question_1_2_3

In [33]:
```
D <- 1000
D
```

```
1000
```

In [30]:
```
K <- 5
K
```

```
5
```

In [31]:
```
h <- 0.05
h
```

```
0.05
```

In [34]:
```
2*D*K
```

```
10000
```

In [35]:
```
(2*D*K)/h
```

```
2e+05
```

question _ 4

In [38]:
```
Q = sqrt((2*D*K)/h) # method_1
Q
```

```
447.213595499958
```

In [37]:
```
((2*D*K)/h)**0.5 # method_2
```

```
447.213595499958
```

In [39]:
```
my_vec <- c(1:10)
my_vec
```

```
1  2  3  4  5  6  7  8  9  10
```

In [40]:
```
my_vec+1
```

```
2  3  4  5  6  7  8  9  10  11
```

In [41]:
```
my_vec/2
```

```
0.5  1  1.5  2  2.5  3  3.5  4  4.5  5
```

In [42]:
```
my_vec2 <- c(10:18)
my_vec2
```

```
10  11  12  13  14  15  16  17  18
```

In [43]:
```
my_vec2 + my_vec
```

```
Warning message in my_vec2 + my_vec:
"longer object length is not a multiple of shorter object length"
```

```
11  13  15  17  19  21  23  25  27  20
```

In [56]:
```
sequence1  <- 1:15 # direct written the sequence ,
#That gave us every integer between (and including) 1 and 15
#(an integer is a positive or negative counting number, including 0)
print(sequence1)

sequence2 <- c(1:15)  # sequence in vector form
print(sequence2)

sequence3 <- seq(1,15) #The help files show the arguments listed for the seq() function.
#The first two arguments are “from =” and “to =”.
print(sequence3)

sequence4 <- seq(from = 1, to = 15)
print(sequence4)
```

```
 [1]  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
 [1]  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
 [1]  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
 [1]  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
```

In [57]:
```
data <- c("East","West","East","North","North","East","West","West","West","East","North")

print(data)
print(is.factor(data))

# Apply the factor function.
factor_data <- factor(data)

print(factor_data)
print(is.factor(factor_data))
```

```
 [1] "East"  "West"  "East"  "North" "North" "East"  "West"  "West"  "West"
[10] "East"  "North"
[1] FALSE
 [1] East  West  East  North North East  West  West  West  East  North
Levels: East North West
[1] TRUE
```

In [62]:
```
# Create the data frame.
emp.data <- data.frame(
   emp_id = c (1:5),
   emp_name = c("Rick","Dan","Michelle","Ryan","Gary"),
   salary = c(623.3,515.2,611.0,729.0,843.25),

   start_date = as.Date(c("2012-01-01", "2013-09-23", "2014-11-15", "2014-05-11",
      "2015-03-27")),
   stringsAsFactors = FALSE
)
# Extract first two rows.
result <- emp.data[,1:2]
print(result)  # for two rows


print(emp.data[1:2,]) # for two columns
```

```
  emp_id emp_name
1      1     Rick
2      2      Dan
3      3 Michelle
4      4     Ryan
5      5     Gary
  emp_id emp_name salary start_date
1      1     Rick  623.3 2012-01-01
2      2      Dan  515.2 2013-09-23
```

In [63]:
```
data(mtcars)
dim(mtcars)
summary(mtcars)
```