Assignment 1.5

Create an m x n matrix with replicate(m, rnorm(n)) with m=10 column vectors of n=10 elements each,

constructed with rnorm(n), which creates random normal numbers.

Then we transform it into a dataframe (thus 10 observations of 10 variables) and perform an algebraic

operation on each element using a nested for loop: at each iteration, every element referred by the two

indexes is incremented by a sinusoidal function, compare the vectorized and non-vectorized form of creating

the solution and report the system time differences.

> d<-matrix(1:100,nrow = 10,ncol = 10)

> d

[,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10]

[1,] 1 11 21 31 41 51 61 71 81 91

[2,] 2 12 22 32 42 52 62 72 82 92

[3,] 3 13 23 33 43 53 63 73 83 93

[4,] 4 14 24 34 44 54 64 74 84 94

[5,] 5 15 25 35 45 55 65 75 85 95

[6,] 6 16 26 36 46 56 66 76 86 96

[7,] 7 17 27 37 47 57 67 77 87 97

[8,] 8 18 28 38 48 58 68 78 88 98

[9,] 9 19 29 39 49 59 69 79 89 99

[10,] 10 20 30 40 50 60 70 80 90 100

> d<- as.data.frame(d)

> d

V1 V2 V3 V4 V5 V6 V7 V8 V9 V10

1 1 11 21 31 41 51 61 71 81 91

2 2 12 22 32 42 52 62 72 82 92

3 3 13 23 33 43 53 63 73 83 93

4 4 14 24 34 44 54 64 74 84 94

5 5 15 25 35 45 55 65 75 85 95

6 6 16 26 36 46 56 66 76 86 96

7 7 17 27 37 47 57 67 77 87 97

8 8 18 28 38 48 58 68 78 88 98

9 9 19 29 39 49 59 69 79 89 99

10 10 20 30 40 50 60 70 80 90 100