Exercises

3.277 [060] Let X be a set. Let I, J families not empty of indexes, and for every $i \in I$ let $J_i \subseteq J$ a family not empty of indexes. For each $i \in I$, $j \in I_j$ let $A_{i,j} \subseteq X$. Show that

$$\bigcap_{i \in I} \bigcup_{j \in J_i} A_{i,j} = \bigcup_{\beta \in B} \bigcap_{i \in I} A_{i,\beta(i)}$$

where $B = \prod_{i \in I} J_i$ and remember that every $\beta \in B$ is a function $\beta : I \to J$ for which for every i you have $\beta(i) \in J_i$. Then formulate a similar rule by exchanging the role of intersection and union. (use the complements of the sets $A_{i,j}$ and the rules of de Morgan).

Solution 1. *[061]*

[[27B]]