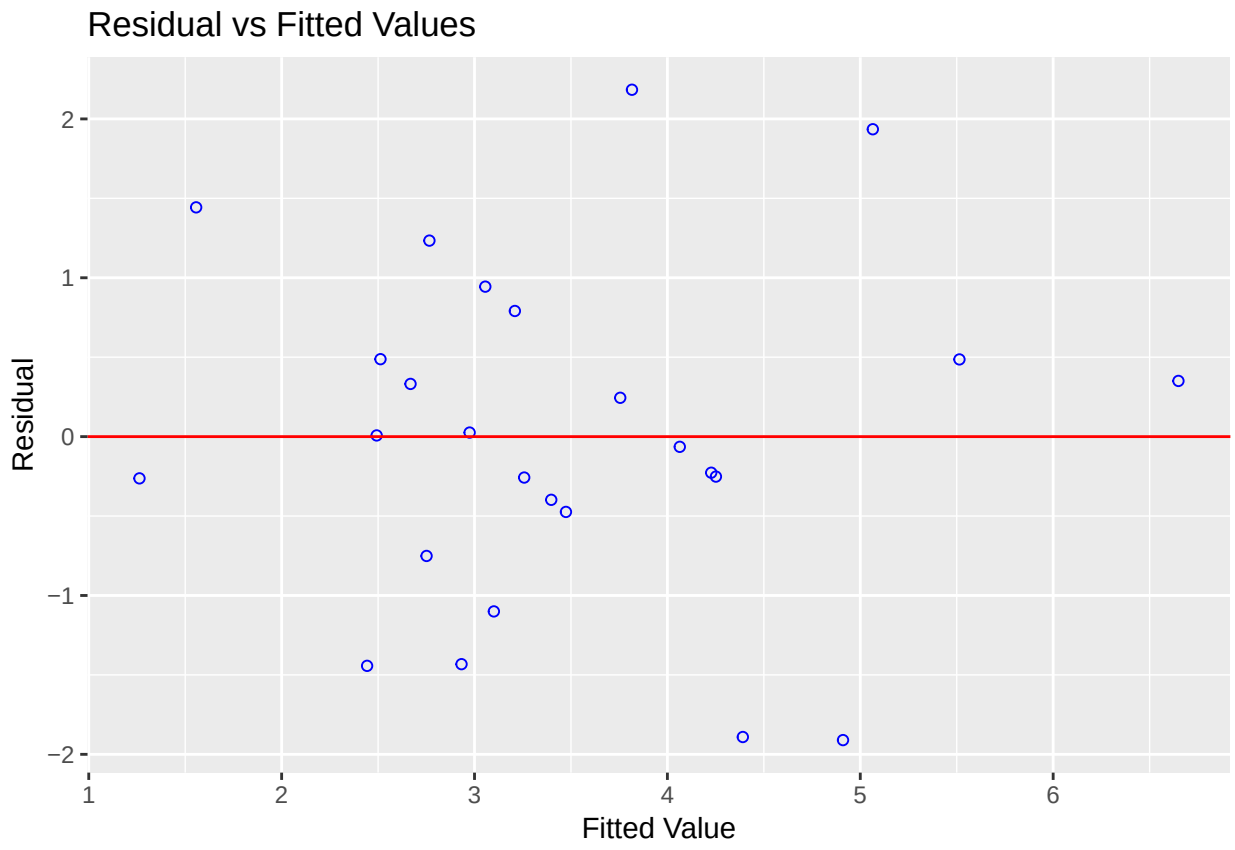
Devoir 2

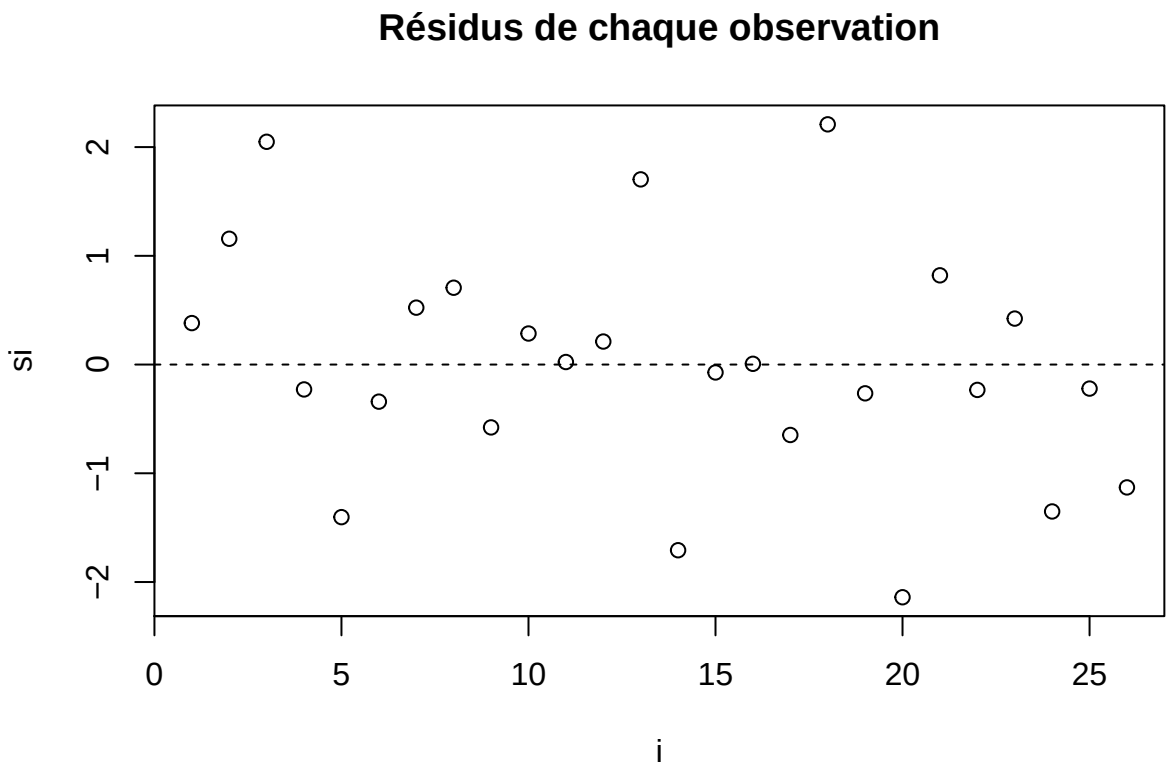
Partie pratique

P1

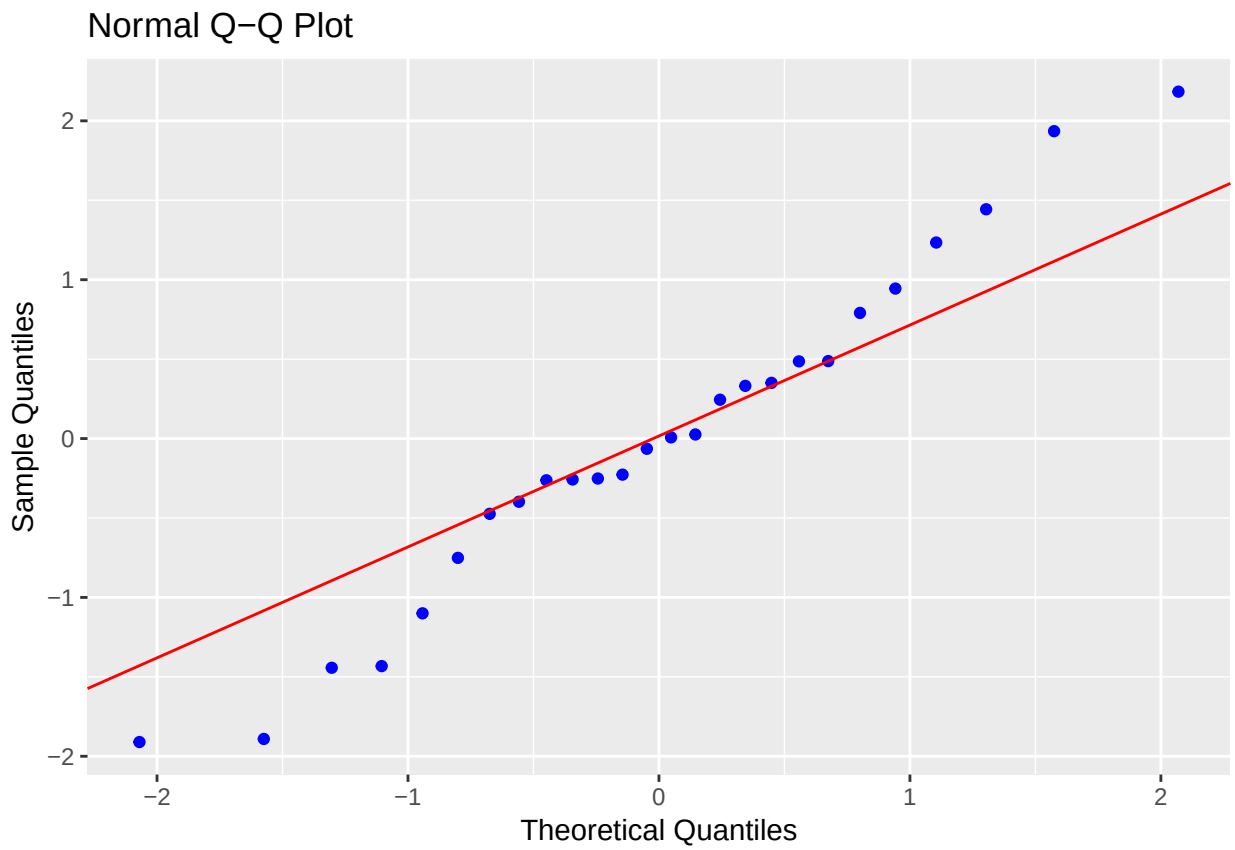
```
#Modèle complet
modele_complet=lm(SOMA ~ WT2+HT2+WT9+HT9+LG9+ST9, data = data_tp1)

#Modèle final
#model_final=lm(SOMA ~ WT2+WT9+HT9+ST9, data = data_tp1)

Y<-data_tp1$SOMA
si <- studres(modele_complet) # residus studentises
hatYi <- modele_complet$fitted.values # valeurs ajustees
i <- 1:length(Y)

ols_plot_resid_fit(modele_complet)
```




```
# Résidus pour chaque observation
plot(i,si,xlab="i",ylab="si",main="Résidus de chaque observation")
abline(h=0,lty=2)
```



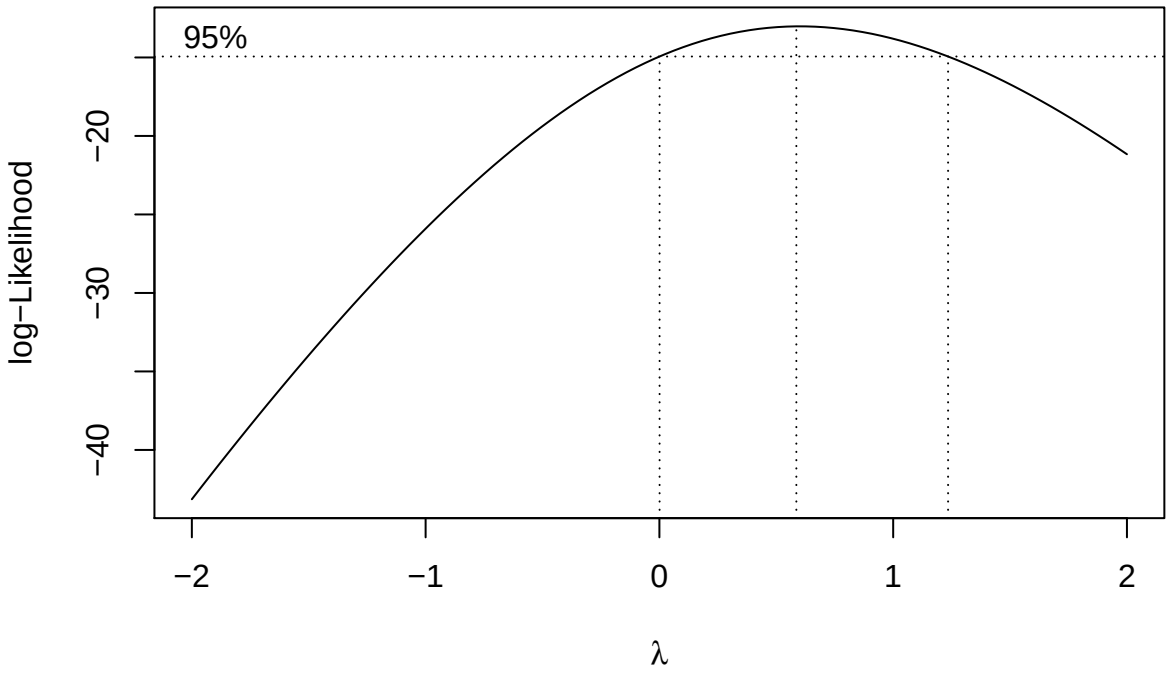

```
# QQ-plot
ols_plot_resid_qq(modele_complet)
```




```
# Tests de normalité
ols_test_normality(modele_complet)
```

```
## -----------------------------------------------
##        Test             Statistic       pvalue
## -----------------------------------------------
## Shapiro-Wilk              0.9754         0.7655
## Kolmogorov-Smirnov        0.0969         0.9482
## Cramer-von Mises          2.1142         0.0000
## Anderson-Darling          0.239          0.7554
## -----------------------------------------------
```

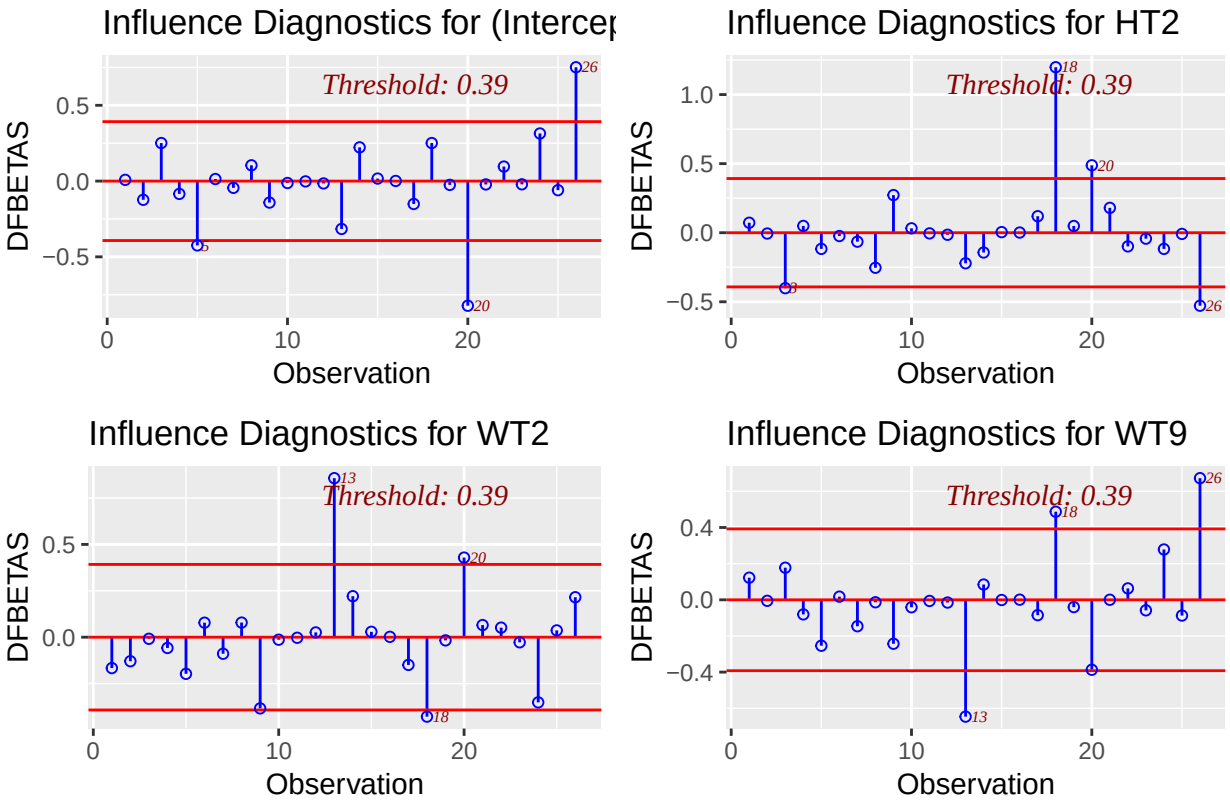
```
# Transformation de Box-Cox
boxcox(modele_complet)
```

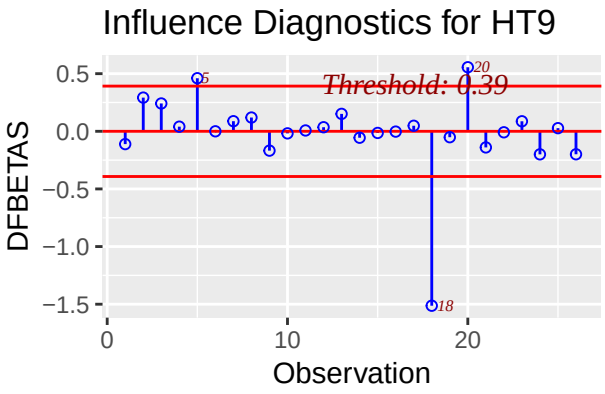


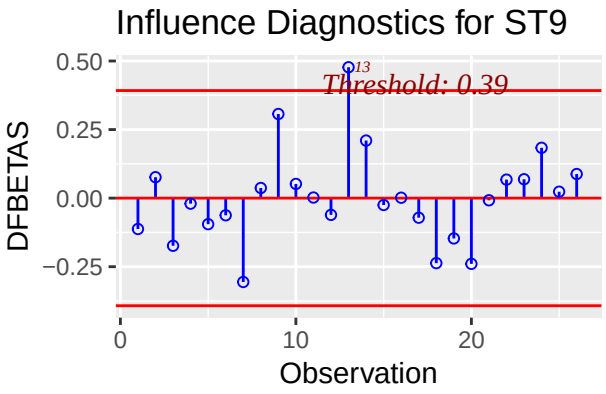

```
################################################################################
#Influence
################################################################################
# Valeurs des h_ii
ols_leverage(modele_complet)
```

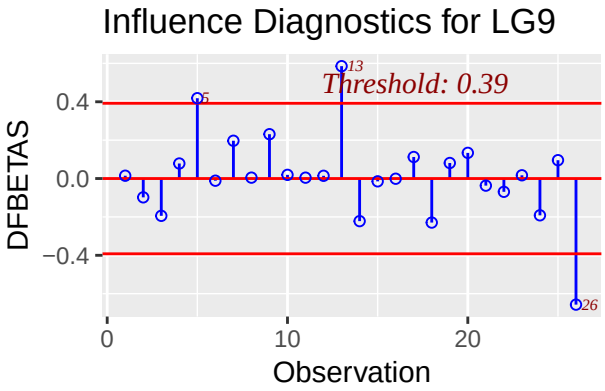
```
##  [1] 0.455975 0.219053 0.105055 0.188216 0.261575 0.126045 0.440616
##  [8] 0.177106 0.562445 0.133062 0.238291 0.144617 0.467278 0.089638
## [15] 0.502303 0.271476 0.120702 0.376987 0.367143 0.361289 0.122590
## [22] 0.255176 0.141666 0.197224 0.323307 0.351165
```

```
# DFBETAS
ols_plot_dfbetas(modele_complet)
```

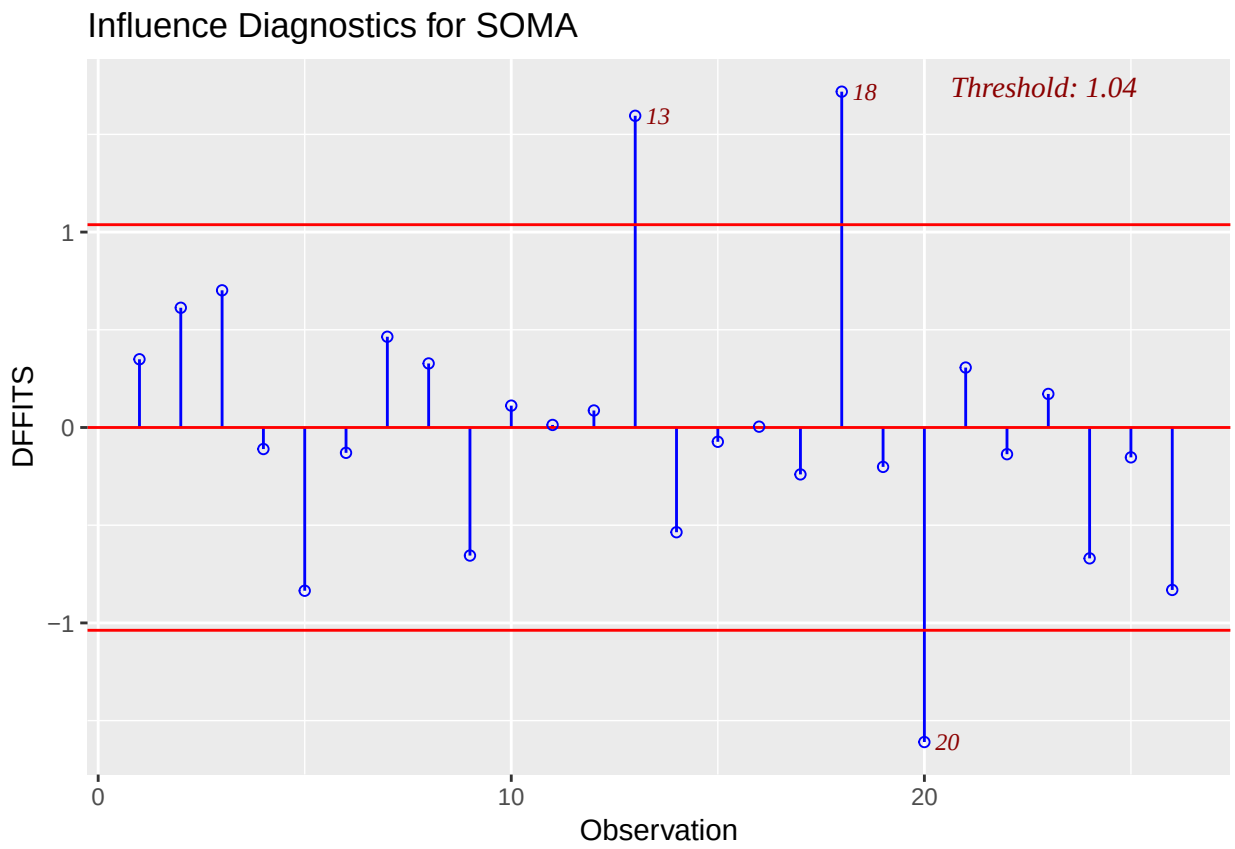

Influence Diagnostics for (Intercep
Threshold: 0.39
DFBETAS
Observation
Influence Diagnostics for HT2
Threshold: 0.39
DFBETAS
Observation
Influence Diagnostics for WT2
Threshold: 0.39
DFBETAS
Observation
Influence Diagnostics for WT9
Threshold: 0.39
DFBETAS
Observation



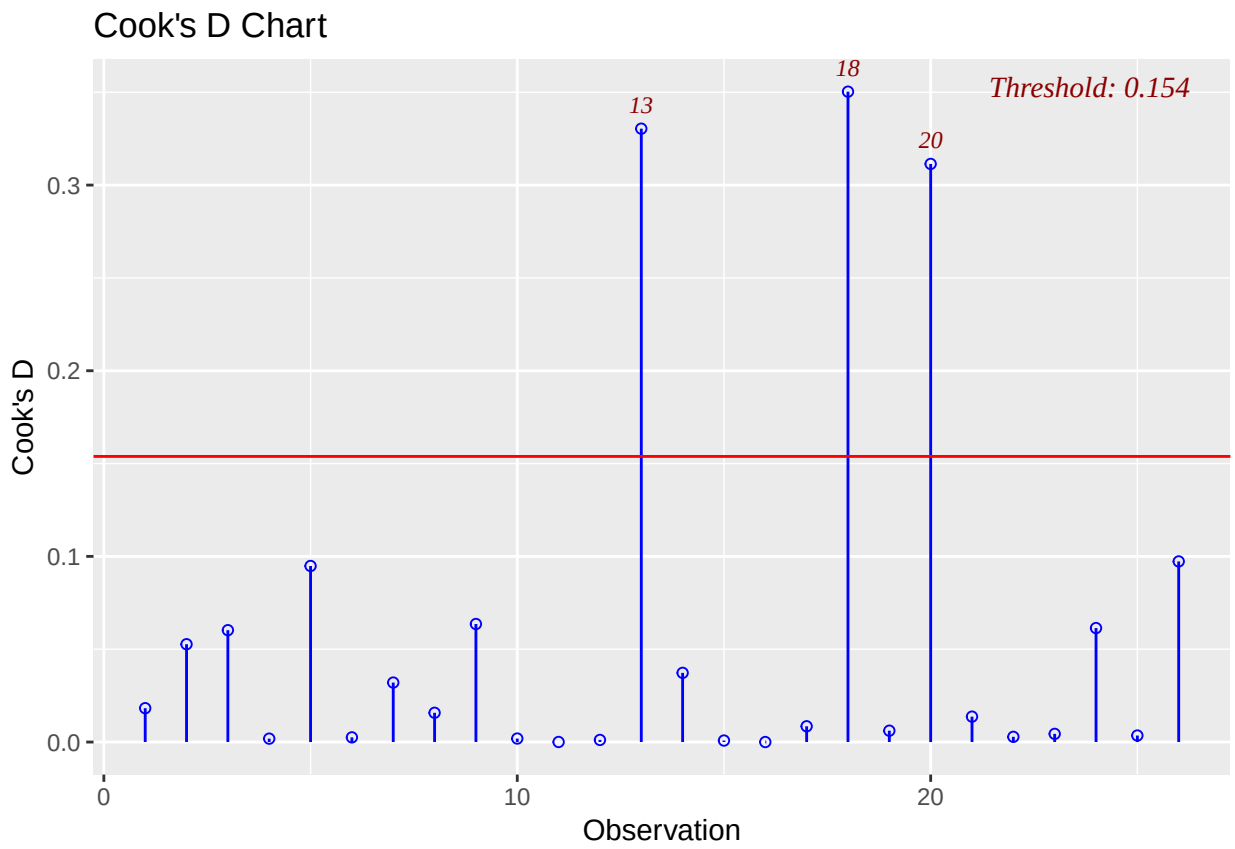




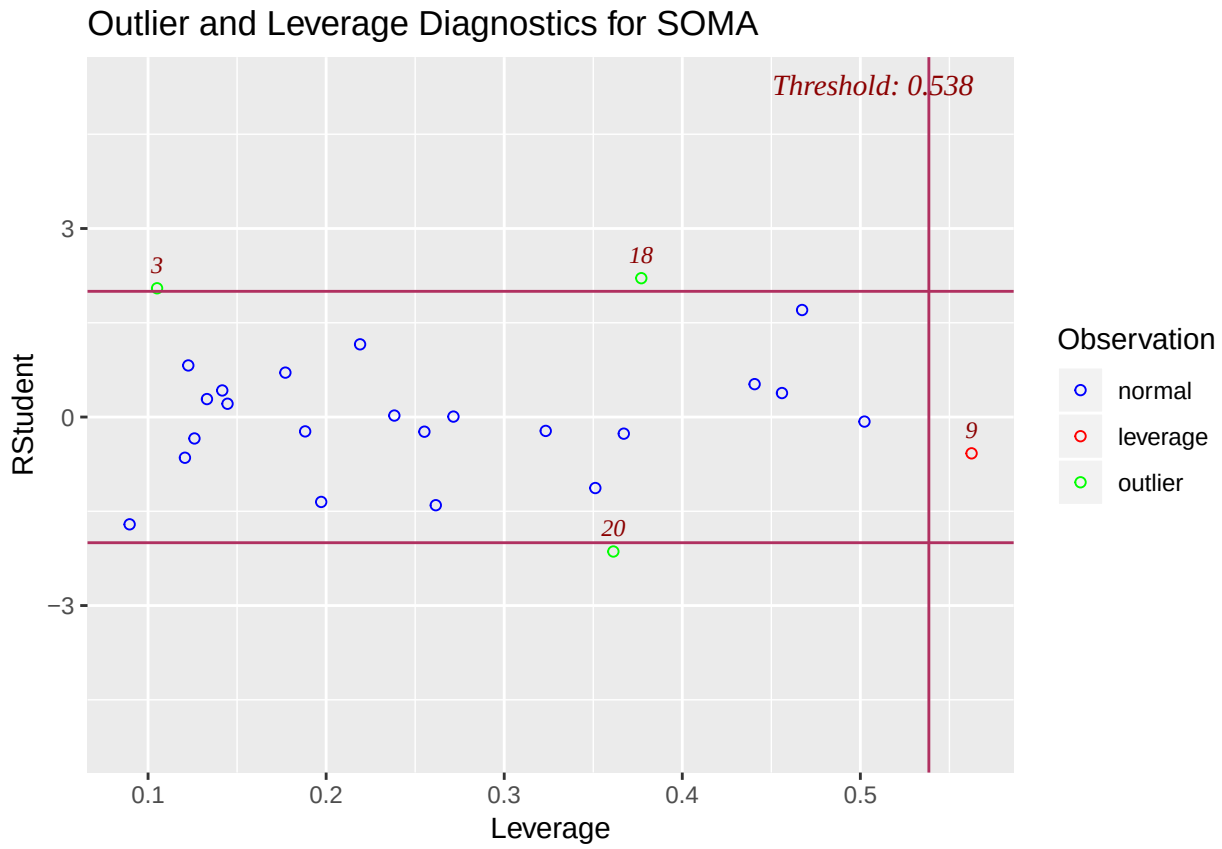

```
# DFFITS
ols_plot_dffits(modele_complet)
```




```
# Distances de Cook
ols_plot_cooksd_chart(modele_complet)
```




```
# Residus vs h_ii
ols_plot_resid_lev(modele_complet)
```




```
# covratios
covratio(modele_complet)
```

```
##       1       2       3       4       5       6       7       8       9
## 2.53680 1.13174 0.37612 1.76235 0.95583 1.59691 2.34837 1.46516 2.93374
##      10      11      12      13      14      15      16      17      18
## 1.63172 1.91640 1.67748 0.96313 0.56065 2.92759 2.00408 1.41309 0.43706
##      19      20      21      22      23      24      25      26
## 2.24521 0.46766 1.28684 1.91926 1.58739 0.92501 2.11707 1.39291
```

```
# tableau résumé
influence.measures(modele_complet)
```

```
## Influence measures of
##   lm(formula = SOMA ~ WT2 + HT2 + WT9 + HT9 + LG9 + ST9, data = data_tp1) :
##
##       dfb.1_  dfb.WT2  dfb.HT2   dfb.WT9   dfb.HT9   dfb.LG9  dfb.ST9
## 1   0.008123 -0.16644  0.07222  0.122248 -0.111099  0.014669 -0.11247
## 2  -0.123311 -0.12949 -0.00590 -0.005534  0.292217 -0.098014  0.07627
## 3   0.250925 -0.00855 -0.40167  0.177463  0.241419 -0.194215 -0.17362
## 4  -0.084557 -0.05795  0.04903 -0.080687  0.040210  0.078400 -0.02013
## 5  -0.424465 -0.19735 -0.11695 -0.254000  0.460460  0.418604 -0.09492
## 6   0.013665  0.07817 -0.02397  0.017359 -0.000079 -0.011245 -0.06250
## 7  -0.044552 -0.08913 -0.06475 -0.146195  0.087595  0.196906 -0.30570
## 8   0.103981  0.07870 -0.25368 -0.013655  0.119569  0.004650  0.03697
## 9  -0.141764 -0.38371  0.27226 -0.243105 -0.167680  0.231063  0.30667
## 10 -0.012621 -0.01348  0.03154 -0.041290 -0.017997  0.019194  0.05181
```

```
## 11 -0.002044 -0.00304 -0.00486 -0.006353  0.007379  0.004555  0.00221
## 12 -0.015505  0.02566 -0.01482 -0.015141  0.035366  0.014265 -0.06094
## 13 -0.315758  0.85709 -0.22117 -0.646220  0.151153  0.585568  0.47720
## 14  0.222409  0.22103 -0.14307  0.084449 -0.055717 -0.221885  0.20993
## 15  0.016662  0.02908  0.00426 -0.001127 -0.014311 -0.014622 -0.02503
## 16  0.000947  0.00195  0.00118  0.000798 -0.002682 -0.000958  0.00151
## 17 -0.151033 -0.14945  0.11936 -0.084953  0.048108  0.112315 -0.07134
## 18  0.251007 -0.42811  1.19781  0.487216 -1.513164 -0.229389 -0.23697
## 19 -0.025086 -0.01714  0.04862 -0.040282 -0.051159  0.080954 -0.14693
## 20 -0.822420  0.42908  0.48806 -0.386865  0.555697  0.133768 -0.23960
## 21 -0.022050  0.06534  0.17984  0.000245 -0.139753 -0.036927 -0.00778
## 22  0.095740  0.05147 -0.09901  0.063027 -0.008566 -0.069142  0.06746
## 23 -0.021340 -0.02748 -0.04306 -0.058248  0.086932  0.016924  0.06884
## 24  0.314157 -0.35120 -0.11716  0.278405 -0.199868 -0.191645  0.18353
## 25 -0.059931  0.03661 -0.00884 -0.087177  0.027185  0.095530  0.02338
## 26  0.751130  0.21535 -0.52850  0.672797 -0.199269 -0.657016  0.08791
##       dffit cov.r     cook.d    hat inf
## 1   0.34912 2.537 0.01823198 0.4560   *
## 2   0.61266 1.132 0.05268370 0.2191
## 3   0.70196 0.376 0.06025293 0.1051
## 4  -0.11021 1.762 0.00182613 0.1882
## 5  -0.83529 0.956 0.09483331 0.2616
## 6  -0.12957 1.597 0.00251540 0.1260
## 7   0.46438 2.348 0.03203124 0.4406   *
## 8   0.32773 1.465 0.01575934 0.1771
## 9  -0.65535 2.934 0.06358361 0.5624   *
## 10  0.11184 1.632 0.00187771 0.1331
## 11  0.01305 1.916 0.00002568 0.2383
## 12  0.08698 1.677 0.00113802 0.1446
## 13  1.59503 0.963 0.33039983 0.4673
## 14 -0.53585 0.561 0.03726140 0.0896
## 15 -0.07307 2.928 0.00080495 0.5023   *
## 16  0.00424 2.004 0.00000272 0.2715
## 17 -0.24001 1.413 0.00848855 0.1207
## 18  1.71847 0.437 0.35032777 0.3770   *
## 19 -0.20157 2.245 0.00610330 0.3671   *
## 20 -1.60953 0.468 0.31141076 0.3613
## 21  0.30671 1.287 0.01367422 0.1226
## 22 -0.13657 1.919 0.00280400 0.2552
## 23  0.17173 1.587 0.00440328 0.1417
## 24 -0.66965 0.925 0.06139487 0.1972
## 25 -0.15279 2.117 0.00351078 0.3233   *
## 26 -0.83123 1.393 0.09728982 0.3512
```