STATS 500, HOMEWORK #5, due Wednesday, Oct, 20th, 8PM

This homework is optional. You do **NOT** need to turn it in. However, if you turn it in, the score can be used to replace the lowest value of those contributing homework scores if it is lower than the core of HW #5. The contributing homework scores are those non-optional homework scores after the lowest score being dropped.

1. Revisiting the `teengamb` dataset (data(teengamb)). Consider a linear regression model of $Y_{\log} = log(teengamb\$gamble + 1)$ on `sex, status, income` and `verbal`. Using the codes from the classnotes to produce partial regression and partial residual plots for the predictor verbal. Is it appropriate to claim that Y has a linear relationship with `verbal`adjusted for the existence of other predictors in the model?

2. For the `teengamb` problem, use the Y_{org} and $Y_{\log}$ and the corresponding regression models to answer the following questions.

   (a) Check for and report large leverage points.

   (b) Would the leverage values differ for Y_{org} and $Y_{\log}$ models, explain.

3. For the `teengamb` problem, use the $Y_{\log}$ and the corresponding regression model to answer the following questions.

   (a) Check for and report outliers.

   (b) Check for influential points. Please briefly comment on the relationship of the Cook's distances to residuals and leverage levels for the two data points with the largest Cook's distances.