**Exercise Lab 1**

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**#1**

c=TRUE

c

as.integer(c)

**Output:** > #1

> c=TRUE

> c

[1] TRUE

> as.integer(c)

[1] 1

**#2**

string='"Do you think this is a game?", he said. "No, I think Jengas a game". Archer responded.'

**Output:** string='"Do you think this is a game?", he said. "No, I think Jengas a game". Archer responded.'

> string

[1] "\"Do you think this is a game?\", he said. \"No, I think Jengas a game\". Archer responded."

**#3**

p=4L

q=8L

class(p)

class(q)

**Output:** > p=4L

> q=8L

> class(p)

[1] "integer"

> class(q)

[1] "integer"

**#4**

tot=p+q

tot

diff=q-p

diff

prod=p\*q

prod

quot=q/p

quot

**Output:** > tot=p+q

> tot

[1] 12

> diff=q-p

> diff

[1] 4

> prod=p\*q

> prod

[1] 32

> quot=q/p

> quot

[1] 2

**#5**

root=sqrt(p)

root

log2(root)

**Output:** > root=sqrt(p)

> root

[1] 2

> log2(root)

[1] 1

**#6**

log=log10(100)

cos(pi)\*log

**Output:** > log=log10(100)

> cos(pi)\*log

[1] -2

**#7**

x=-2:2

x

**Output:** > x=-2:2

> x

[1] -2 -1 0 1 2

**#8**

y=c(1:10)

y

dim(y)

length(y)

**Output:**

|  |
| --- |
| > y=c(1:10)  > y  [1] 1 2 3 4 5 6 7 8 9 10  > dim(y)  NULL  > length(y)  [1] 10 |
|  |
| |  | | --- | |  | |

**#9**

small=c("a", "b", "c", "d", "e")

caps=c("Z", "Y","X","W","V")

rbind(small,caps)

cbind(small,caps)

**Output:** > small=c("a", "b", "c", "d", "e")

> caps=c("Z", "Y","X","W","V")

> rbind(small,caps)

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

small "a" "b" "c" "d" "e"

caps "Z" "Y" "X" "W" "V"

> cbind(small,caps)

small caps

[1,] "a" "Z"

[2,] "b" "Y"

[3,] "c" "X"

[4,] "d" "W"

[5,] "e" "V"

**#10**

M=c(1,-2,5,4,8,-1,3,6,7)

dim(M)<-c(3,3)

M

mul=M%\*%M%\*%M

mul

**Output:** > M=c(1,-2,5,4,8,-1,3,6,7)

> dim(M)<-c(3,3)

> M

[,1] [,2] [,3]

[1,] 1 4 3

[2,] -2 8 6

[3,] 5 -1 7

> mul=M%\*%M%\*%M

> mul

[,1] [,2] [,3]

[1,] 182 248 558

[2,] 332 364 924

[3,] 322 150 562

**#11**

elementwise=M\*M

elementwise

**Output:** > elementwise=M\*M

> elementwise

[,1] [,2] [,3]

[1,] 1 16 9

[2,] 4 64 36

[3,] 25 1 49

**#12**

transpose=t(M)

transpose

inverse=solve(M)

inverse

determinant=det(M)

determinant

**Output:** > transpose=t(M)

> transpose

[,1] [,2] [,3]

[1,] 1 -2 5

[2,] 4 8 -1

[3,] 3 6 7

> inverse=solve(M)

> inverse

[,1] [,2] [,3]

[1,] 0.5000000 -0.25000000 5.551115e-17

[2,] 0.3548387 -0.06451613 -9.677419e-02

[3,] -0.3064516 0.16935484 1.290323e-01

> determinant=det(M)

> determinant

[1] 124