# Material de Informática

## Relaciones (Subtema de P.C)

- Se define como relación entre los conjuntos A y B a un subconjunto del producto cartesiano A×B, una cama, compuesto por pares ordenados de elementos que cumplen cierta regla bien definida.

T = { oficial, no oficial }

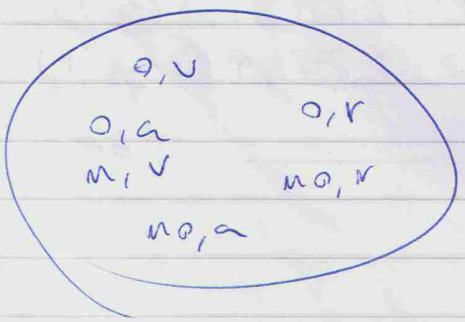
C = { Verde, azul, rojo }

T x C = { (o, v), (o, a), (o, r), (no, v), (no, a), (no, r) }

$R^1_{T \times C}$ = { (o, v), (no, r) }

$R^2_{T \times C}$ = { (o, v), (o, a), (o, r) }

T x C



Encontrar 2 relaciones de $A \times B$, $B \times C$, $A \times C$.

$A = \{1, 2, 3, 4, 5\}$
$B = \{1, 2, 7, 8, 9\}$
$C = \{2, 6, 8, 10\}$

$R^1_{A \times B} = \{(1,9), (2,9), (7,9), (4,9), (5,9)\}$
$R^2_{A \times B} = \{(4,1), (4,2), (4,7), (4,8), (4,9)\}$

$R^1_{B \times C} = \{(2,2), (2,6), (2,8), (2,10)\}$
$R^2_{B \times C} = \{(1,10), (2,10), (7,10), (8,10), (9,10)\}$

$R^1_{A \times C} = \{(1,6), (2,6), (3,6), (3,8), (3,10)\}$
$R^2_{A \times C} = \{(3,2), (3,6), (3,8), (3,10)\}$

= o =

$A = \{2, 4, 6, 8\}$
$B = \{4, 8, 12, 16\}$

Decidir si estas relaciones son de $A \times B$, argumentar.

$R_1 = \{(2,4), (5,2), (3,8)\}$
$R_2 = \{(2,4), (4,8), (6,10)\}$
$R_3 = \{(8,16), (4,2), (2,8)\}$
$R_4 = \{(16,4), (12,2), (8,4)\}$

5 ∉ A  3 ∉ A
2 ∉ B

R1 = NO ⇒ (2,4), (5,2), (3,8)

10 ∉ B

R2 = NO ⇒ (2,4), (4,8), (6,10)

12 ∉ A

R3 = NO ⇒ (8,16), (4,2), (12,8)

16 ∉ A  12 ∉ A

R4 = NO ⇒ (16,4), (12,2), (8,4)

2 ∉ B

## B × A

∉ B

R1 = NO ⇒ (2,4), (5,2), (3,8)

∉ B  ∉ B  ∉ A

R2 = NO ⇒ (2,4), (4,8), (6,10)

R3 = SI ⇒ (8,16), (4,2), (12,8)

∉ B

R4 = NO ⇒ (16,4), (12,2), (8,4)

formas

(*) Maneras de representarlo

$A \times B$

$A = x$ $\quad B = y$

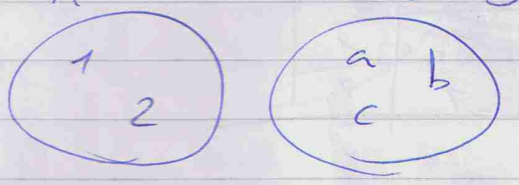



Diagrama Sagital (*)

$A \times B = \{(1,a),(1,b),(1,c),(2,a),(2,b),(2,c)\}$

$R_{A\times B} = \{(1,a),(2,b)\}$ // $R_{A\times B} = \{(1,b),(1,c),(2,b),(2,c)\}$

Diagrama de Ejes Cartesianos (*)

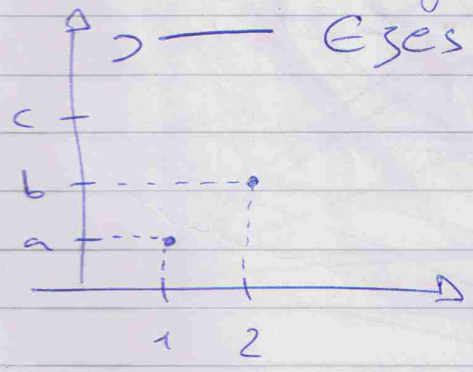
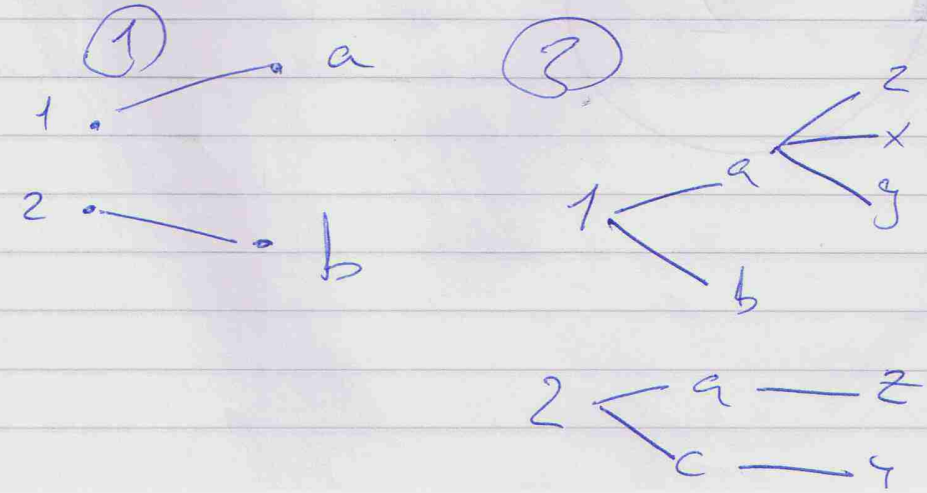



Diagrama de árbol

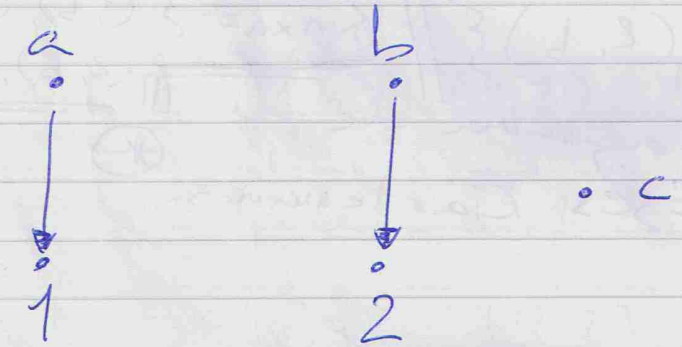


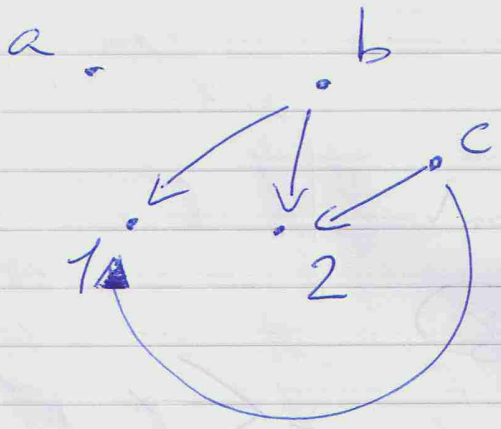
# Diagramen de matrices.

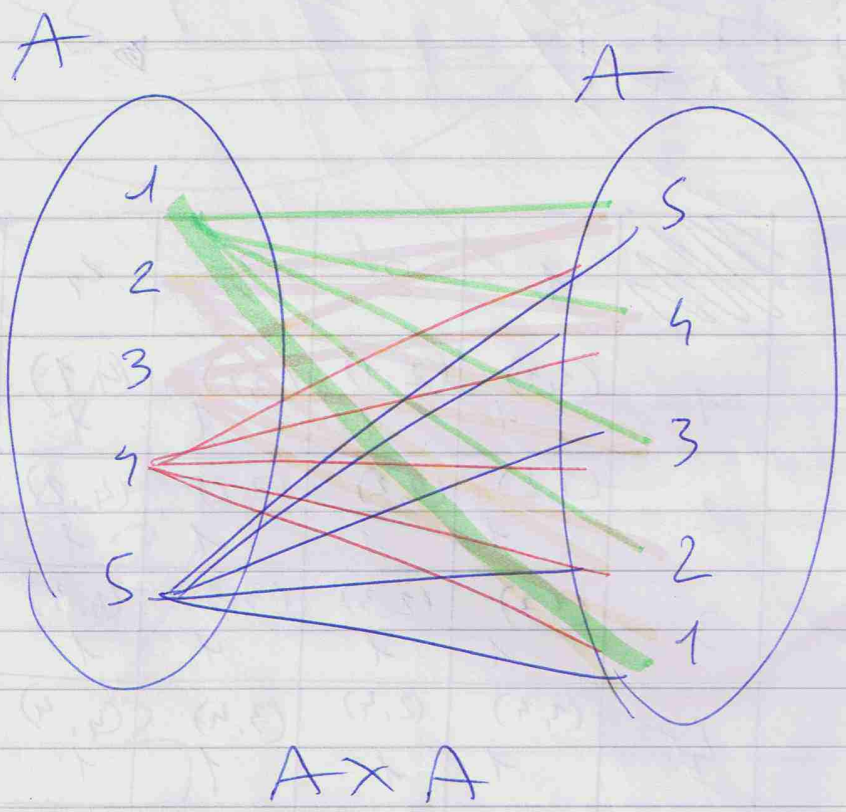
| | 1 | 2 |
|---|---|---|
| a | (1,a) 1 | 0 |
| b | 0 | (2,b) 1 |
| c | 0 | 0 |

| | | |
|---|---|---|
| a | ∅ | ∅ |
| b | 1 | 1 |
| c | 1 | 1 |

# Diagramen de grafos.

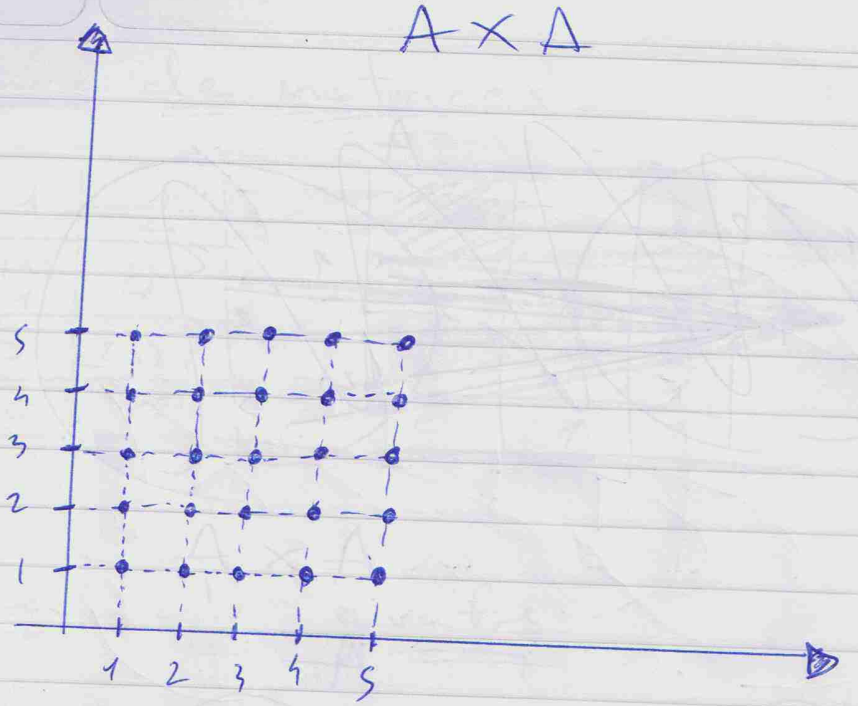


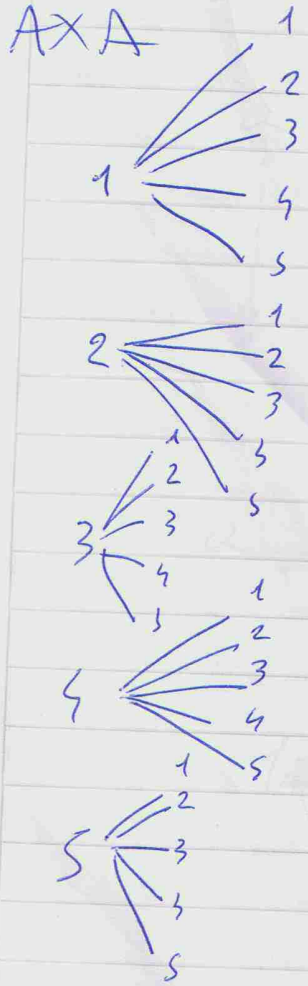



$A \times A$

# A × A

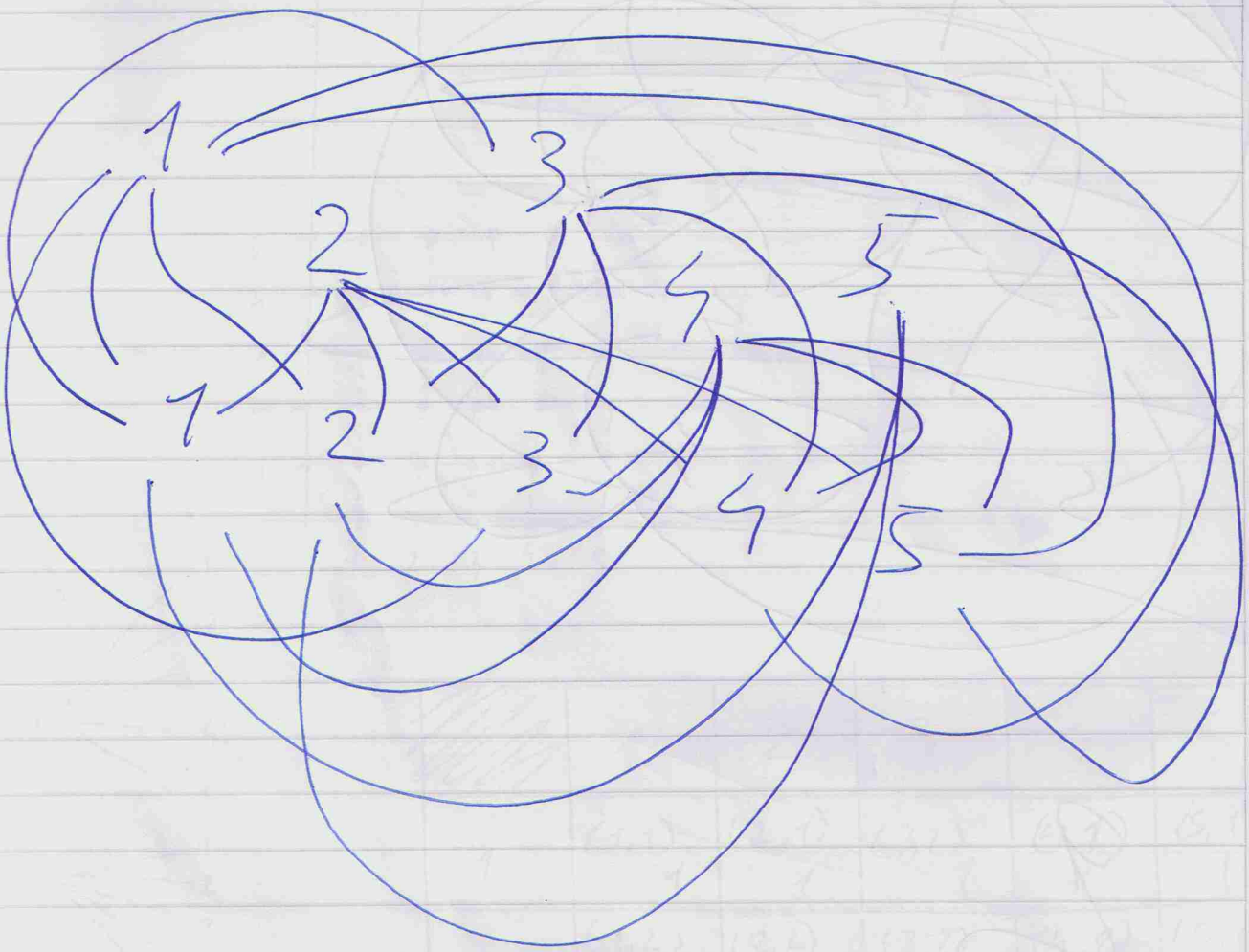



A × A




| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | (1,1) 1 | (2,1) 1 | (3,1) 1 | (4,1) 1 | (5,1) 1 |
| 2 | (1,2) 1 | (2,2) 1 | (3,2) 1 | (4,2) 1 | (5,2) 1 |
| 3 | (1,3) 1 | (2,3) 1 | (3,3) 4 | (4,3) 1 | (5,3) 1 |
| 4 | (1,4) 1 | (2,4) 1 | (3,4) 1 | (4,4) 1 | (5,4) 1 |
| 5 | (1,5) 1 | (2,5) 1 | (3,5) 1 | (4,5) 1 | (5,4) 1 |

A × A


1
2
3
4
5
1
2
3
4
5

$A = \{1, 2, 3, 4, 5\}$

$B = \{1, 2, 7, 8, 9\}$

$C = \{2, 6, 8, 10\}$

$R^{1}_{A \times B} = \{(1,9), (2,9), (3,9)\}$