3.258 [04R] Prerequisites:[04P],[03H],[22F].Difficulty:*.*(Solved on 2022-10-13 in parte)*

Let A infinite. Show that $|D \times A| = |A|$ for every non-empty countable set D. [a]

(A possible solution uses [04P])

Solution 1. *[04S]*

(Another possible solution uses Zermelo's theorem, [22F] and [03H]; in this case [04P] becomes a corollary of this result.)

Solution 2. *[04T]*

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[a]Equivalently, show that there is a partition U of A such that each part $B \in U$ has cardinality $|B| = |A|$, and the family U of the parts has cardinality $|U| = |D|$.