SRT411A0

This assignment was uploaded to github under username jthegrey. This assignment is basically to help understand the basics of R, as well as figure out how to use knitr to generate PDF's of the .Rmd file.

I followed this guide: https://cran.r-project.org/doc/contrib/Torfs+Brauer-Short-R-Intro.pdf

3.1 Calculator

The percetage of my life I have spent at Seneca. Note: for this section the guide said to use 2014, but since the year is 2018 I used that number instead.

```
((2018 - 2017) / (2018 - 1993)) *100
```

```
## [1] 4
```

3.2 Workspace

Same as above, but used some variables.

```
age = 2018 - 1993
years_in_school = 2018 - 2017
years_in_school/age * 100
```

```
## [1] 4
```

3.4 Functions

Compute the sum of 4, 5, 8 and 11 by first combining them into a vector and then using the function sum.

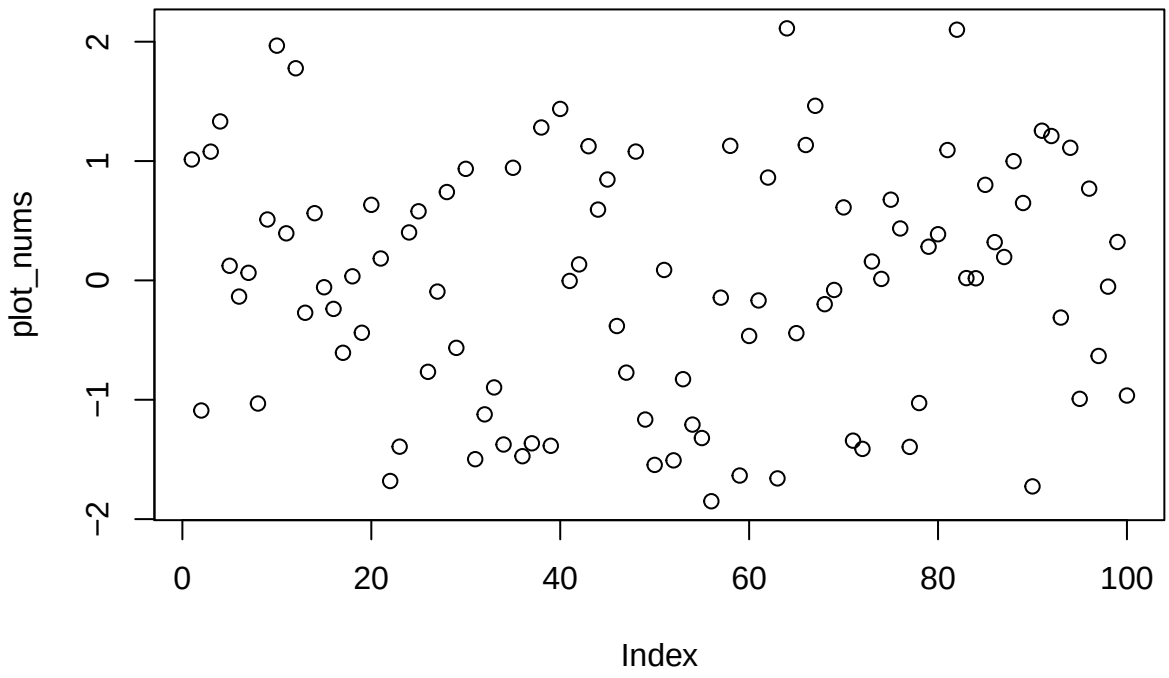
```
nums = c(4,5,8,11)
sum(nums)
```

```
## [1] 28
```

3.5 Plots

Plot 100 normal random numbers

```
plot_nums = rnorm(100)
plot(plot_nums)
```



4.0 Help Documentation Find help for the sqrt function.

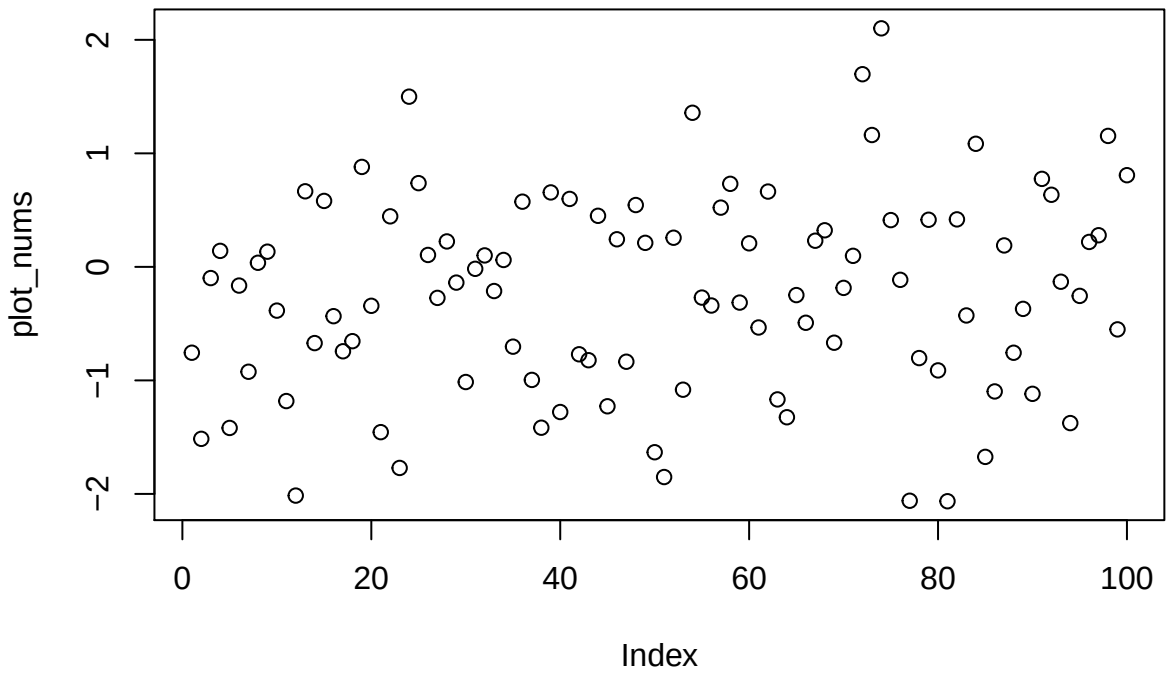
```
help(sqrt)
```

```
## starting httpd help server ... done
```

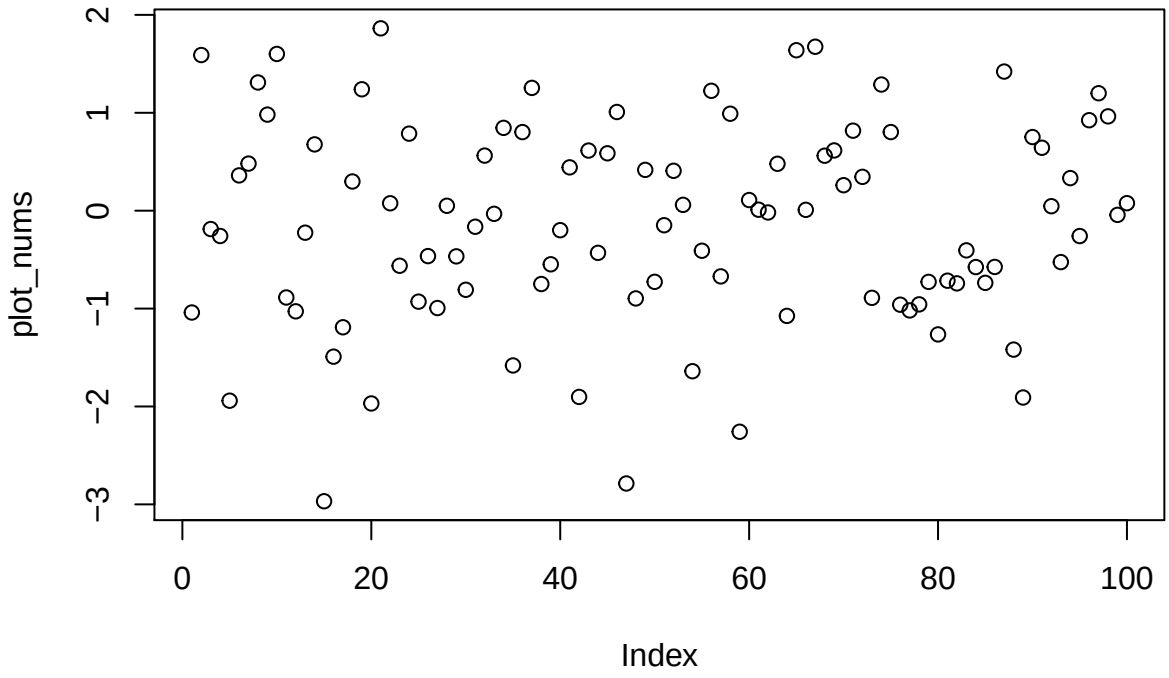
5.0 Scripts

Script contents of firstscript.R: plot_nums = rnorm(100) plot(plot_nums)

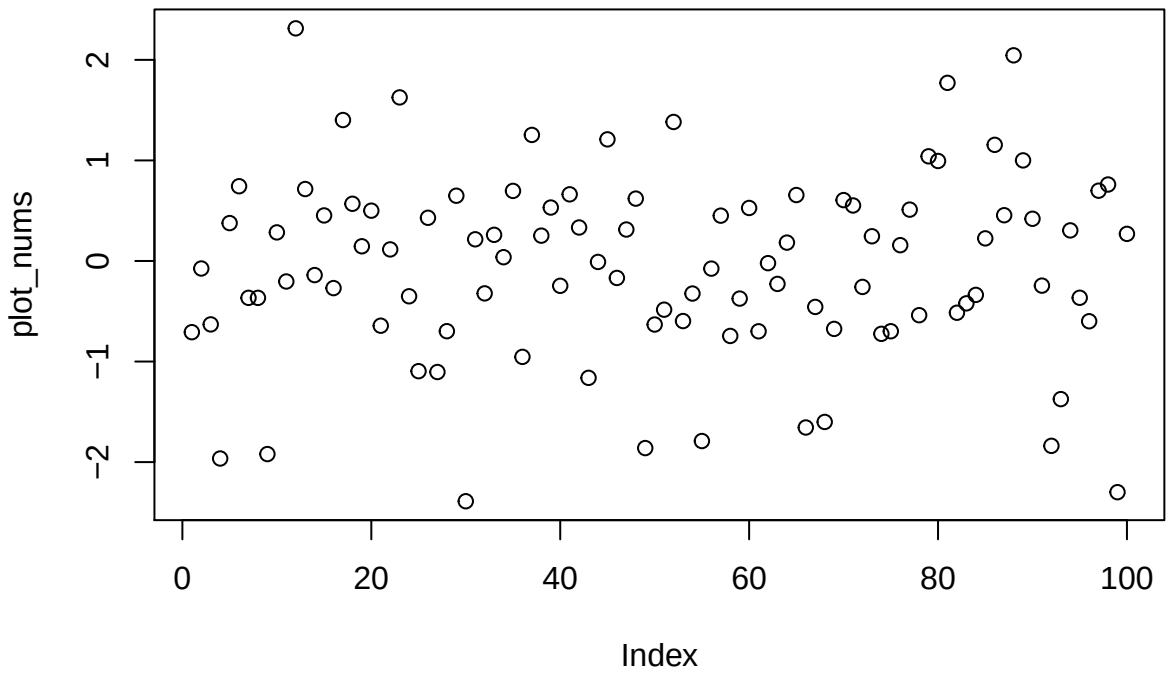
```
setwd("C:\\Users\\Hagop\\Desktop")
source("firstscript.R")
```




```
source("firstscript.R")
```




```
source("firstscript.R")
```



6.2 Matrices Put the numbers 31 to 60 in a vector named P and in a matrix with 6 rows and 5 columns named Q

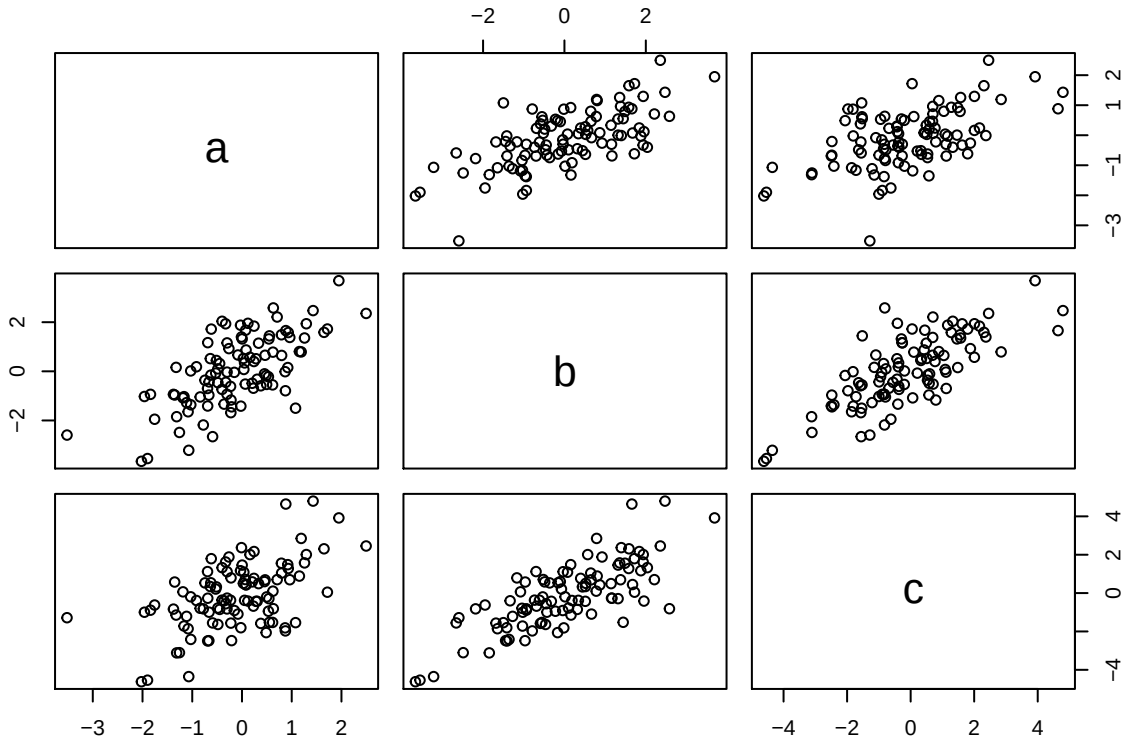
```
nums = seq(from=31, to=60, by=1)
mat = matrix(data=nums, ncol=5)
mat
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]   31   37   43   49   55
## [2,]   32   38   44   50   56
## [3,]   33   39   45   51   57
## [4,]   34   40   46   52   58
## [5,]   35   41   47   53   59
## [6,]   36   42   48   54   60
```

6.3 Data Frames

Make a script file which constructs three random normal vectors of length 100. Call these vectors x1,x2 andx3. Make a data frame called t with three columns (called a , b and c) containing respectively x1, x1+x2 and x1+x2+x3. Call the following functions for this data frame: plot(t) and sd(t).

```
x1=rnorm(100)
x2=rnorm(100)
x3=rnorm(100)
t= data.frame(a = x1, b= (x1+x2), c=(x1+x2+x3))
plot(t)
```

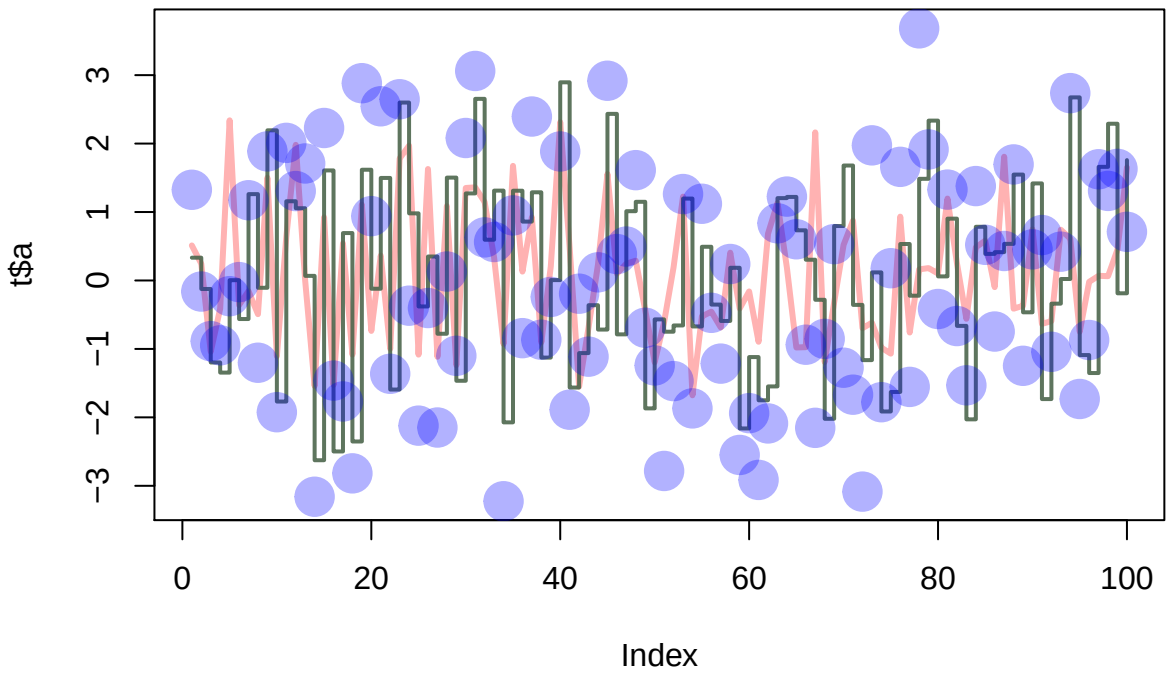


sd(t) fails, so it was omitted.

7.0 Graphics

```
x1=rnorm(100)
x2=rnorm(100)
x3=rnorm(100)
t= data.frame(a = x1, b= (x1+x2), c=(x1+x2+x3))

plot(t$a, type="l", ylim=range(t),lwd=3, col=rgb(1,0,0,0.3))
lines(t$b, type="s", lwd=2,col=rgb(0.3,0.4,0.3,0.9))
points(t$c, pch=20, cex=4, col=rgb(0,0,1,0.3))
```



8.0 Reading and writing data files

```
data1=read.table(file="tst1.txt", header=TRUE)
data1
```

```
##    a  g  x
## 1  1  2  3
## 2  2  4  6
## 3  4  8 12
## 4  8 16 24
## 5 16 32 48
## 6 32 64 96
```

```
data1[2] * 5
```

```
##     g
## 1  10
## 2  20
## 3  40
## 4  80
## 5 160
## 6 320
```

```
write.table(data1,file="tst1.txt",row.names=FALSE)
data1
```

```
##    a  g  x
## 1  1  2  3
## 2  2  4  6
```

```
## 3  4  8 12
## 4  8 16 24
## 5 16 32 48
## 6 32 64 96
```

9.0 Not Available Data

```
mean(sqrt(rnorm(100)),na.rm =TRUE)
```

```
## Warning in sqrt(rnorm(100)): NaNs produced
```

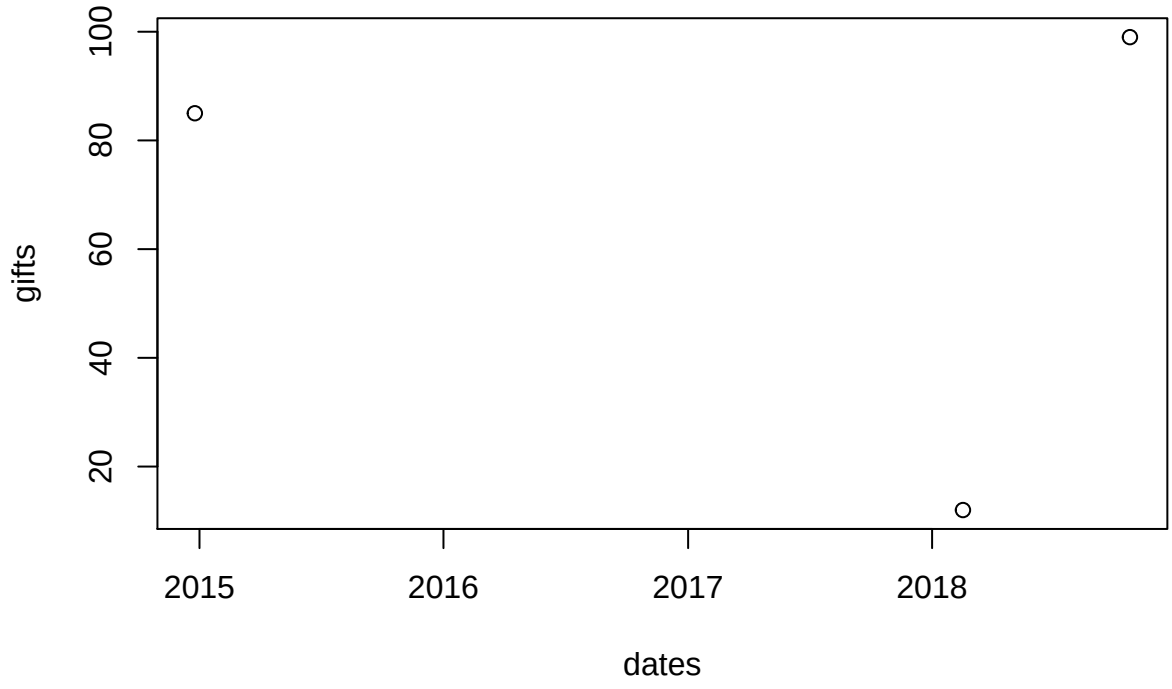
```
## [1] 0.8864348
```

This section creates an error because the sqrt of negative numbers does not exist, this leaves holes in the data. We used na.rm=TRUE to tell the interpreter to ignore the missing data.

10.0 Classes

Make a graph with on the x-axis: today, Sinterklaas 2014 and your next birthday and on the y-axis the number of presents you expect on each of these days

```
dates=strptime(c("20180216042200", "20141225010000", "20181024010000"), format="%Y%m%d%H%M%S")
gifts = c(12, 85, 99)
plot(dates,gifts)
```



11.2 For-Loop

```
s =c()
for(i in 1:100)
{
  if (i < 5 | i >90)
  {
    s[i] = (i *10)
  }
  else
  {
    s[i]= i * 0.1
  }
}
s
```

```
##   [1]   10.0   20.0   30.0   40.0    0.5    0.6    0.7    0.8    0.9    1.0
##  [11]    1.1    1.2    1.3    1.4    1.5    1.6    1.7    1.8    1.9    2.0
##  [21]    2.1    2.2    2.3    2.4    2.5    2.6    2.7    2.8    2.9    3.0
##  [31]    3.1    3.2    3.3    3.4    3.5    3.6    3.7    3.8    3.9    4.0
##  [41]    4.1    4.2    4.3    4.4    4.5    4.6    4.7    4.8    4.9    5.0
##  [51]    5.1    5.2    5.3    5.4    5.5    5.6    5.7    5.8    5.9    6.0
##  [61]    6.1    6.2    6.3    6.4    6.5    6.6    6.7    6.8    6.9    7.0
##  [71]    7.1    7.2    7.3    7.4    7.5    7.6    7.7    7.8    7.9    8.0
##  [81]    8.1    8.2    8.3    8.4    8.5    8.6    8.7    8.8    8.9    9.0
##  [91]  910.0  920.0  930.0  940.0  950.0  960.0  970.0  980.0  990.0 1000.0
```

11.3 Writing your own Functions

```
fun1 = function(arg1)
{
  s=c()
for(i in 1:length(arg1))
{
  if (i < 5 | i >90)
  {
    s[i] = (i *10)
  }
  else
  {
    s[i]= i * 0.1
  }
}
s
}

fun1(arg1=seq(from=1, to=100, by=1))
```

```
##   [1]   10.0   20.0   30.0   40.0    0.5    0.6    0.7    0.8    0.9    1.0
##  [11]    1.1    1.2    1.3    1.4    1.5    1.6    1.7    1.8    1.9    2.0
##  [21]    2.1    2.2    2.3    2.4    2.5    2.6    2.7    2.8    2.9    3.0
##  [31]    3.1    3.2    3.3    3.4    3.5    3.6    3.7    3.8    3.9    4.0
##  [41]    4.1    4.2    4.3    4.4    4.5    4.6    4.7    4.8    4.9    5.0
```

```
##  [51]    5.1    5.2    5.3    5.4    5.5    5.6    5.7    5.8    5.9    6.0
##  [61]    6.1    6.2    6.3    6.4    6.5    6.6    6.7    6.8    6.9    7.0
##  [71]    7.1    7.2    7.3    7.4    7.5    7.6    7.7    7.8    7.9    8.0
##  [81]    8.1    8.2    8.3    8.4    8.5    8.6    8.7    8.8    8.9    9.0
##  [91]  910.0  920.0  930.0  940.0  950.0  960.0  970.0  980.0  990.0 1000.0
```

Extra ToDo in Footnote

```
fun1 = function(arg1)
{
less = arg1[ arg1 <=5 | arg1 >= 90] * 5
mid = arg1[ arg1 >=5 | arg1 <= 90] * 0.1
arg1 <- c(less,mid)
}

fun1(arg1=seq(from=1, to=100, by=1))
```

Sources used:

https://nicercode.github.io/guides/reports/ https://cran.r-project.org/doc/contrib/Torfs+Brauer-Short-R-Intro.pdf https://www.dataquest.io/blog/how-to-share-data-science-portfolio/