# Problem Set - 02

16/01/2020

1. Find the characters of the standard representation of $S_4$.

2. Define product representation, $D(g) = D^{(r)}(g) \otimes D^{(s)}(g)$, as,

$$\Big(D(g)\Big)_{a\alpha,b\beta} = D^{(r)}(g)_{ab} D^{(s)}(g)_{\alpha\beta}.$$

   Show that this really forms a representation (reducible). How are the characters related?

3. Prove by matrix multiplication that,

$$(34)(2413) = (14)(23).$$