

Exercise 8.69. [225] *Difficulty:**.

Let Y be a topological space. We say that Y satisfies the property (P) with respect to a topological space X when it satisfies this condition: for every dense subset $A \subseteq X$ and every pair of continuous functions $f, g : X \rightarrow Y$ such that $f(a) = g(a)$ for every $a \in A$, necessarily there follows that $f = g$.

Prove that Y is Hausdorff if and only if it satisfies the property (P) with respect to any topological space X .