MATH 4773 Laboratory 8: Multiple Regression part 6

In this lab you will learn about model selection and model construction using categorical and continuous variables.

# Objectives

1. Make models using R formula language
2. Interpret output
3. Choose the “best” model by using an informational criterion

### Tasks

Please use RMD and knit into an HTML document and when complete upload to canvas.

* Task 1
  + Download from CANVAS the zipped data files, “Dataxls”
  + Unzip the contents into a directory on your desktop (call it LAB)
  + Download the file “Lab8.R”
  + Place this file with the others in LAB8.
  + Start Rstudio
  + Open “lab8.r” from within Rstudio (this is an exemplar file).
  + Using hash commenting and at the top of Lab 8 place the task number eg #Task 1
  + Go to the “session” menu within Rstudio and “set working directory” to where the source files are located.
  + Issue the command getwd(): under #Task 1
* Task 2
  + Do Example 12.5 in R page 669
  + Answer parts a, b
  + A)
  + B)
* Task 3
  + Do Example 12.7 page 678
  + Answer a – b
  + A)
  + B)
  + Construct the picture Fig 12.24 page 679
* Task 4
  + Do Example 12.8 page 680
  + Answer a-c
  + A)
  + B)
  + C)
* Task 5 Nested Models
  + Use the Ftest for nested models (anova() in R) page 686
  + Reproduce the example 12.9 and produce the necessary output to calculate the F test to compare the two models.
  + Reproduce the plot page 688
  + Make your own function to calculate F by retrieving information from the two lm models.

Hint: Use summary(y.lm) call the function myF()

Use myF() to calculate the F of example 12.9 – place output in RMD.

* Task 6
  + Write a paragraph in your own words about AIC (go to Wikipedia)
  + Use AIC criterion to do a stepwise regression shown in Example 12.10 using R (see the code in Lab 8.R)
  + Show output in your document: