第六次作业反馈

参考解答与错误分析

Ch3 12

$$\tau\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 1 & 2 & 3 & 6 & 5 & 4 \end{pmatrix}$$

$$\tau^2\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 4 & 1 & 5 & 6 & 3 \end{pmatrix}$$

$$\sigma\tau = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 3 & 6 & 4 & 5 & 1 & 2 \end{pmatrix}$$

$$\sigma^{-1}\tau\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 6 & 1 & 5 & 4 & 3 \end{pmatrix}$$

Ch3 13

(1)

$$(257)(78)(145) = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \\ 4 & 5 & 3 & 7 & 1 & 6 & 8 & 2 \end{pmatrix} = (147825)$$

(2)

$$(72815)(21)(476)(12) = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \\ 5 & 8 & 3 & 2 & 7 & 4 & 6 & 1 \end{pmatrix} = (1576428)$$

Ch3 14

(1)

$$\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \\ 8 & 2 & 6 & 3 & 7 & 4 & 5 & 1 \end{pmatrix} = (18)(364)(57)$$

(2)

$$\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \\ 3 & 6 & 4 & 1 & 8 & 2 & 5 & 7 \end{pmatrix} = (134)(26)(587)$$

(3)

$$\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \\ 3 & 1 & 4 & 7 & 2 & 5 & 8 & 6 \end{pmatrix} = (13478652)$$

注：置换的乘积应从右向左算，轮换的运算方式是将每个元素映到它右边的元素，以上三题做错的同学大多是把某一个弄反了。

Ch3 17

(1)

$$x_1 = x_1(x_2 + \bar{x}_2)(x_3 + \bar{x}_3) = x_1x_2x_3 + x_1\bar{x}_2x_3 + x_1x_2\bar{x}_3 + x_1\bar{x}_2\bar{x}_3$$

(2)

$$\begin{aligned} x_1x_2 + x_2x_3 + x_3\bar{x}_1 &= x_1x_2 + x_2x_3(x_1 + \bar{x}_1) + x_3\bar{x}_1 \\ &= x_1x_2(1 + x_3) + \bar{x}_1x_3(x_2 + 1) \\ &= x_1x_2 + \bar{x}_1x_3 \end{aligned}$$

注：开关函数的运算中 $a + c = b + c$ 是不能推出$a = b$的,取$a = 0, b = c = 1$即为反例，部分同学在上题中使用了这一错误推断。

Ch3 19

(1) $x_1x_2 + x_1\bar{x}_2 + \bar{x}_1x_2 + \bar{x}_1\bar{x}_2$
(2) $x_1x_2 + \bar{x}_1\bar{x}_2$
