

Quiz 6 Roberto Campos

Show $I - H$ is Symmetric

$$\begin{aligned}(I - H)(I - H)^T &= (I - H)(I^T - H^T) \\&= I I^T - I H^T - H I^T - H H^T \\&= I - H^T - H + H H^T \\&= I - H - H + H H \\&= I - H\end{aligned}$$

Show $(I - H)$ is idempotent

$$\begin{aligned}(I - H)(I - H) &= I(I - H) - H(I - H) \\&= I - H - H + H H \\&= I - 2H + H H \\&= I - 2H + H \\&= I - H\end{aligned}$$