MATH 4773 Laboratory 4: Multiple Regression part 2

In this laboratory you will extend the MLR of part 1 to include interval parameter estimates and hypothesis testing.

# Objectives

In this lab you will learn how to:

* Estimate
* Calculate SSE
* Calculate
* Calculate interval estimates of
* Test individual parameter coefficients in the ML model

### Tasks

Use R markdown and create an HTML file.

Upload the RMD and HTML files to CANVAS once complete!!

* 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 “lab4.r”
  + Place this file with the others in LAB4.
  + Start Rstudio
  + Open “lab4.r” from within Rstudio (this is an exemplar file).
  + Using hash commenting and at the top of Lab 4 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.
  + Copy and paste the working directory by issuing the command getwd(): under #Task 1
* Task 2
  + Make sure you install the readxl package.
  + Locate the file BUBBLE2.xls
  + Use read\_excel() to read the data into R, this function will already be available within the script lab4.r which you have opened in Rstudio.
  + Create the first six lines of the data using “head()”
* Task 3
  + Give a paragraph summary of the story behind the data by reading 11.6 page 580. Write it here:
  + Using the model in 11.6 part a) create make sure it shows in your final document
  + Using Theorem 11.1 and assuming find for model part a)
  + Using the same theorem find SSE for the model part a)
* Task 4
  + Using the model in 11.6 part b) and Theorem 11.2 find 95% cis for all three betas
  + Make sure they are released into the html document
  + What do you conclude for the testing of the , i.e
  + Create the appropriate summary information from R for the above test. All this must show in your document.
* Task 5 (<http://www.sthda.com/english/wiki/a-complete-guide-to-3d-visualization-device-system-in-r-r-software-and-data-visualization> )
  + Using the package “rgl” make a 3 dimensional plot of model 11.6 part a). This plot should show the data and the plane, use color.
  + Do the same for the model 11.6 part b). Make sure all plots appear in the html document. Be patient and make it work.
* Task 6 Make an R function called myreg(Y,X, alpha) that will take Y, and alpha as arguments and produce the following command line output in a list:
  + Confidence intervals for the
  + estimates
* The function should also produce an rgl plot of the data and a regression plane.
* Using the BUBBLE2 data and model part b) call the your function – all output must show in the html document.