> Suppose V is a complex inner product space and $T \in \mathcal{L}(V)$ is a normal operator such that $T^9 = T^8$. Prove that T is self-adjoint and $T^2 = T$.

In 7.1, Axler asserts that V is finite-dimensional.

T has a diagonal matrix w.r.t. an orthonormal basis of V.

$$TT^* = T^*T$$