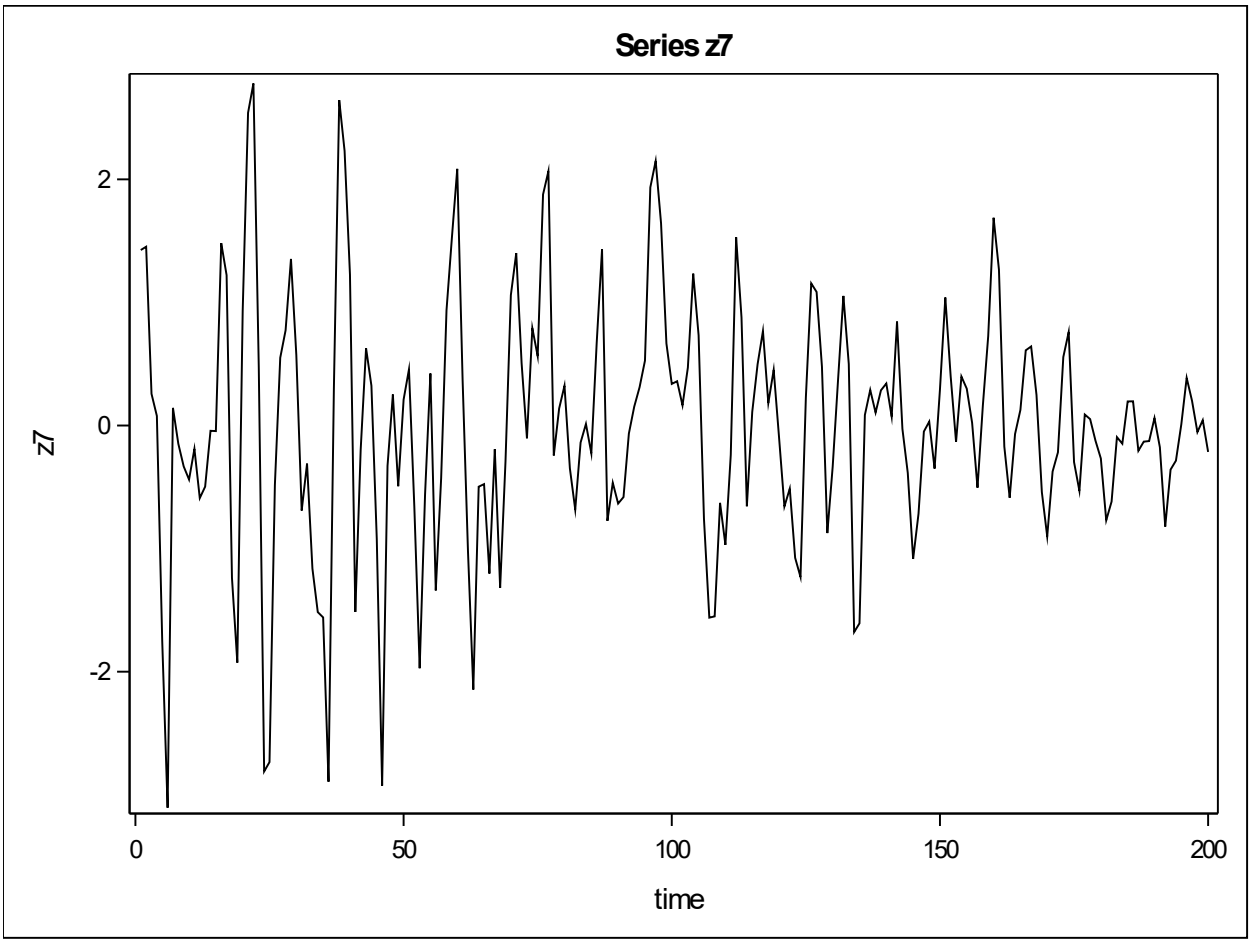
Problem #7
Analyze Series Z7



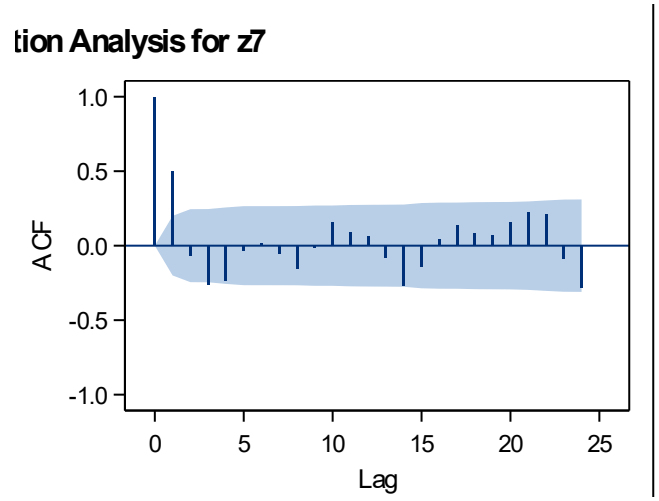
Comparing Mean between 1/3 and 3/3 of observations.

1/3 & 2/3 respectively.

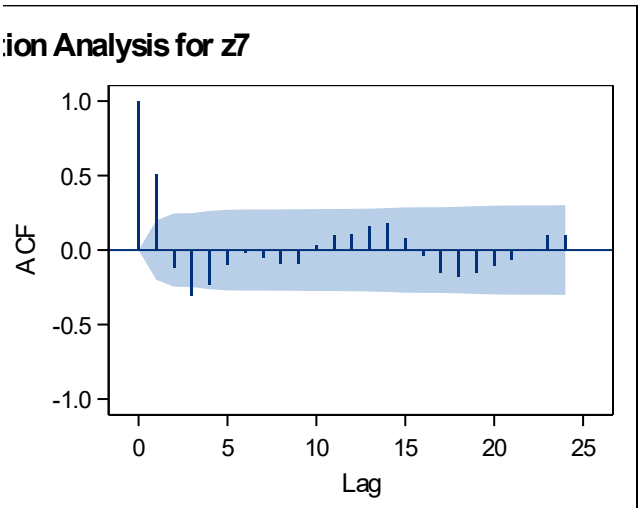
Name of Variable = z7	
Mean of Working Series	-0.17467
Standard Deviation	1.351011
Number of Observations	67

Name of Variable = z7	
Mean of Working Series	-0.03117
Standard Deviation	0.564817
Number of Observations	67

ACF of First Half of Obs



ACF of Second Half of Obs

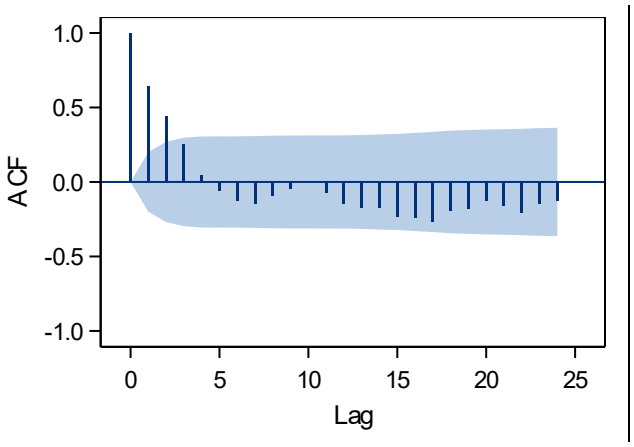


Z7 is the Stationary process among these processes. This is because if you look at Z7 versus observation numbers, the data clutters and center around zero which implies constant variance! This never changes, so we can assume constant variance. Additionally, If we look at the ACF's for the first and second half of the observations, we observe that they are practically the same! Lastly, If we check the MEANS between the 1/3 of the observations and 3/3 they standard deviation does not change much! Thus all 3 conditions are fulfilled for Stationarity.

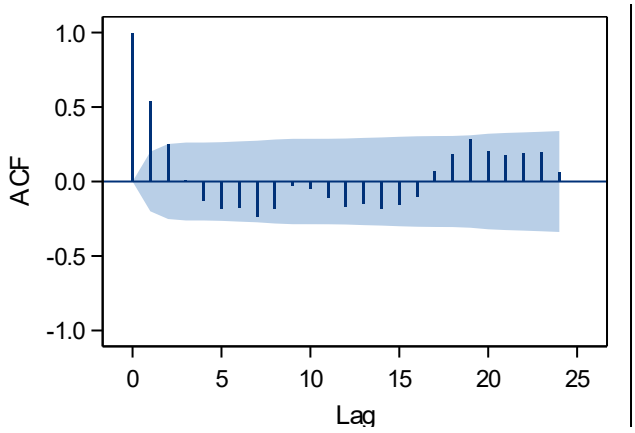
Problem #8

Analyzing z8

Acf in first hundred observations.



Acf in second hundred observations.



We can deduce from the two ACF plots that this is non-stationary. The plots are obviously different, which means that the series changes ACF with respect to time!

Problem #9

Analyzing Z9

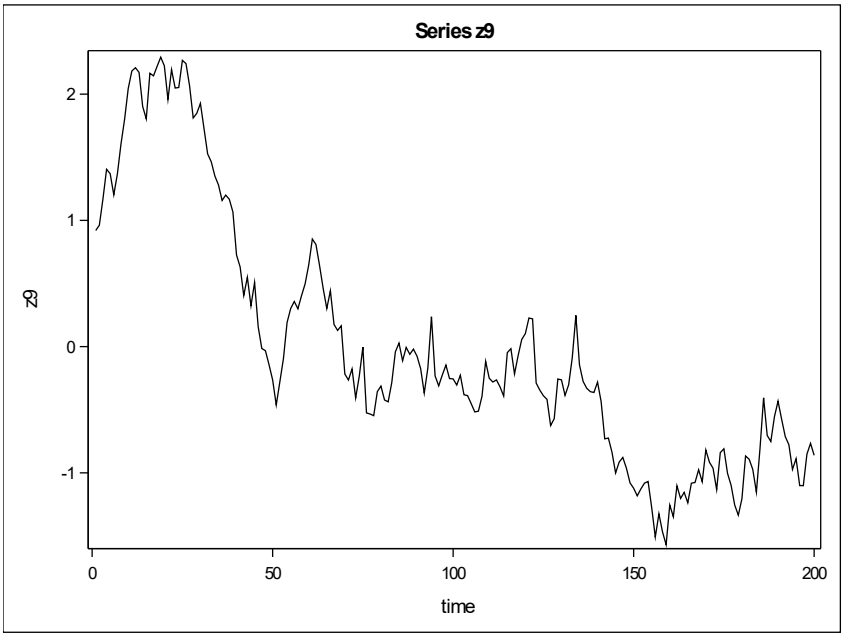
Standard Deviation From 1/3rd of Observations

Name of Variable = z9	
Mean of Working Series	1.133109
Standard Deviation	0.807852
Number of Observations	67

Standard Deviation From 3/3rd of Observations

Name of Variable = z9	
Mean of Working Series	-0.90785
Standard Deviation	0.342253
Number of Observations	67

Plot of Z9 versus time!

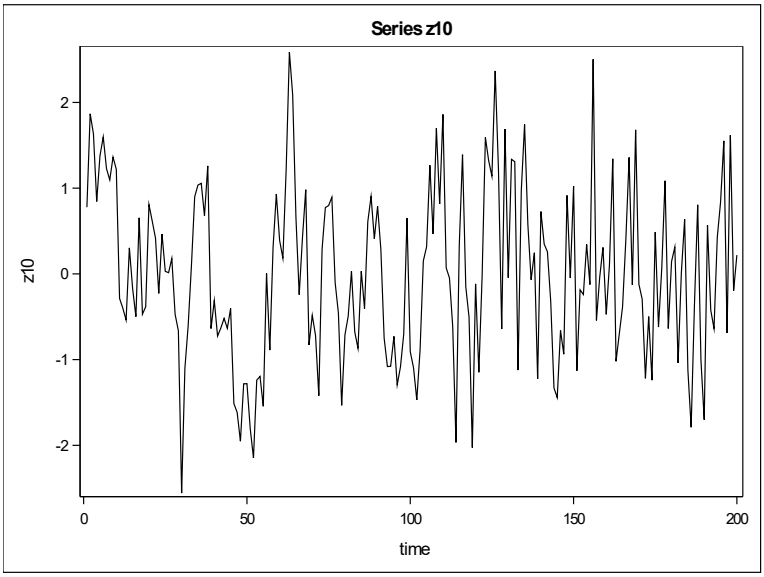


Z9 is non stationary because it does not have constant variance, the plot of Z9 vs Time is such that the series does not center around zero or any number for that, and the standard deviation at 1/3rd of the observations is completely different from the standard deviation at 2/3rd the observations.

Problem #10

Analyzing Z10

Z10 vs Time Graph

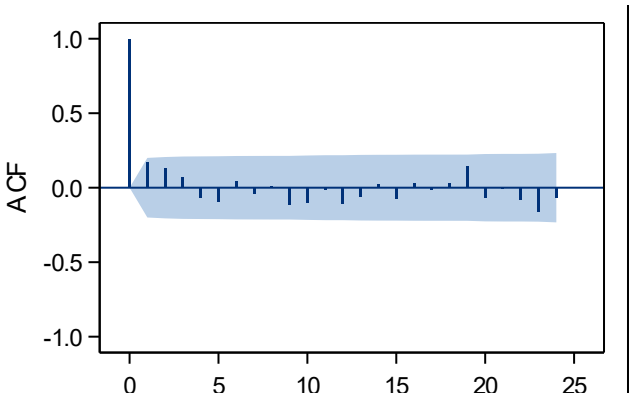


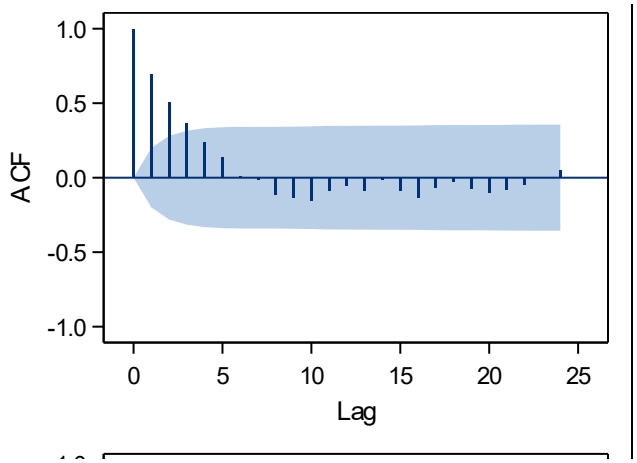
Standard Deviation and Mean with first 1/3rd Observations

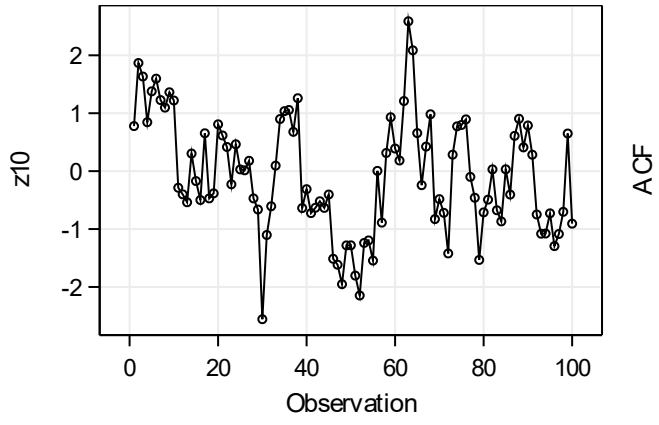
Name of Variable = z10	
Mean of Working Series	0.020306
Standard Deviation	1.076207
Number of Observations	67

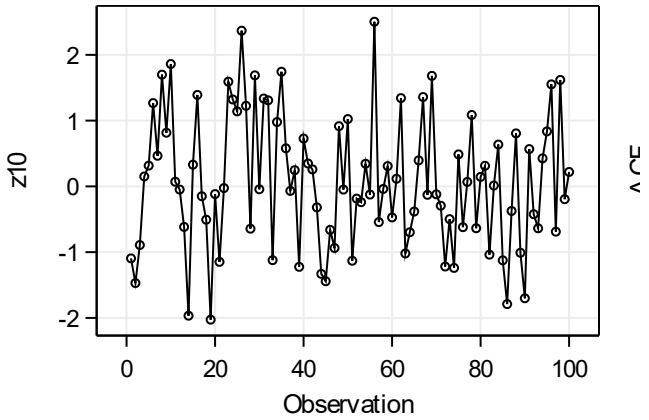
Standard Deviation and Mean with first 3/3rd Observations

Name of Variable = z10	
Mean of Working Series	-0.01425
Standard Deviation	0.899486
Number of Observations	67


ACF
1.0
0.5
0.0
-0.5
-1.0
0
5
10
15
20
25


ACF
1.0
0.5
0.0
-0.5
-1.0
0
5
10
15
20
25
Lag


z10
2
1
0
-1
-2
0
20
40
60
80
100
Observation
ACF



Z10 has constant variance as the standard deviation does not really change between first 3rd and last 3rd of data. Z10 also has constant mean between 3rd and last 3rd of data as well as ACF's between first and second half of data that exhibit the same behavior! However, when first half of series is plotted against observation number and second half of series is plotted against observation number, a different behavior emerges. One graph dips while the other oscillates between upper and lower bounds.

Problem #11

Analyze Z11

Z11 has a noticeably different Mean between first 3rd of series and last 3rd of series which indicates non constant mean. IF we include the second third of the series the mean becomes more positive before it jumps and becomes negative. This is very sporadic behavior for the mean and indicates non constant behavior.

First Third of Series

Name of Variable = z11	
Mean of Working Series	-0.06657
Standard Deviation	0.842917
Number of Observations	67

Second third of Series

Name of Variable = z11	
Mean of Working Series	0.174438
Standard Deviation	1.110631
Number of Observations	66

Last Third of Series

Name of Variable = z11	
Mean of Working Series	-0.10527
Standard Deviation	0.999521
Number of Observations	67