

Representation Theory — WiSe 2022

Bonus exercises for Tutorial 3

Irreducible representations of semi-direct products by Abelian groups. In the following two exercises, compute the character table of the given groups. You can consult Section 8.2 in *Linear Representations of Finite Groups* by J.-P. Serre for a method to approach the computation.

1. Compute the character table of the following non-Abelian group of order 21:

$$C_7 \rtimes C_3 = \langle x, y \mid x^7, y^3, yxy^{-1} = x^2 \rangle.$$

2. Compute the character table of the following non-Abelian group of order 36:

$$(C_3 \times C_3) \rtimes C_4 = \langle x, y, z \mid x^3, y^3, z^4, [x, y], zxz^{-1} = y, zyz^{-1} = x^2 \rangle.$$