

A6.1

$$D_{k_j}^{[reg]}(s_i) = \begin{cases} 1 & s_i s_j = s_k \\ 0 & \text{otherwise} \end{cases}$$

Multiplication table:

	(1)	(12)	(13)	(23)	(123)	(321)
(1)	(1)	(12)	(13)	(23)	(123)	(321)
(12)	(12)	(1)	(321)	(123)	(32)	(13)
(13)	(13)	(123)	(1)	(321)	(12)	(23)
(23)	(23)	(321)	(123)	(1)	(13)	(12)
(123)	(123)	(13)	(23)	(12)	(321)	(1)
(321)	(321)	(23)	(12)	(13)	(1)	(123)

← Copied from sheet 4 that I handed in.

Rearrange the columns in a way that the table looks like this:

$$\begin{array}{c}
 g_1^{-1} g_2^{-1} g_3^{-1} \dots \\
 g_1 \\
 g_2 \\
 g_3 \\
 \vdots
 \end{array}$$

Then

$$D_{g_j}^{[reg]}((12)) = \begin{pmatrix} 0 & 1 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \end{pmatrix}$$

$$D_{g_j}^{[reg]}((123)) = \begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 1 \\ & & & & 1 & \\ & & & & & 1 \\ & & & & & & 1 \\ & & & & & & & 1 \\ & & & & & & & & 1 \\ & & & & & & & & & 1 \end{pmatrix}$$

$$s_k s_j^{-1} = s_j s_k^{-1}$$

$$[s_k s_j^{-1}]^{-1} = [s_k s_j^{-1}]^{-1}$$