Notes

September 17, 2014

assignment

Section 1.4: # 17, 19, 20, 23, 24, 27.

2.3 5.

6. (1),(12),(13),(14),(23),(24),(34),(123),(124),(134),(234),(132),(243),(142),(143),(1234)

2.3.5 theorem

sketch of a proof

$$\tau = \begin{pmatrix} 1 & 2 & 3 & \dots & n \\ \sigma(1) & \sigma(2) & \sigma(3) & \dots & \sigma(n) \end{pmatrix}$$

example

$$\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 7 & 2 & 6 & 3 & 1 & 5 & 4 \end{pmatrix} = (1,7,4,3,6,5)$$

definition: let $\sigma \in S$ the least positive integer m such that $\sigma^m = (1)$ is called the order of σ

example

$\sigma = (123)(45) \to (123)^3(45)^2 = \sigma^6$

observation for 2.3.8 proof

$(a1a2a3\dots ak)^i = (1)$ and $(b1b2b3\dots bk)^i = 1$ because they are disjoint and applying the a permutions don't change the b elements and vice versa