

Actividad 1.3

1. Efectua las siguientes operaciones entre conjuntos

$$\begin{aligned}U &= \{x \in \mathbb{N} \mid 2 \leq x \leq 11\} \\&= \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}\end{aligned}$$

$$\begin{aligned}A &= \left\{ \frac{3x+1}{2} \in \mathbb{N} \mid 2 \leq x \leq 11 \wedge x \in \mathbb{N} \right\} \\&= \{5, 8, 11, 14, 17\}\end{aligned}$$

$$\begin{aligned}B &= \left\{ \frac{7n+2}{5} \in \mathbb{N} \mid 2 < n < 11 \wedge n \in \mathbb{N} \right\} \\&= \{6, 13\}\end{aligned}$$

$$\begin{aligned}C &= \left\{ \frac{y^2-9}{y-3} \in \mathbb{N} \mid y \in \mathbb{N}, 1 \leq y \leq 8 \wedge y \neq 3 \right\} \\&= \{4, 5, 7, 8, 9, 10, 11\}\end{aligned}$$

$$\begin{aligned}D &= \{x \in \mathbb{N} \mid x^2 - x - 56 = 0\} \\&= \{8\}\end{aligned}$$

1. $(A \cap B)^c - (D - C)^c$

$$\begin{aligned}(A \cap B)^c - (D - C)^c &= \\&= \emptyset^c - \emptyset^c \\&= U - U \\&= \emptyset\end{aligned}$$

2. $(C \cap D^c) \oplus B^c$

$$\begin{aligned}(C \cap D^c) \oplus B^c &= \\&= (C \cap (U - \{8\})) \oplus \{6\}^c \\&= (C - \{8\}) \oplus (U - \{6\}) \\&= \{2, 3, 8\}\end{aligned}$$

3. $C^c - (D \oplus A)$

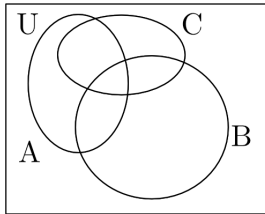
$$\begin{aligned}C^c - (D \oplus A) &= \\&= \{2, 3, 6\} - (A - \{8\}) \\&= \{2, 3, 6\}\end{aligned}$$

4. $((A \cup B^c) - C) \oplus D^c$

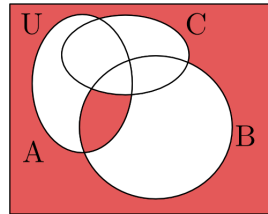
$$\begin{aligned}((A \cup B^c) - C) \oplus D^c &= \\&= (A \cup (U - \{6\})) - C \oplus (U - \{8\}) \\&= (U - C - \{6\}) \oplus (U - \{8\}) \\&= (C \cup \{6\}) - \{8\} \\&= \{4, 5, 6, 7, 9, 10, 11\}\end{aligned}$$

2. Representa las siguientes operaciones por medio del Diagrama de Venn Euler siguiente.

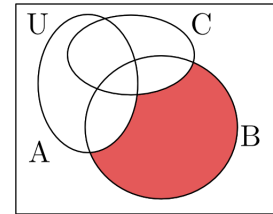
Dado:



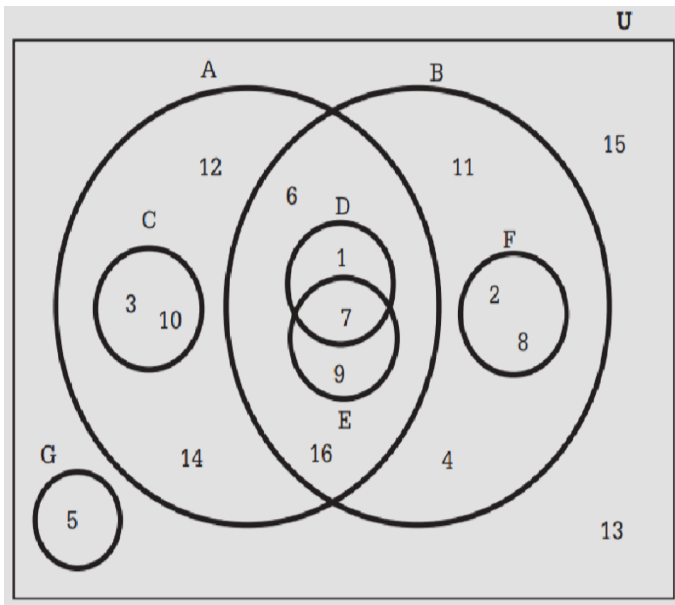
1. $C^c - (B \oplus A)$



2. $(A \cap B)^c - (B - C)^c$



3. Colocar en cada uno de los incisos una V si la aseveración es verdadera o bien una F si es falsa.



- a) V: $F \subseteq (B - A)$
- b) V: $A \cap C \neq \emptyset$
- c) V: $E - D = \{9\}$
- d) F: $E \cap D = \emptyset$
- e) F: $(C \cup E) \subseteq B$
- f) V: $(D - E) \subseteq (A \cap B)$
- g) V: $C - G = \{3, 10\}$
- h) F: $G - F = \emptyset$
- i) V: $(F - C) \subseteq B$
- j) V: $A - B = \{3, 10, 12, 14\}$
- k) F: $D \cap E = \{1, 7, 9\}$
- l) V: $(D \cap E) \subseteq (A \cup B)$
- m) V: $16 \notin (D \cup E)$
- n) V: $(A \cup B)^c = \{5, 13, 15\}$
- o) V: $B - A = \{2, 4, 8, 11\}$
- p) V: $(A \cap B) \cup (A - B) = A$
- q) F: $2 \in U^c$
- r) V: $(U - (A \cup B)) = G \cup \{13, 15\}$
- s) V: $D \oplus E = \{1, 9\}$
- t) V: $A - (A \cap B) = C \cup \{12, 14\}$