

Given $x_0 \in X, y_0 \in Y$ show that the maps $f: X \rightarrow X \times Y$ and $g: Y \rightarrow X \times Y$ defined by: $f(x) = x \times y_0$ and $g(y) = x_0 \times y$ are imbeddings

f is clearly injective. Let $f': X \rightarrow X \times y_0$ by $f'(x) = f(x)$ then f' is a bijection

We also see that if $u \times y_0$ is open in the subspace topology then u is open in X and vice versa. Thus f is an imbedding.