

MA8403 Week 1

Drew Heard (drew.k.heard@ntnu.no)

August 25, 2023

1. Question 1

Show that $\rho_{C_2} \otimes \rho_{C_2} \cong 2\rho_{C_2}$.

2. Question 2

Let V and W be G -representations. Prove that claim we used in class:

$$\chi_{V \otimes W}(g) = \chi_V(g)\chi_W(g),$$

i.e, the character is multiplicative with respect to tensor product of representations.

3. Question 3

For groups H and G let $\pi_G: G \times H \rightarrow G$ and $\pi_H: G \times H \rightarrow H$ be the projections. Show that

$$\rho_{G \times H} \cong \pi_G^*(\rho_G) \otimes \pi_H^*(\rho_H).$$