Mulțimi exerciții

$A = \{1, \{2\}, 2, \{3\}, 4, \{9,10\}, 9\}$

Stabiliți valoarea logică a propozițiilor:

$\emptyset \subset A$ (A)

$A \supset \{1\}$ (F)

$2 \in A$ (A)

$\{2\} \in A$ (A)

$\{2\} \subset A$ (A)

$A \subset A$ (F)

$A \supseteq A$ (A)

$3 \in A$ (F)

$3 \subset A$ (F)

$\{3\} \subset A$ (F)

$\{9,10\} \subset A$ (F)

$\{9,10\} \in A$ (A)

$9 \in A$ (A)

$9 \subset A$ (F)

$\{9\} \in A$ (F)

$M = \{1, \{1\}, 2, \{3\}, \{4,5\}, 4\}$

$1 \in M$ (A)

$\{1\} \in M$ (A)

$\{1\} \subset M$ (A)

$1 \subset M$ (F)

↳ element

$2 \in M$ (A)

$\{2\} \in M$ (F)

$\{2\} \subset M$ (A)

$\{4,5\} \in M$ (A)

$\{4,5\} \subset M$ (F)

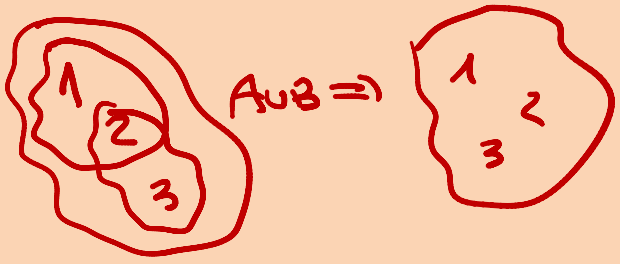
$4 \in M$ (A)

OPERAȚII CU MULȚIMI

REUNIUNEA: $A \cup B = \{x \mid x \in A \text{ sau } x \in B\}$

$A = \{1,2\}$
$B = \{2,3\}$
$C = \{4\}$
$D = \{2\}$

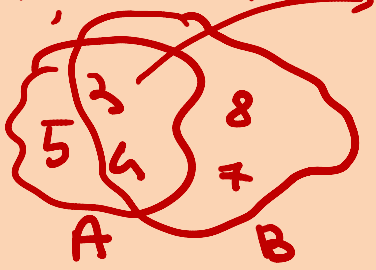
$A \cup B = \{1,2,3\}$
$A \cup C = \{1,2,4\}$
$A \cup D = \{1,2\}$



INTERSECȚIA: $A \cap B = \{x \mid x \in A \text{ și } x \in B\}$ → $A \cap B$

$A = \{3, 4, 5\}$
$B = \{4, 8, 3, 7\}$
$C = \{5\}$
$D = \{6, 7\}$

$\Rightarrow$ $A \cap B = \{3, 4\}$
$A \cap C = \{5\}$
$A \cap D = \emptyset$
↳ A și D = mulțimi DISJUNCTE



DIFERENȚA: $A - B = A \setminus B = \{x \mid x \in A \text{ și } x \notin B\}$

Ex: $A = \{1, 2, 3, 4\}$
$B = \{4, 3, 2\}$
$C = \{2, 3, 7, 9\}$
$D = \{2, 8\}$
$E = \{9\}$

$A - B = \{1\}$
$B - A = \emptyset$
$A - C = \{1, 4\}$
$C - A = \{7, 9\}$
$A - D = \{1, 3, 4\}$
$D - A = \{8\}$

$A - E = A = \{1, 2, 3, 4\}$
$E - A = E = \{9\}$

OBS: $B \subset A \Rightarrow B - A = \emptyset$
$A \cap E = \emptyset \Rightarrow A - E = A$, $E - A = E$

Complementara unei mulțimi:
dacă $A \subset E \Rightarrow C_E A = \{x \mid x \in E, x \notin A\} = E - A$

$A = \{1, 2, 3\}$
$E = \{1, 2, 3, 4, 5\}$
$\Rightarrow C_E A = \{4, 5\}$