

MATH 122: HOMEWORK 7

- Section 19.3 # 2a,b,c
- “Problem A”

Problem 19.3 #2 a,b,c. In each part a character of a subgroup H of G is specified. Compute the values of the induced character $\text{Ind}_H^G(\psi)$ on all conjugacy classes of G and use the character tables of Section 1 to write $\text{Ind}_H^G(\psi)$ as a sum of irreducible characters.

- (a) ψ is the unique nonprincipal character of the subgroup $\langle(12)\rangle$ of S_3 .
- (b) ψ is the degree 1 character of the subgroup $\langle r \rangle$ of D_8 such that $\psi(r) = i$ where $i = \sqrt{-1}$.
- (c) ψ is the degree 1 character of the subgroup $\langle r \rangle$ of D_8 defined by $\psi(r) = -1$.

Problem A. Let G be the following nonabelian group of order 21:

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

Find the conjugacy classes of G and compute the character table. Construct the characters of degree 3 as induced characters.