

Algebraic and Geometric Methods in Engineering and Physics

Homework 5

Due on October 26

1. Prove that D_3 is isomorphic to S_3 .

2. Consider the action of $D_4 = \{e, r, r^2, r^3, s, sr, sr^2, sr^3\}$ on $R(4) = \{1, -1, i, -i\}$.
 - (a) Determine whether this action is effective, transitive or free.
 - (b) Find the isotropy group of i .
 - (c) Construct an equivalent action on $D_4/(D_4)_i$, giving the equivalence explicitly.