

Alg IV - Exercises 12

Consider the dihedral group

$$D_8 = \langle a, b : a^4 = b^2 = 1, b^{-1}ab = a^{-1} \rangle$$

and its complex representations.

① Show that its 2-d representation

$$a \mapsto A = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}, \quad b \mapsto B = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$$

is irreducible, by calculating the eigenvectors of A & B .

② Using the above & results from the lecture, calculate all the irreducible reps of D_8 .