Stat 6021: Guided Question Set 12

For this question, we will use the same `mtcars` data set that you saw in the tutorial. You will now use lasso to fit a model, with fuel efficiency as the response variable.

1. Before comparing the results between ridge and lasso regression, which of these methods do you think will lead to a more accurate model? Briefly explain.

2. Using `set.seed(12)`, what is the optimal value of λ for lasso?

3. Compare and contrast the test MSE of

   - OLS regression,
   - ridge regression using its optimal λ, and
   - lasso using its optimal λ.

   What do these comparisons inform you about the relationship between the response variable and the predictors (and also among the predictors)?

4. Which predictors remained in the lasso model, when using the optimal λ?

5. Produce the "ridge plot" for your lasso. This is the plot of MSE against the estimated coefficients. How is this plot different than the one from ridge regression?