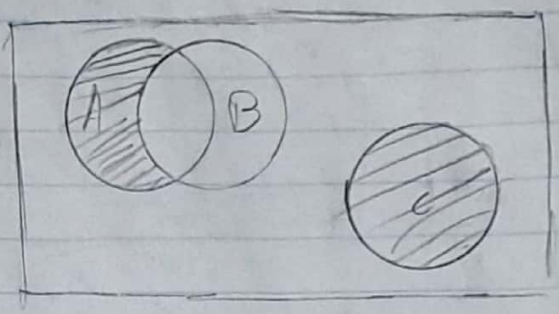
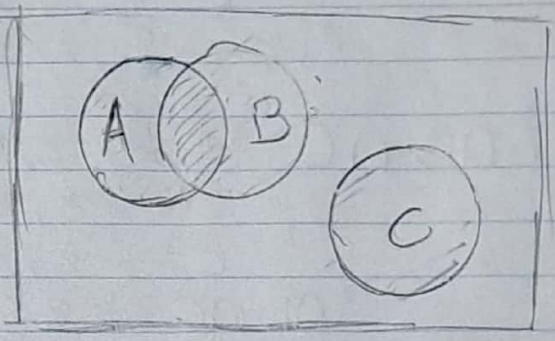
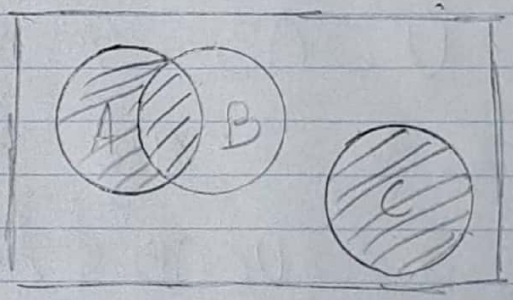
4. a) $A \cup C$



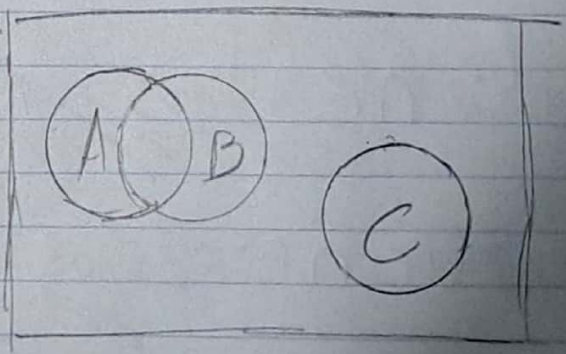
b) $A \cap B \cap C$



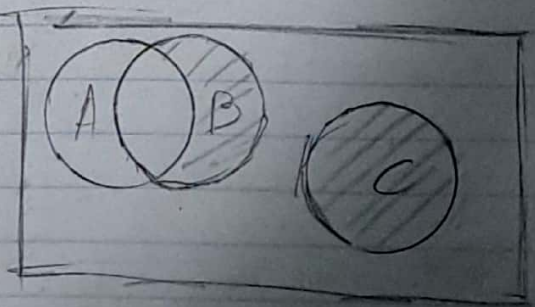
c) $A \cup C \cap B$



d) $A \cap C$



e) $A^c \cap C$



V. $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$

$A = \{2, 4, 6, 8\}$

$B = \{2, 3, 4, 5, 7\}$

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

a. $A \cup C^c$

$A = \{2, 4, 6, 8\}$

$C^c = \{1, 3, 4, 5, 6, 7, 9, 11, 12\}$

$A \cup C^c = \{1, 2, 3, 5, 7, 8, 9, 11, 12\}$

b. $A \cap B \cap C$

$A = \{2, 4, 6, 8\}$

$B = \{2, 3, 4, 5, 7\}$

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

$A \cap B \cap C = \{2\}$

c. $A \cup C \cap B$

$A = \{2, 4, 6, 8\}$

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

$A \cup C = \{4, 6, 10\}$

$B = \{2, 3, 4, 5, 7\}$

$A \cup C \cap B = \{4\}$

d. $A^c \cap C = \{10\}$

$A = \{1, 3, 5, 7, 9, 10, 11, 12\}$

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

e. $A \cup C \cap B^c = \{6, 10\}$

$A = \{2, 4, 6, 8\}$

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

$A \cup C = \{4, 6, 10\}$

$B^c = \{1, 6, 8, 9, 10, 11, 12\}$

f. $n(A \cup B') = 4$

$A = \{2, 4, 6, 8\}$

$B' = \{2, 3, 4, 5, 7\}$

$A \cup B' = \{3, 6, 6, 7\}$

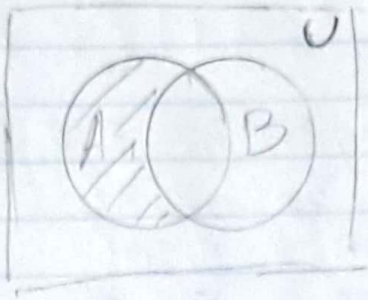
g. $n(A \cap B) = 12$

h. $n(A') = 8$

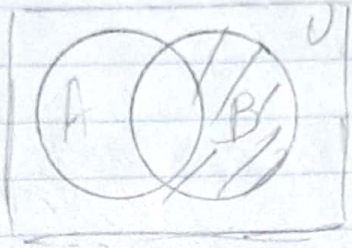
$A = \{1, 3, 5, 7, 9, 10, 11, 12\}$

II. Ej. 27

a. $A \cap B^c$

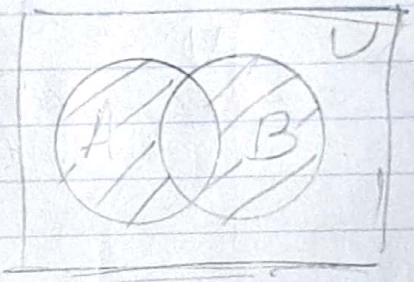


b. $A^c \cap B$

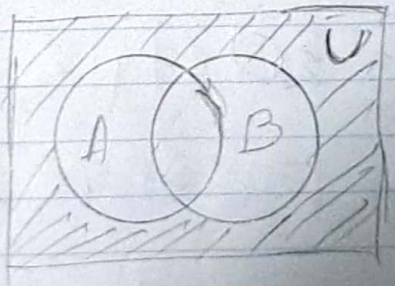


Ej. 28

a. $A^c \cap B^c$



b. $(A \cup B)^c$



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

Ej. 33

a. $A^c = \{2, 4, 6, 8, 10\}$

b. $B \cup C = \{1, 5, 6, 9, 10\}$ $B = \{2\ 4\ 6\ 8\ 10\}$
$C = \{1, 2, 4, 5, 8, 9\}$

c. $C \cup C^c = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

Ej. 31

a. $C \cap C^c = \{\emptyset\}$

b. $(A \cap C)^c = \{2, 3, 4, 6, 7, 8, 10\}$
$A = \{1, 3, 5, 7, 9\}$
$C = \{1, 2, 4, 5, 8, 9\}$
$A \cap C = \{1, 5, 9\}$

c. $A \cup (B \cap C) = \{1, 2, 3, 4, 5, 7, 8, 9\}$

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

Ej. 35

a. $(A \cap B) \cup C = \{1, 2, 4, 5, 8, 9\}$ //

$A = \{1, 3, 5, 7, 9\}$

$B = \{2, 4, 6, 8, 10\}$

$A \cap B = \{\emptyset\}$

$C = \{1, 2, 4, 5, 8, 9\}$

b. $(A \cup B \cup C)^c = \{1, 2, 4, 5, 8, 9\}$ //

$A = \{1, 3, 5, 7, 9\}$

$B = \{2, 4, 6, 8, 10\}$

$C = \{1, 2, 4, 5, 8, 9\}$

$A \cup B \cup C = \{3, 6, 7, 10\}$

c. $(A \cap B \cap C)^c = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ //

$A = \{1, 3, 5, 7, 9\}$

$B = \{2, 4, 6, 8, 10\}$

$C = \{1, 2, 4, 5, 8, 9\}$

Ej. 36

a. $A^c \cap (B \cap C^c) = \{6, 10\}$ //

$B = \{2, 4, 6, 8, 10\}$

$C^c = \{3, 6, 7, 10\}$

$B \cap C^c = \{6, 10\}$

$A^c = \{2, 4, 6, 8, 10\}$

b. $(A \cup B^c) \cup (B \cap C^c) = \{6, 10\}$ //

$A \cup B^c = \{\emptyset\}$ $\quad B = \{2, 4, 6, 8, 10\}$

$B \cap C = \{6, 10\}$ $\quad C^c = \{3, 6, 7, 10\}$

c. $(A \cup B)^c \cap C^c = \{3, 6, 7, 10\}$ //

$(A \cup B)^c = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$C^c = \{3, 6, 7, 10\}$

IV

$E_1 = \{x \mid 10 <= x < 12\}$

$E_2 = \{x \mid 11 < x < 15\}$

a. $E_1 \cup E_2 = \{x \mid 10 <= x < 15\}$

b. $E_1 \cap E_2 = \{x \mid 11 <= x < 12\}$

c. $E_1' = \{x \mid (R^+) - \{10 <= x < 12\}\}$

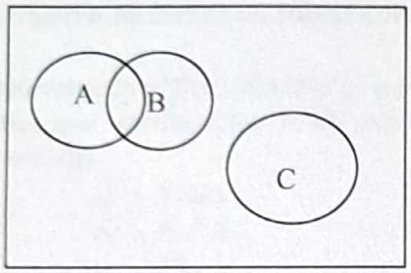
d. $E_1' \cap E_2 = \{x \mid 12 <= x < 15\}$

Universidad Politécnica de Puerto Rico
Departamento de Ingeniería Industrial
ASIGNACION# 1a
Engi 2270 Probabilidad y Estadística para Ingenieros

Nombre: Jorge A. Serrano Num:Est: 121260
Prof. Ing. José Raúl Díaz, PE;

I. Utilizando el diagrama abajo ilustrado oscuresca lo siguiente:

a. $A \cup C$ b. $A \cap B \cap C$ c. $A \cup C \cap B$ d. $A \cap C$ e. $A^C \cap C$



II. Sea U ={ 1,2,3,4,5,6,7,8,9,10,11,12}, A={ 2, 4, 6, 8} , B={ 2,3,4,5,7} y C={2,8,10}
Determine lo siguiente:

a. $A \cup C^C$ b. $A \cap B \cap C$ c. $A \cup C \cap B$ d. $A^C \cap C$ e. $A \cup C \cap B^C$

Utilizando la misma definición de los anteriores conjuntos. Determine el número de elementos del conjunto:

f. $n(A \cup B^C)$ g. $n(A \cap B)$ h. $n(A^c)$

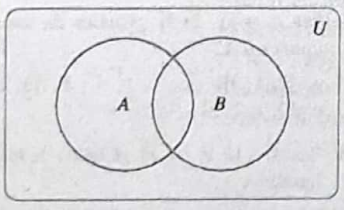
III.Favor de hacer los siguientes problemas:

- **27 al 28**
- **33 al 36**

En los ejercicios 27 y 28, oscurezca la parte de la figura anexa que represente a cada conjunto.

27. a. $A \cap B^c$
    b. $A^c \cap B$

28. a. $A^c \cap B^c$
    b. $(A \cup B)^c$



En los ejercicios 33 al 36, sean $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{1, 3, 5, 7, 9\}$, $B = \{2, 4, 6, 8, 10\}$ y $C = \{1, 2, 4, 5, 8, 9\}$. Encuentre cada conjunto.

33. a. A^c b. $B \cup C$ c. $C \cup C^c$

34. a. $C \cap C^c$ b. $(A \cap C)^c$ c. $A \cup (B \cap C)$

35. a. $(A \cap B) \cup C$ b. $(A \cup B \cup C)^c$
c. $(A \cap B \cap C)^c$

36. a. $A^c \cap (B \cap C^c)$ b. $(A \cup B^c) \cup (B \cap C^c)$
c. $(A \cup B)^c \cap C^c$

IV Problema de conjuntos forma Constructiva

Measurements of the thickness of a plastic connector might be modeled with sample space $S=R^+$, the set of positive real numbers. Let $E_1=\{X|10<= X <12\}$ and $E_2= \{X|11< X<15\}$
Determine:

a. $E_1 \cup E_2$
b. $E_1 \cap E_2$
c. E'_1
d. $E'_1 \cap E_2$