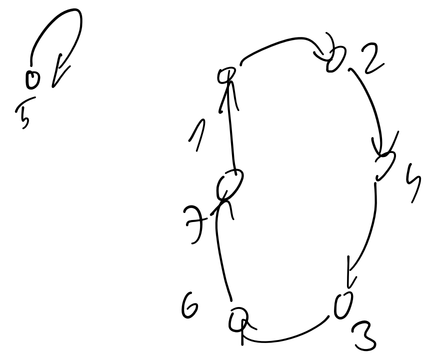
$p = (2\ 4\ 6\ 3\ 5\ 7\ 1)$, $q = (3\ 6\ 7\ 4\ 5\ 2\ 1)$, $p \circ q$

Urči grafy, cykly, rozklad na transpozice, počet inverzí, znaménko a inverzní permutaci:

$$\begin{matrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 2 & 4 & 6 & 3 & 5 & 7 & 1 \\ 1 & 2 & 3 & 4 & \cancel{5} & 6 & 7 \end{matrix}$$



$(1, 2, 4, 3, 6, 7)$

$(1,2) \circ (2,4) \circ (4,3) \circ (3,6) \circ (6 \circ 7) \circ (7,1) \circ (5,5)$

$\#$ inverzí $= 8$

$\operatorname{sgn}(p) = +1$

$p^{-1} = (7\ 1\ 4\ 2\ 5\ 3\ 6)$

Počet permutací na 2, 3, 4, 5 a 6 prvcích?

Vždy je to $n!$

$q = (2,4) \in S_4$

$\{ q \circ p : p \in A \}$

$\{ \overset{+}{(1,2)}, \overset{-}{(2,1)} \}$

Spočítejte determinant:

nad $\mathbb{R}$ $\begin{pmatrix} 7 & -1 \\ 5 & -2 \end{pmatrix}$ $\quad -14 + 5 = -9$

$\begin{pmatrix} 7 & -3 \\ 5 & -6 \end{pmatrix}$ $\quad -42 + 15 = -27$

nad $\mathbb{C}$ $\begin{pmatrix} 2-i & i+3 \\ i-3 & 2+i \end{pmatrix}$ $\quad 5 + 10 = 15$

$(2-i)\cdot(2+i) = 2^2 - i^2 = 5$

$(i+3)\cdot(i-3) = i^2 - 3^2 = -10$

nad $\mathbb{Z}_5$: $\begin{pmatrix} 1 & 2 & 3 \\ 4 & 4 & 1 \\ 2 & 3 & 3 \end{pmatrix}$

$\{ \overset{+}{(1,2,3)}, \overset{+}{(2,3,1)}, \overset{-}{(1,3,2)}, \underset{-}{(2,1,3)}, \underset{+}{(3,1,2)}, \underset{-}{(3,2,1)} \}$

$12 + 4 - 3 \underbrace{- 24 + 36 - 24}_{-12} = \underline{1}$

Převedem na trojúhelníkovou matici:

$\frac{5}{7} \cdot -\frac{3}{7} = \frac{-15}{7} \quad -\frac{42}{7}$

nad $\mathbb{R}$ $\begin{pmatrix} 7 & -3 \\ 5 & -6 \end{pmatrix} \sim \begin{pmatrix} 7 & -3 \\ 0 & -\frac{27}{7} \end{pmatrix}$

$\det(A) = 7 \cdot -\frac{27}{7} = \underline{\underline{-27}}$

nad $\cancel{\mathbb{Z}_7}\ \mathbb{Z}_5$ $\begin{pmatrix} 1 & 2 & 3 \\ 4 & 4 & 1 \\ 2 & 3 & 3 \end{pmatrix} \sim \begin{pmatrix} 1 & 2 & 3 \\ 0 & 1 & 4 \\ 0 & 4 & 2 \end{pmatrix} \sim \begin{pmatrix} 1 & 2 & 3 \\ 0 & 1 & 4 \\ 0 & 0 & 1 \end{pmatrix}$

$\underline{\underline{\det(A) = 1}}$