

Definition MunkTop.15.1: If (X, \mathcal{T}) and (Y, \mathcal{T}') are topological spaces then *the basis for the product topology on $(X, \mathcal{T}) \times (Y, \mathcal{T}')$* is the set of $U \times V$ such that $U \in \mathcal{T}$ and $V \in \mathcal{T}'$.

Definition MunkTop.15.2: If (X, \mathcal{T}) and (Y, \mathcal{T}') are topological spaces then *the product topology on $(X, \mathcal{T}) \times (Y, \mathcal{T}')$* is the topology on X generated by the basis for the product topology on $(X, \mathcal{T}) \times (Y, \mathcal{T}')$.

Definition MunkTop.15.3: $\pi_1(x, y) = x$.

Definition MunkTop.15.4: $\pi_2(x, y) = y$.

Definition MunkTop.15.5: If there exist u, v such that $x = (u, v)$ then $\pi_1(x) = u$. Otherwise $\pi_1(x)$ is undefined.

Definition MunkTop.15.6: If there exist u, v such that $x = (u, v)$ then $\pi_2(x) = v$. Otherwise $\pi_2(x)$ is undefined.