Step-1

Let S and T are linear with $S(v)=T(v)=v$.

We have to verify that $S(T(v))=v$ or v^2.

Step-2

Now

$$S(T(v))=S(v) \quad (\text{Since } S(v)=v, \text{ for any } v)$$
$$=v$$

Therefore, $\boxed{S(T(v))=v}$

And $S(T(v))\neq v^2$