Ex: (Legile de distributivitate generalizate pt $\cup, \cap$)

$I \to$ mult $I \neq \emptyset$, $A \to$ mult; $(A_i)_{i \in I} \to$ fam de mult.

At: (a) $A \cup \left(\bigcap_{i\in I} A_i\right) = \bigcap_{i \in I} (A \cup A_i)$

(b) $A \cap \left(\bigcup_{i\in I} A_i\right) = \bigcup_{i \in I} (A \cap A_i)$

Dem că: $\begin{cases} (a) \Rightarrow (c) \\ (b) \Rightarrow (d) \end{cases}$

(c) Dacă $J \to$ mult, $J \neq \emptyset$ și $(B_j)_{j \in J} \to$ fam de mult,

at: $\left(\bigcap_{j\in J} B_j\right) \cup \left(\bigcap_{i \in I} A_i\right) = \bigcap_{i\in I}\bigcap_{j \in J} (B_j \cup A_i) = \bigcap_{j\in J}\bigcap_{i\in I}(B_j \cup A_i) =$

$= \bigcap_{(i,j) \in I \times J} (B_j \cup A_i)$

(d) Cu not de la (c):

$\left(\bigcup_{j\in J} B_j\right) \cap \left(\bigcup_{i\in I} A_i\right) = \bigcup_{i \in I}\bigcup_{j\in J} (B_j \cap A_i) = \bigcup_{j\in J}\bigcup_{i\in I} (B_j \cap A_i) =$

$= \bigcup_{(i,j)\in I\times J} (B_j \cap A_i)$

• $\underline{(a) \Rightarrow (c)}$

$\left(\bigcap_{j\in J} B_j\right) \cup \left(\bigcap_{i\in I} A_i\right) \overset{(a)}{=} \bigcap_{i\in I}\left(\left(\bigcap_{j\in J} B_j\right) \cup A_i\right) \overset{(a)}{=}$

$= \bigcap_{i\in I}\bigcap_{j\in J} (B_j \cup A_i)$

• $\underline{(a)}$ Fie $T := A \cup \bigcup_{i\in I} A_i \cup \{0\} \neq \emptyset$

$(\forall X \in \mathcal{P}(T))$

$(\forall X \subseteq T)$ χ_X = funcț caract a lui X raportat la T (⊛)