> #1

>#(a)

> (7-8)+5^3-5/6+sqrt(62)

[1] 131.0407

> #or

> (7-8)+5^3-5/6+62^0.5

[1] 131.0407

> #(b)

> log(3)+sqrt(2)\*sin(pi)-exp(3)

[1] -18.98692

> #(c)

> 2\*(5+3)-sqrt(6)+9^2

[1] 94.55051

> #(d)

> log(5)-exp(2)+2^3

[1] 2.220382

> #(e)

> 9/2\*4-sqrt(10)+log(6)-exp(1)

[1] 13.9112

> log10(14)+log(14)

[1] 3.785185

>#2

> rep(c(1,2,3,4,5),times=4)

[1] 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5

> rep(c(1,2,3,4,5),each=4)

[1] 1 1 1 1 2 2 2 2 3 3 3 3 4 4 4 4 5 5 5 5

> rep(c("Math","Biology","Statistics"),times=2:4)

[1] "Math" "Math" "Biology" "Biology" "Biology"

[6] "Statistics" "Statistics" "Statistics" "Statistics"

>#3

> Test1=c(56,78,87,89,95,98,NA,78,87,98,54,89,78,98,97)

> Test2=c(86,67,78,89,87,67,94,78,81,83,78,NA,93,98,100)

> data=data.frame(S.N,Test1,Test2)

> data

S.N Test1 Test2

1 1 56 86

2 2 78 67

3 3 87 78

4 4 89 89

5 5 95 87

6 6 98 67

7 7 NA 94

8 8 78 78

9 9 87 81

10 10 98 83

11 11 54 78

12 12 89 NA

13 13 78 93

14 14 98 98

15 15 97 100

>#(a)

> length(which(Test1>80))

[1] 9

>#(b)

> length(which(Test2>85))

[1] 7

>#(c)

> any(is.na(Test1)==T|is.na(Test2)==T)#if True, somebody did not take at least one text.

[1] TRUE

>#(d)

> length(which(Test1<Test2))

[1] 4

>#(e)

> length(which(Test1==Test2))

[1] 3

>#(f)

> mean(Test1[-which(is.na(Test1))])

#find the location of data NA, then delete this data from Test1, finally calculate the average of rest data. The result is the class average of Test1.

[1] 84.42857

> mean(Test2[-which(is.na(Test2))])

[1] 84.21429

>#4

>M=matrix(1:20,nrow=4,dimnames=list(rows=c("Experimet.1","Experimet.2","Experimet.3","Experimet.4"),cols=c("column-1","column-2","column-3","column-4","column-5")))

> M

cols

rows column-1 column-2 column-3 column-4 column-5

Experimet.1 1 5 9 13 17

Experimet.2 2 6 10 14 18

Experimet.3 3 7 11 15 19

Experimet.4 4 8 12 16 20

>#(a)

> dim(M)

[1] 4 5

>#(b)

> M[c(1,2),]

cols

rows column-1 column-2 column-3 column-4 column-5

Experimet.1 1 5 9 13 17

Experimet.2 2 6 10 14 18

>#(c)

> colSums(M)

column-1 column-2 column-3 column-4 column-5

10 26 42 58 74

>#(d)

> rowSums(M)

Experimet.1 Experimet.2 Experimet.3 Experimet.4

45 50 55 60

>#(e)

> apply(M,1,sample)

rows

Experimet.1 Experimet.2 Experimet.3 Experimet.4

[1,] 5 10 11 12

[2,] 1 6 3 8

[3,] 13 2 19 4

[4,] 17 18 15 20

[5,] 9 14 7 16

> A=matrix(c(2,3,3,-4),nrow=2,byrow=T)

> Y=matrix(c(21,23),nrow=2)

> X=solve(A)%\*%Y

> X

[,1]

[1,] 9

[2,] 1