Exercises

E8.93 [OMH] Prerequisites: [OKS]. If (X, τ) satisfies the second axiom of countability, given $A \subseteq X$ there exists a countable subset $B \subseteq A$ such that $\overline{B} \supseteq A$. In particular, the whole space X admits a dense countable subset: X is said to be *separable*. The vice versa holds for example in metric spaces, see [OQ7]. See also [OSQ] for an application in $\mathbb{R}^n$.

Solution 1. *[OMJ]*