

7. Consider the following topologies on \mathbb{R} :

\mathcal{T}_1 = the standard topology,

\mathcal{T}_2 = the topology of \mathbb{R}_K ,

\mathcal{T}_3 = the finite complement topology,

\mathcal{T}_4 = the upper limit topology, having all sets $(a, b]$ as basis,

\mathcal{T}_5 = the topology having all sets $(-\infty, a) = \{x \mid x < a\}$ as basis.

Determine, for each of these topologies, which of the others it contains.

(from Basis for a Topology)