Loyola University Chicago
Math 201, Spring 2010

Worksheet 6

Problem 1. Consider the set $S = \{a, b, c, d, e\}$ and the following permutations:

$$\rho = \begin{pmatrix} a & b & c & d & e \\ b & c & d & e & a \end{pmatrix}, \qquad \sigma = \begin{pmatrix} a & b & c & d & e \\ c & a & e & d & b \end{pmatrix}.$$

(a) find ρ^{-1}

(b) find ρ^2

(c) find $\rho \circ \sigma$

(d) find n such that ρ^n is the identity permutation

Problem 2. Find bijections

(a) from $[0, 1)$ to $[0, 1/2) \cup (1/2, 1]$.

(b) from $\{0, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \dots\}$ to $\{\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \dots\}$

(c) from $[0, 1]$ to $(0, 1]$

(d) from $(0, 1]$ to $[0, 1]$