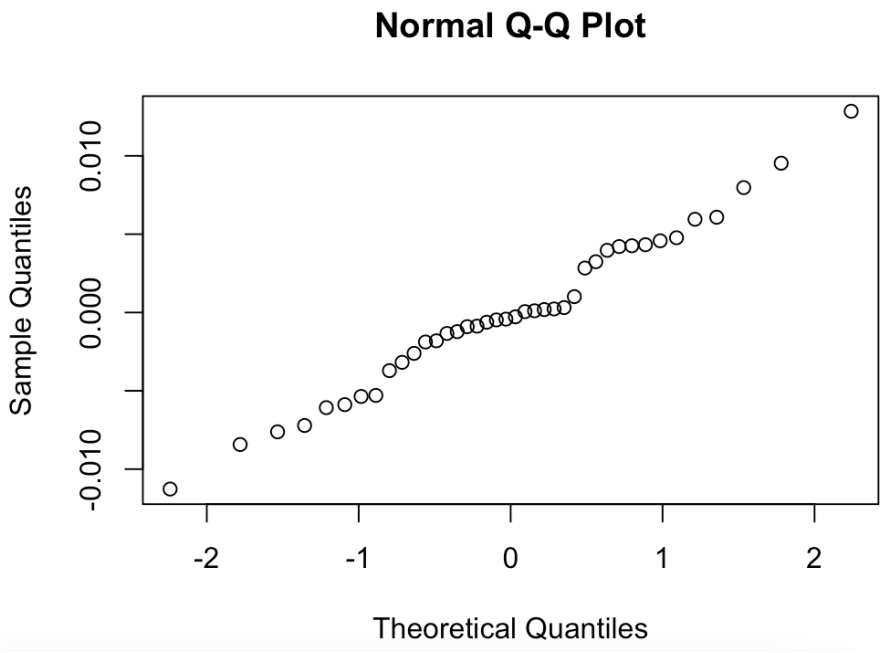
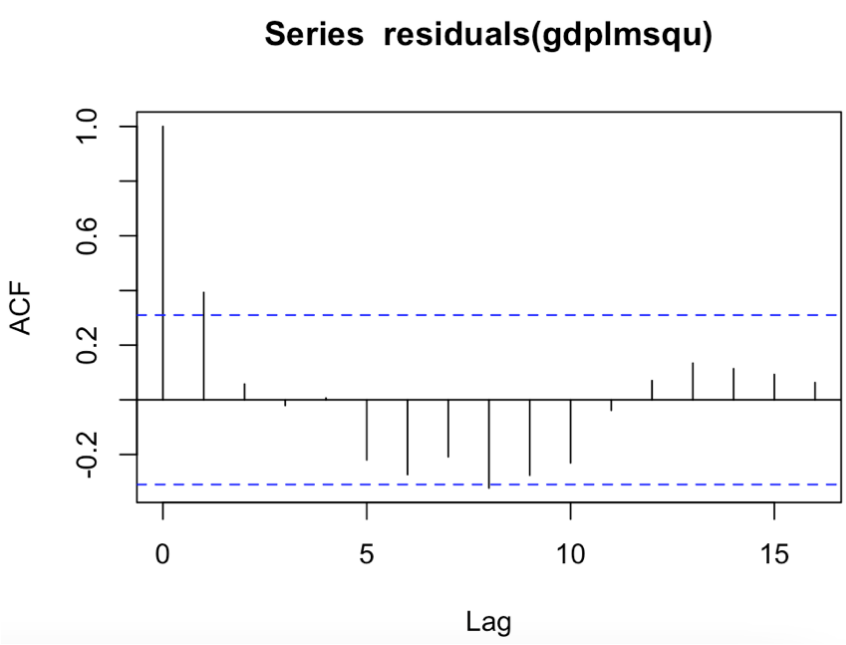
g) The transformations have improved model adequacy considerable. The model appears to be well specified with a relatively constant variance (based on the time series plot of the residuals), and the qq plot suggests that the assumption of normal errors appears to be more reasonably met than the qq plot in part d). This means that there exists linear relationship and so it satisfies the assumption of Normality of the Errors. When observing the correlogram, we find that there exists significant positive autocorrelation at lag 1 and there is significant negative autocorrelation at lag 8. However, the positive autocorrelation at lag 1 in this correlogram is smaller than the positive autocorrelation at lag 1 in the correlogram in part d). Thus, it does not satisfy the assumption of independence, but it is better than the model in part d).

```
# g)
plot(GDP_US$time,residuals(gdplmsqu),xlab="time",main="Time Series Plot of the Residuals")
qqnorm(residuals(gdplmsqu))
acf(residuals(gdplmsqu))
```


Normal Q-Q Plot
Sample Quantiles
0.010
0.000
-0.010
-2
-1
0
1
2
Theoretical Quantiles


Series residuals(gdplmsqu)
ACF
1.0
0.6
0.2
-0.2
0
5
10
15
Lag