Writing Assignment 10

Due Friday, October 30, 11:59 PM

This is secretly asking you for a proof, but you may treat it as a writing assignment if that helps you think through the problem better.

Let $A \subset X$ and $B \subset Y$. If X and Y are topological spaces, then A and B can be given the subspace topology. Accordingly, the set $A \times B$ can be given the product topology. Call this topology $\mathcal{T}$.

On the other hand, consider the subset $A \times B \subset X \times Y$ and give $A \times B$ the subspace topology. Call it $\mathcal{T}'$.

Are $\mathcal{T}$ and $\mathcal{T}'$ the same topology?

Explore, write; explain your thoughts.