Actividad 5. Teoría de conjuntos

Juan Esteban Alfonso Hernandez

T.I 1032940696

Ficha:2926378

Sena

Matemáticas

Diana Torres

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2. Sean los conjuntos:

$$U = \{x \mid x \in Z\}$$
$$A = \{x \mid x \in Z;\ x\ es\ primo;\ 5 < x < 30\}$$
$$B = \{9, 11, 12, 13, 15, 16, 17, 21, 23\}$$
$$C = \{6, 7, 8, 9, 15, 17, 20, 21, 22, 23, 25\}$$
$$D = \{x \mid x \in Z;\ x\ es\ impar;\ 10 < x < 20\}$$

Resuelve:

a) Grafica en un solo diagrama de Venn todos los conjuntos

b) Resuelve cada una de las siguientes operaciones entre conjuntos

a) $[B \oplus (C' \cap A)] - D'$

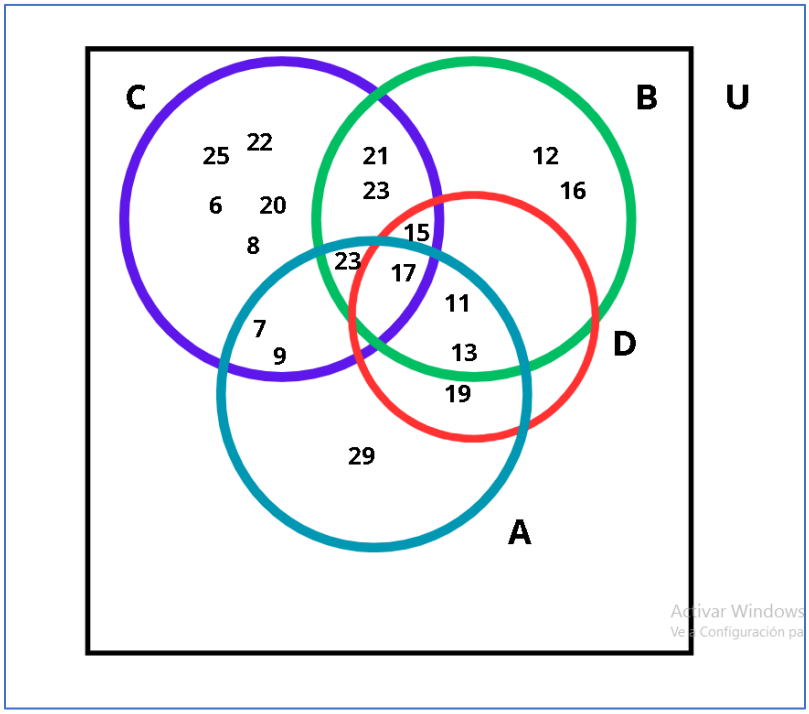
b) $[(B - C) - D'] \cup (A \oplus B')$

c) $[(C' \cup B) \oplus D] - A'$

d) $[B' \oplus (A' \cap C')] - D$

R:/

a)



b)

A = {7, 11, 13, 17, 19, 23, 29}

B= {9, 11, 12, 13, 15, 16, 17, 21, 23}

C= {6, 7, 8, 9, 15, 17, 20, 21, 22, 23, 25}

D= {11, 13, 15, 17, 19}

A) [B⊕(C´ ∩ A)] - D´=

D´= {6,7,8,9,12,16,17,20,21,22,23,25}

C´ = {11,12,13,16,19,29}

(C´ ∩ A) = {11,13,19,29}

[B⊕ (C´ ∩ A)] = {9,12,15,16,17,21,23,29}

[B⊕ (C´ ∩ A)] - D´= {9,15,29}

B) [(B - C) - D´] ∪ (A ⊕ B´)

(B-C) = {11,12,13,16}

D´= {6, 7, 8, 9,12,16,20, 21, 22, 23, 25, 29}

[(B-C)-D´] = {11,13}

$B' = \{6,7,8,19,20,22,25,29\}$

$(A \oplus B') = \{6,8,11,13,17,20,22,23,25\}$

$[(B\text{-}C)\text{-}D'] \cup (A \oplus B') = \{6,8,11,13,17,20,22,23,25\}$

C) $[(C' \cup B) \oplus D] - A'$

$C' = \{11,12,13,16,19,29\}$

$(C' \cup B) = \{9, 11, 12, 13, 15, 16, 17,19, 21, 23,29\}$

$[(C' \cup B) \oplus D] = \{9,12,13,15,17,19\}$

$A' = \{8, 9,12,15,16 ,20, 21, 22,25\}$

$[(C' \cup B) \oplus D] - A' = \{13,17,19\}$

D) $[B' \oplus (A' \cap C')] - D$

$A' = \{6,8,9,12,15,16,20,21,22,25\}$

$C' = \{11, 12, 13,16,19,29\}$

$(A' \cap C') = \{12,16\}$

$B' = \{6, 7, 8,19,20,22,25,29\}$

$[B' \oplus (A' \cap C')] = \{6, 7, 8,12,16,19,20,22,25,29\}$

$D = \{11, 13, 15, 17, 19\}$

$[B' \oplus (A' \cap C')] - D = \{6, 7, 8,12,16,20,22,25,29\}$