Group_____Scribe_____

Other group members_____

# Group Quiz for Section 5.4

Show that if $\boldsymbol{S}, \boldsymbol{T} \in \mathcal{L}(V)$ are such that $\boldsymbol{ST} = \boldsymbol{TS}$, then for any eigenvalue $\lambda$ of $\boldsymbol{T}$, $\boldsymbol{S}$ restricts to a linear map from $Eig_\lambda(\boldsymbol{T})$ to itself. *Hint:* The issue here is to show that the restriction of $\boldsymbol{S}$ to $Eig_\lambda(\boldsymbol{T})$ maps into $Eig_\lambda(\boldsymbol{T})$; i.e., what you need to show is that if $v \in Eig_\lambda(\boldsymbol{T})$, then $\boldsymbol{S}v \in Eig_\lambda(\boldsymbol{T})$ as well.