9. Let $V$ be a finite dimensional inner product space and $U$ be a subspace. Let $T \in \mathcal{L}(U,V)$ be the inclusion (i.e. $Tu = u$). Prove that $T^* = P_U$.

10. Let $V$ and $W$ be finite dimensional inner product spaces and let $S, T \in \mathcal{L}(V,W)$. Prove that $(S + T)^* = S^* + T^*$ and that $(aT)^* = \bar{a}T^*$ for $a \in \mathbb{F}$. (This is asserted without proof on page 119 in the book; you should supply a proof.)