

MATH 473
FALL 2019
HOMEWORK 36

1. Let G be a finite group acting transitively on a set Ω of size greater than 1. Prove that there is some $g \in G$ such that $|\text{fix}_\Omega(G)| = 0$.
2. Determine the number of ways to color the faces of a tetrahedron with n colors (up to symmetry).
3. Prove that the symmetry group of the cube is isomorphic to S_4 .
4. Determine the number of ways to color the faces of a cube with n colors (up to symmetry).