

Dihedral Group

def $D_n =$ group of symmetries of a regular n -gon.
rotations or reflections.

Compute Z_{D_3} & Z_{D_4} :

$$\begin{array}{l} 1, r, r^2, (r^3) \\ s, sr, sr^2, (sr^3) \end{array} \quad Z_{D_3} = 1, \quad Z_{D_4} = \langle r^2 \rangle.$$

$$(127)$$

Sign of $\begin{pmatrix} 1 & 2 & \cdots & n-1 & n \\ n & n-1 & & 2 & 1 \end{pmatrix}$ is $(-1)^{\lfloor \frac{n}{2} \rfloor}$.