

Assignment 4

1. Show that if M is a separable metric space, then every open set is a countable union of open balls $B_n(x)$.
2. Give an example of a σ -ring \mathcal{A} on \mathbb{R} such that $\{a\} \in \mathcal{A}$ for all $a \in \mathbb{R}$ but $[0, 1) \notin \mathcal{A}$.
3. page 27: 9, 11 (in each case you only have to prove one direction), 12
4. page 32: 17, 23