Exercises

E7.59 [OGO]Difficulty:*. Let I be a family of indices; let $a_{i,j} : I \times \mathbb{N} \to [0, \infty]$ a generalised succession, such that $j \mapsto a_{i,j}$ is weakly increasing for every fixed i; prove that

$$\sum_{i \in I} \lim_{j \to \infty} a_{i,j} = \lim_{j \to \infty} \sum_{i \in I} a_{i,j} \ .$$

(This is a version of the well-known *Monotone convergence theorem*).

Solution 1. *[OG2]*

[[OG1]]