

1. a.  $\alpha^{-1} = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 1 & 3 & 5 & 4 & 6 \end{bmatrix}$

b.  $\beta\alpha = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 1 & 6 & 2 & 3 & 4 & 5 \end{bmatrix}$

c.  $\alpha\beta = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 6 & 2 & 1 & 5 & 3 & 4 \end{bmatrix}$

2.  $\alpha = (12345)(678) = (15)(14)(13)(12)(68)(67); \beta = (23847)(56) = (27)(24)(28)(23)(56); \alpha\beta = (12485736) = (16)(13)(17)(15)(18)(14)(12).$

3. a. (15)(234) b. (124)(35)(6) c. (1423)

21. (AHMPRS)(BDGC)(EJLNF)(I)(KO)(QU)(TWV)(XZY)

35. Let  $\alpha, \beta \in \text{stab}(a)$ . Then  $(\alpha\beta)(a) = \alpha(\beta(a)) = \alpha(a) = a$ . Also,  $\alpha(a) = a$  implies  $\alpha^{-1}(\alpha(a)) = \alpha^{-1}(a)$  or  $a = \alpha^{-1}(a)$ .