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A note on product of topological spaces (Preliminary communication)

A NOTE ON PRODUCT OF TOPOLOGICAL SPACES

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Let X be a topological space. Define an equivalence $\sim$ on the set N of all natural numbers such that $m \sim n$ iff X^m is homeomorphic to X^n. Clearly, $\sim$ is a congruence on the additive semigroup $(N, +)$. The following theorem is fulfilled:

Theorem. For every congruence $\sim$ on $(N, +)$ there exists a locally compact separable metric space X such that X^m is homeomorphic to X^n iff $m \sim n$.

This result and some related questions will appear in Fundamenta Mathematicae under the title " X^m is homeomorphic to X^n iff $m \sim n$ where $\sim$ is a congruence on natural numbers".

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