# MAT013 - Practice Sheet

## Chapter 3

### Attempt to do the following in SAS and/or R.

1. Download the data sets [weight.xls](../Data/C3/weight.xls) and [height.xls](../Data/C3/height.xls):
   1. Create a SAS data set containing the bmi of the observations.
   2. Output the data set to csv.
2. For the concatenated data set (of JJJ and MMM):
   1. For individuals over the age of 25, calculate the yearly average savings (for each year after their 25th birthday)
   2. Output a frequency table showing the mean yearly average by sex. (You will need to find out some information on the ``tabulate'' procedure).
   3. Obtain the mean yearly average savings by sex and age groups:
      * Group A [0,18]
      * Group B [19,65]
      * Group C [66,]
   * Find the mean, max and min for the variable ``random number'' and output this to a SAS data set.

* Create (seperate) data sets containing the following:
  1. The first 200 odd numbers;
  2. The square root of the first 1000 integers;
  3. The square root of the first 10000 integers, selecting only those that are integers
  4. The first 20 prime numbers (this is slightly harder)

1. Download the file [coordinates.csv](../Data/C3/coordinates.csv).
   1. Obtain coefficients for a line fitted to the coordinates of this data set.
   2. For each of the observations create a new variable giving the following:
      1. The product ;
      2. The ration ;
      3. The exponent ;
      4. The sum ;
      5. The difference ;
      6. The absolute value of ;
      7. The square root of ;
      8. The log to the base 10 ;
      9. The natural log .
   3. Obtain the following for the above data set (including the newly created variables):
      1. minimum
      2. maximum
      3. total
      4. mean
      5. median
2. The probability that an queue is empty is given by the following formulae:

Use a SAS datastep to obtain for , and .

1. Download the data set [marks.csv](../Data/marks.csv)
   1. Create a data set that shows the percentage increase or decrease of marks for each student from one month to the next.
   2. Obtain a table showing the mean of these percentage changes categorized by gender.
2. Download the data set [numbers.csv](../Data/numbers.csv) and create the following variables: