**1.** Create the vectors

(a) (2*,* 3*, … ,* 29*,* 30)

**Ans.**

a<-2:30

a

(b) (30*,* 29*, … ,* 2)

**Ans.**

b<-30:2

b

(c) (1*,* 2*,* 3*, …. ,* 29*,* 30*,* 29*,* 28*, ,* 2*,* 1)

**Ans.**

c<- c(1:30,29:1)

c

(d) (4*,* 6*,* 3) and assign it to the name dev.

**Ans.**

dev<-c(4,6,3)

dev

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

e) (5*,* 6*,* 7*,* 5*,* 6*,* 7*, ,* 5*,* 6*,* 7) where there are 10 occurrences of 5.

**Ans.**

e<-rep(c(5,6,7),10)

e

(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.

**Ans.**

f<- c(rep(c(5,6,7),10),5)

f

(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.

**Ans.**

g<-c(rep(4,10),rep(6,20),rep(3,30))

g

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

**Ans.**

x=seq(3,6,0.1)

x

y=exp(x)\*sin(x)

y

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.

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

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

d) How many values in y are within 200 of the maximum value of the terms in y?

e) How many numbers in x are divisible by 2?

f) Sort the numbers in the vector x in the order of increasing values in y.

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

h) Calculate: n-1 **Σ** i=1 (e−xi+10/ xi + 10)

**Ans .**

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

x

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

y

y[y>500] #(a)

which(y>700) #(b)

y

x

x[which(y>400)] #(c)

y[y>(max(y)-200)] #(d)

n=length(which(x%%2==0))

n #(e)

x[sort(order(x)[y])] #(f)

v=(x-2)+2\*(x-1)-x

v #(g)

for(i in 1:(n-1))

s=sum( (exp(-x\*i+10)/(x[i]+10)))

s #(h)