Ayudantia 1: Conjuntos numéricos

P1

- $A=\{x\in\mathbb{N} \mid 0\leq x^2\leq 89\}$
- $B=\{x^2+1 \mid x\in\mathbb{N} \text{ y } x\leq 4\}$
- $C=\{x\in\mathbb{R} \mid x\geq 10 \text{ y } x\geq -8\}$
- $D=\{x\in\mathbb{R} \mid x\leq 7 \text{ o } x\geq 15\}$

i) Verdadero o falso

a) $5\in A$ ✓ d) $16\in B$ ✗ g) $35\in D$ ✓

b) $10\in A$ ✗ e) $9\in C$ ✗ h) $7\in(B\cap D)\cup A$ ✓

c) $3\in B$ ✗ f) $\frac{35}{2}\in C\cap D$ ✓

ii) calcule:

a) $A\cap B$

Note que $A=\{1,2,3,4,5,6,7,8,9\}$ y $B=\{2,5,10,17\}$ $\therefore A\cap B=\{2,5\}$

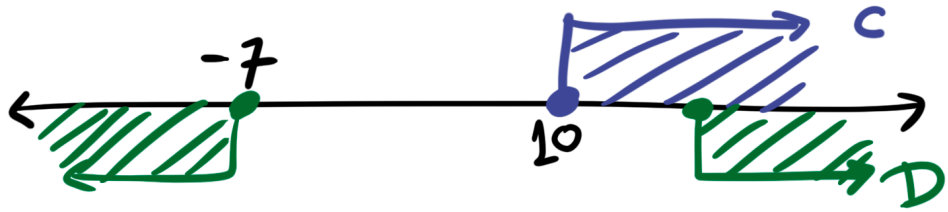
b) $B\cap C$

$C=\{x\in\mathbb{R} \mid x\geq 10\}$ $\therefore B\cap C=\{10,17\}$

c) $(A\cap C)-B$

Note que $A\cap C=\emptyset$. Por lo tanto $(A\cap C)-B=\emptyset-B=\emptyset$

d) $D \cup C$



$D \cup C = \{x \in \mathbb{R} \mid x \leq -7 \text{ o } x \geq 10\}$ $(=]-\infty, -7] \cup [10, \infty[)$

P2| expresa por extensión:

a) $\{x \in \mathbb{N} \mid 3 < x \leq 9\} = \{4, 5, 6, 7, 8, 9\}$

b) $\left\{\frac{1}{n^2} \mid n \in \mathbb{N}, n \text{ par y } n < 11\right\} = \left\{\frac{1}{4}, \frac{1}{16}, \frac{1}{36}, \frac{1}{64}, \frac{1}{100}\right\}$

c) $\{z \in \mathbb{N}_0 \mid 0 \leq z^2 < 9\} = \{0, 1, 2\}$

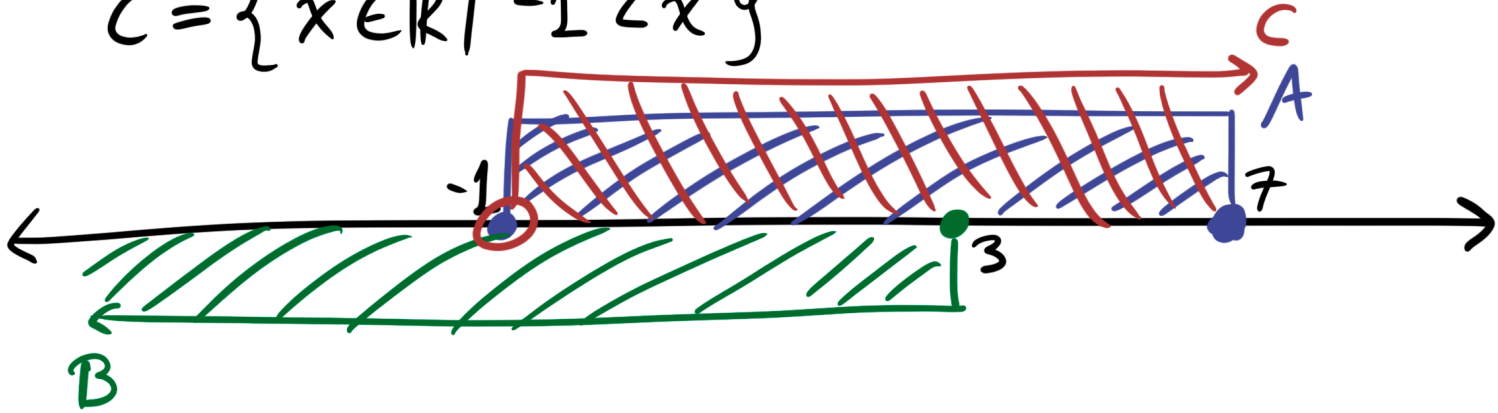
d) $\left\{\frac{n}{n^2+1} \mid n \in \mathbb{Z}, n \text{ impar y } |n| \leq 5\right\}$

$= \left\{\frac{-5}{26}, \frac{-3}{10}, \frac{-1}{2}, \frac{1}{2}, \frac{3}{10}, \frac{5}{10}\right\}$

P3| $A = \{x \in \mathbb{R} \mid -1 \leq x \leq 7\}$

$B = \{x \in \mathbb{R} \mid x \leq 3\}$

$C = \{x \in \mathbb{R} \mid -1 < x\}$



Determine:

a) $(A \cap C) \cup (B \cap C)$

- $A \cap C =]-1, 7]$
- $B \cap C =]-1, 3]$

$\Big\} (A \cap C) \cup (B \cap C) =]-1, 7]$

b) $(A \cap B) - C$

- $A \cap B = [-1, 3] \Rightarrow (A \cap B) - C = \{-1\}$

c) $(A \cup C) \cap (B \cup C)$

- $A \cup C = C$
- $B \cup C = \mathbb{R}$

$\Big\} (A \cup C) \cap (B \cup C) = C \cap \mathbb{R} = C$

P4)

	1ero	2do
♀	x	30
♂	60	$x+20$

nota: $x + x + 20 + 30 + 60 = 2x + 110 = 190$

$\Rightarrow 2x = 80 \Rightarrow \boxed{x = 40}$

a) asistieron $x + 20 = 60$ hombres de Segundo año.

b) hubo $x + 30 = 70$ mujeres en la fiesta