DATA 621 - LMR Exercise 8.8

Claudio, Mauricio

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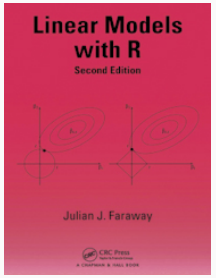
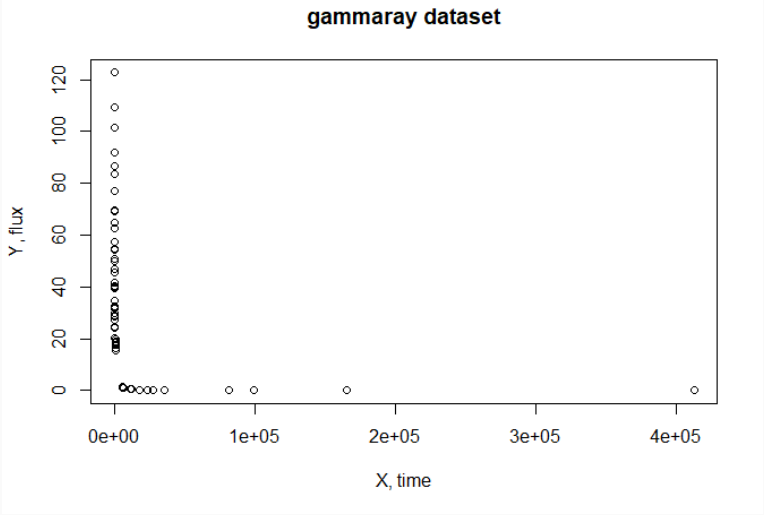


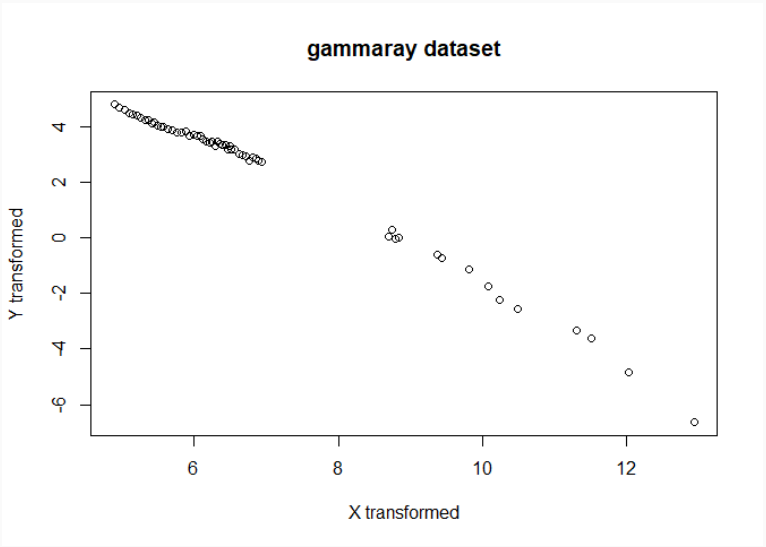
8. The gammaray dataset shows the x-ray decay light curve of a gamma ray burst. Build a model to predict the flux as a function time that uses appropriate weights.

We load and plot X vs. Y, time vs. flux.

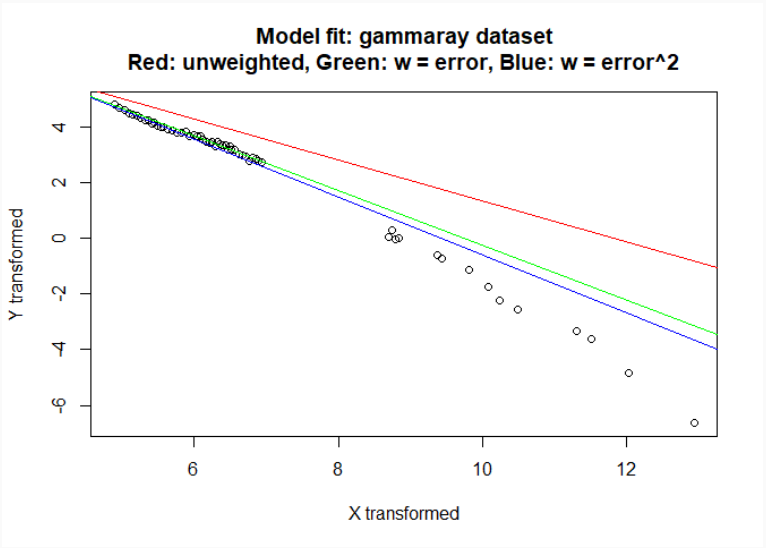
```
## Rows: 63
## Columns: 3
## $ time  <int> 133, 143, 153, 163, 173, 183, 193, 203, 213, 223, 233, 243, 253,~
## $ flux  <dbl> 122.7, 109.5, 101.4, 92.0, 86.8, 83.7, 77.2, 69.4, 69.2, 62.4, 6~
## $ error <dbl> 5.7, 5.4, 5.2, 4.9, 4.8, 4.7, 4.5, 4.3, 4.3, 4.1, 4.1, 3.9, 3.8,~
```



Not very linear or pretty so we transform both variables and plot them again.



Nice. Now that we have a *linearized* our data, we build and plot three alternative models to determine visually which offers the best fit. Model one in red is unweighted. Model two in green is weighted with $w = error$. Model three in blue is weighted with $w = error^2$.



By inspection, we see that the blue line offers the best fit. Therefore we select the weighted model with $w = error^2$.