

**Actividad | #1 | Nombre de la
actividad Matrices**

Nombre del curso

Ingeniería en Desarrollo de Software



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DESARROLLO

Matriz 1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	MATRIZ 5A	B						4)B-2C						
2	$\begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix}$		$\begin{bmatrix} 5 & 15 \\ -10 & 0 \end{bmatrix}$					$\begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix}$				$\begin{bmatrix} 0 & 5 \\ 0 & -13 \end{bmatrix}$		
3														
4								C						
5								$\begin{bmatrix} 2 & -2 \\ 1 & 5 \end{bmatrix}$	$\begin{bmatrix} 4 & -4 \\ 2 & 10 \end{bmatrix}$					
6	2). 2A+B							R=	$\begin{bmatrix} 0 & 5 \\ 0 & -13 \end{bmatrix}$					
7	$\begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix}$		$\begin{bmatrix} 6 & 7 \\ -2 & -3 \end{bmatrix}$											
8								Escriba aquí la ecuación.						
9														
10								5)2A+(B-C)						
11	3) 3A-4B							$\begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix}$						
12	$\begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix}$		$\begin{bmatrix} 3 & 9 \\ -6 & 0 \end{bmatrix}$	$\begin{bmatrix} -13 & 5 \\ -14 & 12 \end{bmatrix}$				B						
13								$\begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix}$						
14	B							C						
15	$\begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix}$		$\begin{bmatrix} 16 & 4 \\ 8 & -12 \end{bmatrix}$					$\begin{bmatrix} 2 & -2 \\ 1 & 5 \end{bmatrix}$						
16								R=	$\begin{bmatrix} 4 & 9 \\ -3 & -8 \end{bmatrix}$					
17	R=	$\begin{bmatrix} -13 & 5 \\ -14 & 12 \end{bmatrix}$												
18														
19														
20														
21														
22														

Matriz 2

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	A*B						2)B*C		C					
	$\begin{bmatrix} 1 & -2 \\ 3 & 0 \end{bmatrix}$	$\begin{bmatrix} 1 & 2 \\ 4 & 0 \end{bmatrix}$	$\begin{bmatrix} 2 & 17 \\ 0 & -2 \end{bmatrix}$				$\begin{bmatrix} -1 & 2 \\ 1 & 0 \\ 5 & -2 \end{bmatrix}$		$\begin{bmatrix} 1 & 3 \\ -4 & 2 \end{bmatrix}$			$\begin{bmatrix} -9 & 1 \\ 1 & 3 \\ 13 & 11 \end{bmatrix}$		
	B						R=	$\begin{bmatrix} -9 & 1 \\ 1 & 3 \\ 13 & 11 \end{bmatrix}$						
	$\begin{bmatrix} -1 & 2 \\ 1 & 0 \\ 5 & -2 \end{bmatrix}$	A*B=	$\begin{bmatrix} 2 & 17 \\ 0 & -2 \end{bmatrix}$											
	3) C*A	A												
	$\begin{bmatrix} 1 & 3 \\ -4 & 2 \end{bmatrix}$	$\begin{bmatrix} 1 & -2 \\ 3 & 0 \end{bmatrix}$	$\begin{bmatrix} 10 & -2 \\ 2 & 8 \end{bmatrix}$	$\begin{bmatrix} 13 & 4 \end{bmatrix}$										
	R=	$\begin{bmatrix} 10 & -2 \\ 2 & 8 \end{bmatrix}$												

Matriz 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1) A^T								3) $B^T \cdot A$		$A =$				
$\begin{bmatrix} 2 & 3 \\ 6 & 7 \\ 8 & 7 \end{bmatrix}$			A^T	$\begin{bmatrix} 2 & 6 & 8 \\ 3 & 7 & 7 \end{bmatrix}$				$\begin{bmatrix} 2 & 1 \\ 3 & -1 \\ 5 & 0 \\ 7 & 4 \\ -1 & 3 \end{bmatrix}$		$\begin{bmatrix} 2 & 3 \\ 6 & 7 \\ 8 & 7 \end{bmatrix}$				
2) B^T														
$\begin{bmatrix} 2 & 3 & 5 & 7 & -1 \\ 1 & -1 & 0 & 4 & 3 \end{bmatrix}$						B^T	$\begin{bmatrix} 2 & 1 \\ 3 & -1 \\ 5 & 0 \\ 7 & 4 \\ -1 & 3 \end{bmatrix}$		4) $A^T \cdot B$	A^T				
										$\begin{bmatrix} 2 & 6 & 8 \\ 3 & 7 & 7 \end{bmatrix}$				
									$B =$	$\begin{bmatrix} 2 & 3 & 5 & 7 & 1 \\ 1 & -1 & 0 & 4 & 3 \end{bmatrix}$				

1)

```

1 #matriz A 5(A)
2 matriz <- matrix(nrow = 2, ncol = 2)
3 matriz [1,1] <- 1
4 matriz [1,2] <- 3
5 matriz [2,1] <- -2
6 matriz [2,2] <- 0
7 matriz
8
9 escalar <- 5 * matriz
10 escalar

```

```

matriz <- matrix(nrow = 2, ncol = 2)
matriz [1,1] <- 1
matriz [1,2] <- 3
matriz [2,1] <- -2
matriz [2,2] <- 0
matriz
escalar <- 5 * matriz
escalar

```

```

. matriz <- matrix(nrow = 2, ncol = 2)
. matriz [1,1] <- 1
. matriz [1,2] <- 3
. matriz [2,1] <- -2
. matriz [2,2] <- 0
. matriz
.      [,1] [,2]
. [1,]   1   3
. [2,]  -2   0
.
. escalar <- 5 * matriz
. escalar
.      [,1] [,2]
. [1,]   5  15
. [2,] -10   0
.

```

```
Untitled1* x
Source on Save
Run
Source

12 #matriz B 2A + B
13 #crear Matriz A
14 matriz_A <- matrix(c(1, -2, 3, 0), nrow = 2, ncol = 2)
15 matriz_A
16 #crear matriz B
17 matriz_B <- matrix(c(4, 2, 1, -3), nrow = 2, ncol = 2)
18 matriz_B
19
20 #calcular 2A + B
21 suma <- 2 * matriz_A + matriz_B
22 suma
22:5 (Top Level) R Script

Environment History Connections Tutorial
To Console To Source

#crear Matriz A
matriz_A <- matrix(c(1, -2, 3, 0), nrow = 2, ncol = 2)
matriz_A
#crear matriz B
matriz_B <- matrix(c(4, 2, 1, -3), nrow = 2, ncol = 2)
matriz_B
#calcular 2A + B
suma <- 2 * matriz_A + matriz_B
suma

Files Plots Packages Help Viewer Presentation

Console Background Jobs x
R 4.5.1 ~ /
> matriz_A
      [,1] [,2]
[1,]    1    3
[2,]   -2    0
> #crear matriz B
> matriz_B <- matrix(c(4, 2, 1, -3), nrow = 2, ncol = 2)
> matriz_B
      [,1] [,2]
[1,]    4    1
[2,]    2   -3
>
> #calcular 2A + B
> suma <- 2 * matriz_A + matriz_B
> suma
      [,1] [,2]
[1,]     6    7
[2,]    -2   -3
```

```
Untitled1* x
Source on Save
Run
Source

24 #matriz 3A - 4B
25 #crear matriz A
26 matriz_A <- matrix(c(1, -2, 3, 4), nrow = 2, ncol = 2)
27 matriz_A
28 #crear matriz B
29 matriz_B <- matrix(c(4, 2, 1, -3), nrow = 2, ncol = 2)
30
31 resta <- 3 * matriz_A - 4 * matriz_B
32 resta
32:6 (Top Level) R Script

Environment History Connections Tutorial
To Console To Source

#crear matriz A
matriz_A <- matrix(c(1, -2, 3, 4), nrow = 2, ncol = 2)
matriz_A
#crear matriz B
matriz_B <- matrix(c(4, 2, 1, -3), nrow = 2, ncol = 2)
resta <- 3 * matriz_A - 4 * matriz_B
resta

Files Plots Packages Help Viewer Presentation

Console Background Jobs x
R 4.5.1 ~ /
> #crear matriz A
> matriz_A <- matrix(c(1, -2, 3, 4), nrow = 2, ncol = 2)
> matriz_A
      [,1] [,2]
[1,]    1    3
[2,]   -2    4
> #crear matriz B
> matriz_B <- matrix(c(4, 2, 1, -3), nrow = 2, ncol = 2)
>
> resta <- 3 * matriz_A - 4 * matriz_B
> resta
      [,1] [,2]
[1,]   -13    5
[2,]   -14   12
>
```

```
Untitled1* x
Source on Save
Run
Source
1 #matriz4) B - 2C
2 #crear matriz B
3 matriz_B <- matrix(c(4, 1, 2, -3), nrow = 2, ncol = 2)
4 matriz
5 #crear matriz c
6 matriz_C <- matrix(c(2, -2, 1, 5), nrow = 2, ncol = 2)
7 matriz
8
9 resta <- matriz_B - 2 * matriz_C
10 resta
10:6 (Top Level)
R Script

Environment History Connections Tutorial
To Console To Source
#crear matriz B
matriz_B <- matrix(c(4, 1, 2, -3), nrow = 2, ncol = 2)
matriz
#crear matriz c
matriz_C <- matrix(c(2, -2, 1, 5), nrow = 2, ncol = 2)
matriz
resta <- matriz_B - 2 * matriz_C
resta

Files Plots Packages Help Viewer Presentation

Console Background Jobs
R 4.5.1 · ~/
> #crear matriz B
> matriz_B <- matrix(c(4, 1, 2, -3), nrow = 2, ncol = 2)
> matriz
      [,1] [,2]
[1,]    4    1
[2,]    2   -3
> #crear matriz c
> matriz_C <- matrix(c(2, -2, 1, 5), nrow = 2, ncol = 2)
> matriz
      [,1] [,2]
[1,]    4    1
[2,]    2   -3
>
> resta <- matriz_B - 2 * matriz_C
> resta
      [,1] [,2]
[1,]    0    0
[2,]    5  -13
> |
```

```
Untitled1* x
Source on Save
Run
Source
1 #matriz5) 2A + (B - C)
2 #Crear matriz A
3 matriz_A <- matrix(c(1, -2, 3, 0), nrow = 2, ncol = 2)
4 matriz_A
5 #crear matriz B
6 matriz_B <- matrix(c(4, 2, 1, -3), nrow = 2, ncol = 2)
7 matriz_B
8 #crear matriz C
9 matriz_C <- matrix(c(2, 1, -2, 5), nrow = 2, ncol = 2)
10 matriz_C
16:10 (Top Level)
R Script

Environment History Connections Tutorial
To Console To Source
#Crear matriz A
matriz_A <- matrix(c(1, -2, 3, 0), nrow = 2, ncol = 2)
matriz_A
#crear matriz B
matriz_B <- matrix(c(4, 2, 1, -3), nrow = 2, ncol = 2)
matriz_B
#crear matriz C
matriz_C <- matrix(c(2, 1, -2, 5), nrow = 2, ncol = 2)
matriz_C
#realiza la operacion 2A + (B - C)
#multiplicacion por escalar (2 * matriz_A)
#la suma y resta de matrices tambien se realiza por elemento
resultado <- 2 * matriz_A + (matriz_B - matriz_C)
resultado

Files Plots Packages Help Viewer Presentation

Console Background Jobs
R 4.5.1 · ~/
      [,1] [,2]
[1,]    4    1
[2,]    2   -3
> #crear matriz C
> matriz_C <- matrix(c(2, 1, -2, 5), nrow = 2, ncol = 2)
> matriz_C
      [,1] [,2]
[1,]    2   -2
[2,]    1    5
>
> #realiza la operacion 2A + (B - C)
> #multiplicacion por escalar (2 * matriz_A)
> #la suma y resta de matrices tambien se realiza por elemento
> resultado <- 2 * matriz_A + (matriz_B - matriz_C)
> resultado
      [,1] [,2]
[1,]    4    9
[2,]   -3   -8
> |
```

2)

The screenshot shows the RStudio environment with a script editor on the left and a console on the right. The script editor contains the following code:

```
#crear matriz A
matriz_A <- matrix(c(1, 3, -2, 0, 1, 4), nrow = 2, ncol = 3)
matriz_A
#crear matriz B
matriz_B <- matrix(c(-1, 1, 5, 2, 0, -2), nrow = 3, ncol = 2)
matriz_B
multiplicacion <- matriz_A %% matriz_B
multiplicacion
```

The console shows the output of the script:

```
> matriz_A <- matrix(c(1, 3, -2, 0, 1, 4), nrow = 2, ncol = 3)
> matriz_A
      [,1] [,2] [,3]
[1,]    1   -2    1
[2,]    3    0    4
> #crear matriz B
> matriz_B <- matrix(c(-1, 1, 5, 2, 0, -2), nrow = 3, ncol = 2)
> matriz_B
      [,1] [,2]
[1,]   -1    2
[2,]    1    0
[3,]    5   -2
>
> multiplicacion <- matriz_A %% matriz_B
> multiplicacion
      [,1] [,2]
[1,]     2    0
[2,]    17   -2
> |
```

The screenshot shows the RStudio environment with a script editor on the left and a console on the right. The script editor contains the following code:

```
#matriz 2) B*C
#crear matriz B
matriz_B <- matrix(c(-1, 1, 5, 2, 0, -2), nrow = 3, ncol = 2)
matriz_B
#crear matriz C
matriz_C <- matrix(c(1, -4, 3, 2), nrow = 2, ncol = 2)
matriz_C
multiplicacion <- matriz_B %% matriz_C
multiplicacion
```

The console shows the output of the script:

```
> #crear matriz B
> matriz_B <- matrix(c(-1, 1, 5, 2, 0, -2), nrow = 3, ncol = 2)
> matriz_B
      [,1] [,2]
[1,]   -1    2
[2,]    1    0
[3,]    5   -2
> #crear matriz C
> matriz_C <- matrix(c(1, -4, 3, 2), nrow = 2, ncol = 2)
> matriz_C
      [,1] [,2]
[1,]    1    3
[2,]   -4    2
> multiplicacion <- matriz_B %% matriz_C
> multiplicacion
      [,1] [,2]
[1,]   -9    1
[2,]    1    3
[3,]   13   11
```

Untitled1*

```
1 #matriz 3) C*A
2 #crear matriz C
3 matriz_C <- matrix(c(1, -4, 3, 2), nrow = 2, ncol = 2)
4 matriz_C
5 #crear matriz A
6 matriz_A <- matrix(c(1, 3, -2, 0, 1, 4), nrow = 2, ncol = 3)
7 matriz_A
8 multiplicacion <- matriz_C %%% matriz_A
9 multiplicacion
```

9:15 (Top Level) R Script

Console Background Jobs

```
> #crear matriz C
> matriz_C <- matrix(c(1, -4, 3, 2), nrow = 2, ncol = 2)
> matriz_C
      [,1] [,2]
[1,]    1    3
[2,]   -4    2
> #crear matriz A
> matriz_A <- matrix(c(1, 3, -2, 0, 1, 4), nrow = 2, ncol = 3)
> matriz_A
      [,1] [,2] [,3]
[1,]    1   -2    1
[2,]    3    0    4
> multiplicacion <- matriz_C %%% matriz_A
> multiplicacion
      [,1] [,2] [,3]
[1,]   10   -2   13
[2,]    2    8    4
>
```

Environment History Connections Tutorial

```
#crear matriz C
matriz_C <- matrix(c(1, -4, 3, 2), nrow = 2, ncol = 2)
matriz_C
#crear matriz A
matriz_A <- matrix(c(1, 3, -2, 0, 1, 4), nrow = 2, ncol = 3)
matriz_A
multiplicacion <- matriz_C %%% matriz_A
multiplicacion
```

Files Plots Packages Help Viewer Presentation

3)

```
1 # Definir las matrices 1) AT
2 #crear matriz AT
3 matriz_A <- matrix(c(2, 6, 8, 3, 7, 7), nrow = 3, ncol = 2)
4 matriz_A
5 traspuesta_A <- t(matriz_A)
6 traspuesta_A
7
```

6:13 (Top Level) R Script

Console Background Jobs

```
> #crear matriz AT
> matriz_A <- matrix(c(2, 6, 8, 3, 7, 7), nrow = 3, ncol = 2)
> matriz_A
      [,1] [,2]
[1,]    2    3
[2,]    6    7
[3,]    8    7
> traspuesta_A <- t(matriz_A)
> traspuesta_A
      [,1] [,2] [,3]
[1,]    2    6    8
[2,]    3    7    7
>
```

Environment History Connections Tutorial

```
#crear matriz AT
matriz_A <- matrix(c(2, 6, 8, 3, 7, 7), nrow = 3, ncol = 2)
matriz_A
traspuesta_A <- t(matriz_A)
traspuesta_A
```

The image shows two R Studio sessions. The top session defines a 2x5 matrix B and its transpose. The bottom session defines a 2x5 matrix B, a 2x3 matrix A, and attempts to multiply them, resulting in an error.

Top Script:

```
1 # Definir las matrices 1) BT
2 #crear matriz BT
3 matriz_B <- matrix(c(2, 1, 3, -1, 5, 0, 7, 4, -1, 3), nrow = 2, ncol = 5)
4 matriz_B
5 transpuesta_B <- t(matriz_B)
6 transpuesta_B
```

Top Console:

```
> #crear matriz BT
> matriz_B <- matrix(c(2, 1, 3, -1, 5, 0, 7, 4, -1, 3), nrow = 2, ncol = 5)
> matriz_B
      [,1] [,2] [,3] [,4] [,5]
[1,]    2    3    5    7   -1
[2,]    1   -1    0    4    3
> transpuesta_B <- t(matriz_B)
> transpuesta_B
      [,1] [,2]
[1,]    2    1
[2,]    3   -1
[3,]    5    0
[4,]    7    4
[5,]   -1    3
>
```

Bottom Script:

```
1 # Definir las matrices 3) BT*A
2 #crear matriz B
3 matriz_B <- matrix(c(2, 1, 3, -1, 5, 0, 7, 4, -1, 3), nrow = 2, ncol = 5)
4 matriz_B
5 #crear matriz A
6 MATRIZ_A <- matrix(c(2, 3, 6, 7, 8, 7), nrow = 2, ncol = 3)
7 matriz_A
8 transpuesta_B <- t(matriz_B) %*% matriz_A
9 transpuesta
```

Bottom Console:

```
> #crear matriz B
> matriz_B <- matrix(c(2, 1, 3, -1, 5, 0, 7, 4, -1, 3), nrow = 2, ncol = 5)
> matriz_B
      [,1] [,2] [,3] [,4] [,5]
[1,]    2    3    5    7   -1
[2,]    1   -1    0    4    3
> #crear matriz A
> MATRIZ_A <- matrix(c(2, 3, 6, 7, 8, 7), nrow = 2, ncol = 3)
> matriz_A
      [,1] [,2]
[1,]    2    3
[2,]    6    7
[3,]    8    7
> transpuesta_B <- t(matriz_B) %*% matriz_A
Error en t(matriz_B) %*% matriz_A: argumentos no compatibles
```

Las dimensiones no compatibles para la multiplicacion ($2 \times 5 * 3 \times 2$)


```
1 # Definir las matrices4)AT * B
2 #crear matriz AT
3 MATRIZ_A <- matrix(c(2, 6, 8, 3, 7, 7), nrow = 3, ncol = 2)
4 matriz_A
5 #crear matriz B
6 matriz_B <- matrix(c(2, 1, 3, -1, 5, 0, 7, 4, -1, 3), nrow = 2, ncol = 5)
7 matriz_B
8 #tranpuesta AT
9 traspuesta <- t(matiz_A) %%% matriz_B
10 traspuesta_A
```

```
#crear matriz AT
MATRIZ_A <- matrix(c(2, 6, 8, 3, 7, 7), nrow = 3, ncol = 2)
matriz_A
#crear matriz B
matriz_B <- matrix(c(2, 1, 3, -1, 5, 0, 7, 4, -1, 3), nrow = 2, ncol = 5)
matriz_B
#tranpuesta AT
traspuesta <- t(matiz_A) %%% matriz_B
```

10:15 (Top Level) R Script

Console Background Jobs

R 4.5.1

```
> MATRIZ_A <- matrix(c(2, 6, 8, 3, 7, 7), nrow = 3, ncol = 2)
> matriz_A
      [,1] [,2]
[1,]    2    3
[2,]    6    7
[3,]    8    7
> #crear matriz B
> matriz_B <- matrix(c(2, 1, 3, -1, 5, 0, 7, 4, -1, 3), nrow = 2, ncol = 5)
> matriz_B
      [,1] [,2] [,3] [,4] [,5]
[1,]    2    3    5    7   -1
[2,]    1   -1    0    4    3
> #tranpuesta AT
> traspuesta <- t(matiz_A) %%% matriz_B

Error: objeto 'matiz_A' no encontrado
```

Las dimensiones no coinciden, no se me acomodó como en el excel la matriz A.