Homework #5

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1. **(3.12)** A student does not understand why the sum of squares SSPE is called a *pure error sum of squares* "since the formula looks like the one for an ordinary sum of squares". Explain.

- SSE = lack of fit error(SSLF) + pure error(SSPE)
- One possibility is pure error is relatively large and the linear model appears to be adequate. That is, a major part of the SSE is pure error.
- Another possibility is that pure error is relatively small, and the linear model appears to be inadequate. That is, pure error is a small part of the regression error, and error due to lack of fit is a large part of the SSE.

2. **(3.19)** A student fitted a linear regression function for a class assignment. The student plotted the residuals ei against responses Yi and found positive relation. When the residuals were plotted against the fitted values $\hat{Y}i$, the student found no relation.

(a) How could the differences arise? Which is the more meaningful plot?