Math 566: Abstract Algebra I
Homework 3

10 points total. Due Friday, September 10 by 11:10 am in class.

Problems

1. (1 points) Compute the order of the element $(123456)(789)$ in S_9.
2. (1 point) Compute the order of the element $(12364)(597)$ in S_9.
3. (3 points) Suppose a permutation π can be written as a product of two disjoint cycles of lengths m and n. Compute the order of π in its symmetric group, and prove your answer is correct.
4. (1 point) Suppose a is a left inverse of b in a group G, i.e., $ab = 1$. Show that it is also a right inverse, i.e., $ba = 1$.
5. (2 points) Prove that there is only one group of order 3 up to isomorphism.
6. (2 points) Chapter 2 problem 4.3 in Artin.

Recommended practice exercises

(DO NOT hand these in - these are just extra problems I recommend you look at if you'd like more practice.)
Chapter 2 exercises 4.1, 4.2, 4.5, 4.6, 5.1