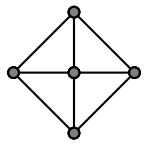
HOMEWORK 9 - MATH 100A - DUE FRIDAY DECEMBER 8TH

In this homework assignment you don't need to prove anything. Just find the correct answer!



Use the above graph in Problems 1-5.

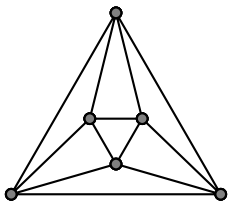
Problem 1. Let $\Gamma = (V, E)$ be the above set of edges and vertices. Compute $|\mathrm{Aut}(\Gamma)|$.

Problem 2. Consider the action of $\mathrm{Aut}(\Gamma)$ on the vertices V. How many orbits are there?

Problem 3. Consider the action of $\mathrm{Aut}(\Gamma)$ on the edges, E. How many orbits are there?

Problem 4. Count the number of colorings of the vertices with k not necessarily distinct colors, up to symmetry.

Problem 5. Count the number of colorings of the edges with k-colors, up to symmetry.



Use the above graph in Problems 6 & 7.

Problem 6. Let $\Gamma = (V, E)$ be the above graph. Consider the action of $\mathrm{Aut}(\Gamma)$ on the vertices. How many orbits are there?

Problem 7. Choose a vertex $v \in V$ and compute the size of $\mathrm{Orb}(v)$ and $\mathrm{Stab}(v)$. Use these results to compute $|\mathrm{Aut}(\Gamma)|$.

Use the above graph in problems 8 & 9.

Problem 8. Let $\Gamma = (V, E)$ be the above graph. Compute $|\mathrm{Aut}(\Gamma)|$.

Problem 9. Count the number of colorings of the vertices of Γ with k not necessarily distinct colors, up to symmetry.