

Math 421 Problem Set
November 10, 2022

1. Recall that the alternating group $A_4 \leq S_4$ is the subgroup consisting of even permutations.
 - (a) List all elements of A_4 and find their orders.
 - (b) Show that A_4 is not isomorphic to D_{12} .
 - (c) Show that A_4 has exactly one subgroup H of order 4 and $H \cong Z_2 \times Z_2$.
 - (d) Use a problem from last week's homework to conclude that $H \trianglelefteq A_4$.