1. (20 points) Basic Math – each question has 5% credits

1. The log of a positive number.
   * Log(10)
   * 
2. What is the default base for the log function?
   * e=exp(1)
   * Calculate the log of your previous number with a different base.
     + Log(10,2)
     + 
3. The log of a negative number. (explain the answer)
   * Log (-10) The log of a negative number is an inifinate number so it is not a number (NaN)
   * 
4. The square-root of a positive number.
   * Sqrt(10)
   * 

2. (15 points) Random number generation.

1. Create a vector of 15 standard normal random variables. Calculate its mean and

SD (Standard Deviation).

* + 
  + 
  + 

1. Change the mean to 10 and the SD to 2 and recalculate the vector of 15 random normal variables. Calculate its mean and SD.
   * 
2. Why are the means and SD not exactly the same as the means and SDs specified in the function?
   * It is a simulation to equate as close to the mean and SD as possible however it does not mean it is going to be exact.

3. (40 points) Vector Operations

1. The weights of 6 individuals in kg are 60, 72, 57, 90, 95, 72.
2. Their heights (in m) are 1.80, 1.85, 1.72, 1.90, 1.74, 1.91.
3. Enter these vectors into R.
   * 
4. Create a scatterplot of weight vs. height. Interpret the scatterplot.
   * 
   * 
   * People who are taller weigh more
5. Calculate the BMI for each individual. (BMI = weight in kg divided by the square of the height in m)
   * 
6. Calculate the mean for weight.
   * 
7. Subtract the mean from each value of weight.
   * 
8. Sum the result. Now you know why we square the deviations from the mean to calculate a standard deviation!
   * 
9. (25 points) Your data science profile. Enter your data science profile into R as a data frame with two columns. Call it by your first name. The categories are computer programming, math, statistics, machine learning, domain expertise, communication and presentation skills, and data visualization. Your ranking for each category 1-5, with 5 as best. Create a bar graph of your data science profile. When you submit your work, please submityour code, including the data entry piece.
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