

Homework 7

MATH 301

Due Wednesday, March 29, 2023.

Instructions. Read the [Homework Guide](#) to make sure you understand how to successfully complete the assignment. All claims must be sufficiently justified.

Exercise 1. Prove that the order of S_n is $n!$.

Exercise 2. (a) Write down the elements in the cyclic subgroups generated by the cycles $(1\ 4\ 3)$ and $(1\ 3\ 5\ 2\ 4\ 6)$.

(b) Prove the order of a k -cycle is k .

Exercise 3. Complete the following exercises from [Section 5.4](#) in the course textbook:

4, 7, 8, 14, 17, 18, 23, 33