Exercises

13.37 [16S]Prerequisites:[2CX].Difficulty:*.

Suppose (X, d) admits a subset D that is dense but has empty interior. [a]

Given a $E \subset X$ which is a F_σ, construct a function $f : X \to \mathbb{R}$ for which E is the set of points of discontinuity.

Solution 1. [16T]

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[a]That is, both D and the complement $X \setminus D$ are dense. $X = \mathbb{R}$ meets this requirement, taking as an example $D = \mathbb{Q}$.