

Q1: Let $\sigma = (143)(3547) \in S_8$.

(1) Write σ as a product of disjoint cycles, find its order, determine if σ is even or odd.

(2) Compute σ^{-1} and σ^{666} . What is the solution set to the equation $x^2 = \sigma$, for $x \in S_8$.

Q2: Show that no two of the following groups are isomorphic: S_4 , A_4 , D_6 , and $\mathbb{Z}_{12}$.