1. Create the vectors

(a) (2, 3, … , 29, 30)

(b) (30, 29, … , 2)

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

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

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

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

(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.

Sol: (a) a=c(2:30)

(b) a=c(30:2)

(c) a=c(1:30,29:1)

(d) dev=c(4,6,3)

(e) a=c(5,6,7)

rep(a,10)

(f) rep(a,times=c(11,10,10))

(g) 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

Sol: a=seq(3,6,by=0.1)

exp(a)\*sin(a)

1. 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)
2. 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:

Sol: To be discussed during Statistics session

1. Use the function paste to create the following character vectors of length 30:
2. ("Label 1", "Label 2", ....., "Label 30").

\*Note that there is a single space between label and the number following. (b) ("FN1", "FN2", ..., "FN30"). \*\*In this case, there is no space between fn and the number following.

Sol: a=c(1:30)

paste("label",1:30)

paste("fn",1:30,sep="")

1. Compound interest can be computed using the formula A = P × (1 + R/100)n, where P is the original money lent, A is what it amounts to in n years at R percent per year interest. Write R code to calculate the amount of money owed after n years, where n changes from 1 to 15 in yearly increments, if the money lent originally is 10000 Rupees and the interest rate remains constant throughout the period at 11.5%.

Sol: P=10000

n=180

rate=11.5

p\*(rate/100)\*(n:24)

1. Generate the following matrices. [,1] [,2] [,3] [,4] [1,] 1 101 201 301 [2,] 2 102 202 302 [3,] 3 103 203 303 [4,] 4 104 204 304 [5,] 5 105 205 305

Sol: A=1:5

B=101:105

C=201:205

D=301:305

Input=c(A,B,C,D)

Mat=matric(data=input,nrow=5)