1. Create the vectors

(a) (2, 3, ... , 29, 30) - a <- seq(1,30,1)

(b) (30, 29, ... , 2) - b <- seq(30,2)

(c) (1, 2, 3, .... , 29, 30, 29, 28, , 2, 1) - c<- c(1:30, rev(1:29))

(d) (4, 6, 3) and assign it to the name dev. - dev <- c(4, 6, 3)

For parts (e), (f) and (g)

e) (5, 6, 7, 5, 6, 7, , 5, 6, 7) where there are 10 occurrences of 5. - rep(dev,10)

(f) (5, 6, 7, 5, 6, 7, , 5, 6, 7, 5) where there are 11 occurrences of 5, 10 occurrences of 6

and 10 occurrences of 7. - rep(dev,l=31)

(g) (4, 4, , 4, 6, 6, , 6, 3, 3, , 3) where there are 10 occurrences of 4, 20 occurrences

of 6 and 30 occurrences of 3. - rep(dev,times=c(10,20,30))

2. Create a vector of the values of eX sin(x) at x = 3, 3.1, 3.2, , 6.

cal <- seq(3,6,by=0.1)

exp(cal)\*sin(cal)

3. Execute the following lines which create two vectors of random integers which are chosen with replacement from the integers 0, 1, : : : , 999. Both vectors have length 250.

set.seed(100)

x <- Sample (0:999, 250, replace=T)

y <- Sample (0:999, 250, replace=T)

a) Identify out the values in y which are > 500. - y[y>500]

b) Identify the index positions in y of the values which are > 700? - which(y>700)

c) What are the values in x which are in Same index position to the values in y which are > 400? - x[y>400]

d) How many values in y are within 200 of the maximum value of the terms in y? - sum(y> max(y)-200)

e) How many numbers in x are divisible by 2? - sum(x%%2==0)

f) Sort the numbers in the vector x in the order of increasing values in y. - x[order(y)]

g) Create the vector (x1 + 2x2 - x3; x2 + 2x3 -x4 ,, xn−2 + 2xn−1 - xn).

xLen <- length(x)

x[-c(xLen-1,xLen)] + 2\*x[-c(1,xLen)] - x[-c(1,2)]

h) Calculate:

n-1

Σ

(e−xi+10/ xi

+ 10)

sum(exp(-x[-1]+10)/(x[-length(x)]+10))