MATH 4753 Laboratory 15:

Simple Linear Regression

### In this lab we will investigate more detail concerning the mathematical underpinning of Simple Linear Regression.

### Sampling distribution of

When performing hypothesis testing it pays to remember the model, namely

The hypotheses are:

The standard error is defined as

Since will usually be unknown, the test statistic will generally be

### Tasks

All output made please copy and paste into **this word file**. Save and place in the dropbox when completed. Anything you are asked to make should be recorded under the question in this document. There will be two files you need to upload:

* a pdf of this document (pdf) or the word file (docx)
* a text file of all the code you used to create answers (txt)

**Note: All output in RMD**

**You are expected to adjust the functions as needed to answer the questions within the tasks below.**

* Task 1
  + Make a folder LAB15
  + Download the file “lab15.r”
  + Place this file with the others in LAB15.
  + Start Rstudio
  + Open “lab15.r” from within Rstudio.
  + Go to the “session” menu within Rstudio and “set working directory” to where the source files are located.
  + Issue the function getwd() and copy the output here.
  + Create your own R file and record the R code you used to complete the lab.
* Task 2
  + Please answer the question below. You can use any functions available within R



* + - a)
    - b)
    - c)
    - d) (Use a test for
    - e)
    - f)

################### LAB FINISHES HERE ###############################