Viernes 10/4

Lógica proposicional corrección

A, B cant conjuntos $2^2 = 4$ → cantidad de filas

A, B, C $2^3 = 8$

1c) $C \subseteq A \implies \overline{B \cap C \subseteq (A \triangle B)^c}$

A	B	C	$C \subseteq A$	$B \cap C$	$A \triangle B$	$(A \triangle B)^c$	$B \cap C \subseteq (A \triangle B)^c$
V	V	V	V	V	F	V	V
V	V	F	V	F	F	V	V
V	F	V	V	F	V	F	V
V	F	F	V	F	V	F	V
F	V	V	F	V	V	F	F
F	V	F	V	F	V	F	V
F	F	V	F	F	F	V	V
F	F	F	V	F	F	V	V

1 b)

$$(A \cap B) \Delta C = (A \Delta C) \cap (B \Delta C)$$

A	B	C	$A \cap B$	$(A \cap B) \Delta C$	$A \Delta C$	$B \Delta C$	$(A \Delta C) \cap (B \Delta C)$
V	V	V	V	F ✓	F	F	F ✓
V	V	F	V	V ✓	V	V	V ✓
V	F	V	F	V ✓	F	V	F ✓
V	F	F	F	F	V	F	F
F	V	V	F	V	V	F	F
F	V	F	F	F ✓	F	V	F
F	F	V	F	V	V	V	V
F	F	F	F	F	F	F	F

1b) $\underbrace{\{1,3\}}_{(A \cap B) \Delta C} \neq \underbrace{\{1\}}_{(A \Delta C) \cap (B \Delta C)}$

Contraejemplo

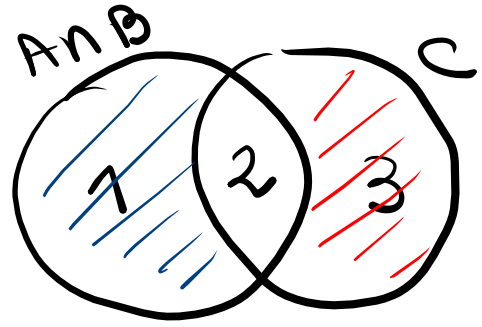
$A = \{1,2\}$ $B = \{1,2,3\}$ $C = \{2,3\}$

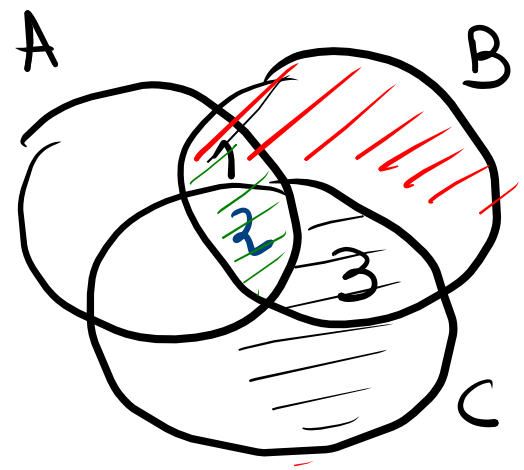
$A \cap B = \{1,2\}$

$(A \cap B) \Delta C$

↓

$\{1,3\}$





$A \Delta C = \{1,3\}$

$B \Delta C = \{1\}$

$(A \Delta C) \cap (B \Delta C) =$

1d) $A \triangle B = \emptyset \implies A = B$

A	B	$A \triangle B$	$A = B$
V	V	F	V ✓
V	F	V	F
F	V	V	F
F	F	F	V ✓

$A \triangle B = \emptyset$

V
F
F
V

La implicación se cumple.

2k) $A \setminus B = B \setminus A \iff A = B$

A	B	$A \setminus B$	$B \setminus A$	$A \setminus B = B \setminus A$	$A = B$
1	1	0	0	1	1
1	0	1	0	0	0
0	1	0	1	0	0
0	0	0	0	1	1

Producto cartesiano

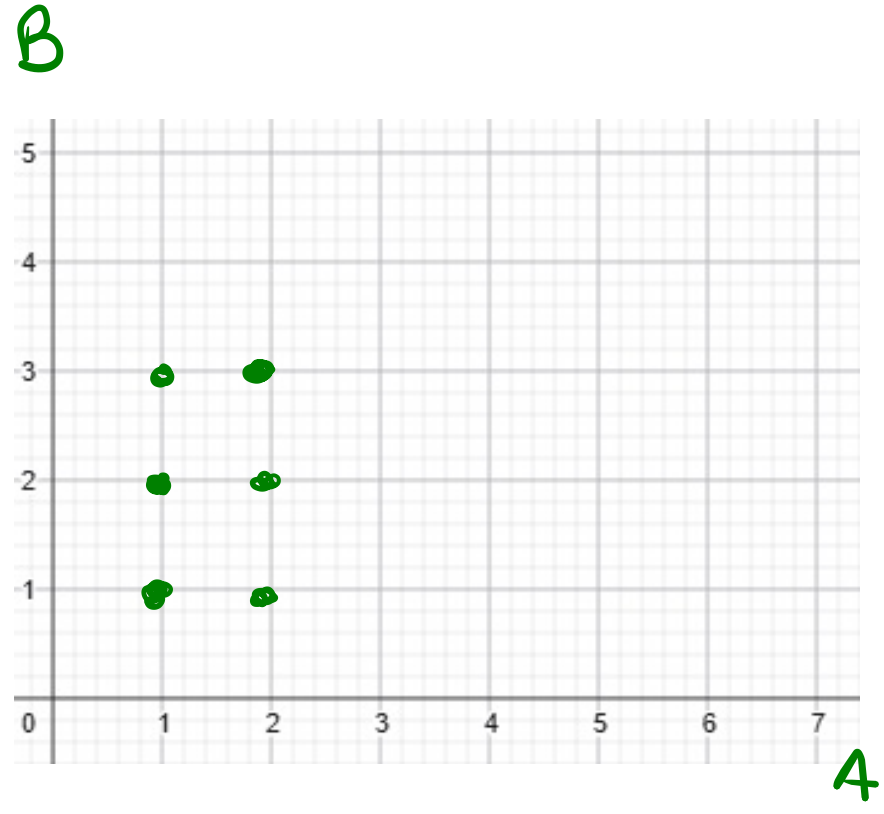
Conjuntos A y B ∧ Pares ordenados (;)

$$A \times B = \{(a,b) / a \in A \wedge b \in B\}$$

$A = \{1, 2\}$

$B = \{1, 2, 3\}$

$A \times B = \{(1;1), (1,2) (1,3) (2,1) (2,2) (2;3)\}$



3) Sean $A = \{1,2,3\}$, $B = \{1,3,5,7\}$. Hallar $A \times A$, $A \times B$, $(A \cap B) \times (A \cup B)$

$A \times A = \{(a,a) / \cdot$

$A = \{1,2,3\} \quad \{1,2,3\}$

4) Sean A, B y C conjuntos. Probar que

a) $(A \cup B) \times C = (A \times C) \cup (B \times C)$

A	B	C	$(A \cup B)xC$	AxC	BxC	$(AxC) \cup (BxC)$
1	1	1	1	1	1	1
1	1	0	0	0	0	0
1	0	1	1	1	0	1
1	0	0	0	0	0	0
0	1	1	1	0	1	1
0	1	0	0	0	0	0
0	0	1	0	0	0	0
0	0	0	0	0	0	0