Here is the terminal output of the R code that was given. This will help us with the analysis

> library(faraway) #this command brings in a library of regression functions

> library(psych)

> library(olsrr)

> library(car)

>

> #Read in the data set GFCLOCKS.csv

> GFCLOCKS <- read.csv(file="C:/Users/buchh/OneDrive/Desktop/regression/hw6/GFCLOCKS.csv",header = TRUE)

>

> head(GFCLOCKS,5L)

AGE NUMBIDS PRICE AGE.BID

1 127 13 1235 1651

2 115 12 1080 1380

3 127 7 845 889

4 150 9 1522 1350

5 156 6 1047 936

>

> lmod<-lm(PRICE ~ AGE + NUMBIDS, data=GFCLOCKS)

>

> ols\_plot\_resid\_fit(lmod)

>

> spreadLevelPlot(lmod,robust.line=FALSE,grid=TRUE,smooth=TRUE)

Suggested power transformation: 0.7376305

>

> ols\_plot\_resid\_stud(lmod)

>

> ols\_plot\_resid\_stand(lmod)

>

> ols\_plot\_resid\_lev(lmod)

>

> ols\_plot\_resid\_stud\_fit(lmod)

Studentized residuals are more effective in detecting outliers and in assessing the equal variance assumption. In this example, it was calculated by this command,

> ols\_plot\_resid\_stud(lmod)

The Studentized Residual by Row Number plot essentially conducts a t test for each residual. Studentized residuals falling outside the red lines are potential outliers. If we look at the plot, it will give us more information about the outliers, which is essentially the main purpose of using this kind of plot. We see from the plot that all of the observational data is within +-2 from the normal line. We see that the threshold is +-3, meaning datapoint with values more than or less than 3 are outliers, which are none, in our case.

Same as above, the leverage plot helps us find influential subjects. This is mostly the same as finding outliers but not all outliers are influential in liner regression analysis. This is achieved by this command,

> ols\_plot\_resid\_lev(lmod)

|  |
| --- |
|  |
| If we look at the chart, we will see that, for price, there are no observations that can be influential, as there are nit values that are above the threshold, meaning all observations are normal |
| Just like above, to discuss more on the influential cases, we run this command,  > ols\_plot\_resid\_stud\_fit(lmod) |

Fundamentally, a data point is influential that implies it "pulls" the evaluated regression line towards itself. All things considered; the observed response would be close to the predicted response. However, on the off chance that you expelled the influential data point from the collection, at that point the estimated regression line would leave from the observed response, in this way bringing about a huge deleted residual. That is, a data point having a huge erased leftover recommends that the data point is influential.