T4

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Problema 1

```
A = matrix(c(1,4,0,3,2,3,1,0,3,2,0,4,4,1,2,0),nrow = 4)
B = matrix(c(4,0,1,0,3,3,2,1,2,0,3,0,1,4,4,2),nrow = 4)
```

$AB =$

```
A%*%B
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    7   19   11   29
## [2,]   18   26   14   26
## [3,]    0    5    0    8
## [4,]   16   17   18   19
```

$BA =$

```
B%*%A
```

```
##      [,1] [,2] [,3] [,4]
## [1,]   19   19   22   23
## [2,]   24    9   22    3
## [3,]   21   11   23   12
## [4,]   10    3   10    1
```

$(AB)^t =$

```
t(A%*%B)
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    7   18    0   16
## [2,]   19   26    5   17
## [3,]   11   14    0   18
## [4,]   29   26    8   19
```

```
t(B)%*%A
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    4    9   12   18
## [2,]   18   17   19   19
## [3,]    2    7    6   14
## [4,]   23   18   19   16
```

$(AB)^{-1} =$

```
solve(A%*%B)
```

```
##       [,1]  [,2]  [,3]  [,4]
## [1,] -1.66 -0.65  4.52  1.52
## [2,]  1.60  0.80 -4.60 -1.60
## [3,]  1.02  0.35 -2.84 -0.84
## [4,] -1.00 -0.50  3.00  1.00
```

$A^{-1}B^t =$

```
solve(A)%*%t(B)
```

```
##               [,1] [,2] [,3] [,4]
## [1,]  6.000000e-01  2.4  6.4  1.2
## [2,] -3.330669e-16 -2.0 -7.0 -1.2
## [3,] -2.000000e-01 -0.8 -3.8 -0.4
## [4,]  1.000000e+00  1.0  5.0  0.6
```

Problema 2

```
dni = 1:8
```

$dni^2 =$

```
dni^2
```

```
## [1]  1  4  9 16 25 36 49 64
```

$\sqrt{dni} =$

```
sqrt(dni)
```

```
## [1] 1.000000 1.414214 1.732051 2.000000 2.236068 2.449490 2.645751 2.828427
```

$\sum_{i \in dni} i =$

```
sum(dni)
```

```
## [1] 36
```

Problema 3

```
name = c("M", "A", "R", "I", "A", "S", "A", "N", "T", "O", "S")
```

Nombre

```
name[1:5]
```

```
## [1] "M" "A" "R" "I" "A"
```

Apellido

```
name[6:11]
```

```
## [1] "S" "A" "N" "T" "O" "S"
```

Ordenado

```
ordered(name)
```

```
##  [1] M A R I A S A N T O S
## Levels: A < I < M < N < O < R < S < T
```

Matriz

```
matrix(name, nrow =3)
```

```
## Warning in matrix(name, nrow = 3): la longitud de los datos [11] no es un
## submúltiplo o múltiplo del número de filas [3] en la matriz
```

```
##      [,1] [,2] [,3] [,4]
## [1,] "M"  "I"  "A"  "O"
## [2,] "A"  "A"  "N"  "S"
## [3,] "R"  "S"  "T"  "M"
```