

Here's the right way to write the rep of B_6 .

(1)

$$\sigma_1 \rightarrow \begin{pmatrix} -1 & 0 & 0 & 0 & \sqrt{t} \\ 0 & -1 & \sqrt{t} & 0 & 0 \\ 0 & 0 & t & 0 & 0 \\ 0 & 0 & \sqrt{t} & -1 & 0 \\ 0 & 0 & 0 & 0 & t \end{pmatrix}$$

$$d = \frac{\sqrt{t}}{1+t}$$

$$e_1 = \begin{pmatrix} 0 & 0 & 0 & 0 & d \\ 0 & 0 & d & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & d & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix} = \frac{1}{t+1} (q_1 + 1)$$

$$\sigma_2 \rightarrow \begin{pmatrix} t & 0 & 0 & 0 & 0 \\ 0 & t & 0 & 0 & 0 \\ 0 & \sqrt{t} & -1 & 0 & 0 \\ \sqrt{t} & 0 & 0 & -1 & 0 \\ \sqrt{t} & 0 & 0 & 0 & -1 \end{pmatrix}$$

$$e_2 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & d & 0 & 0 & 0 \\ d & 0 & 0 & 0 & 0 \\ d & 0 & 0 & 0 & 0 \end{pmatrix}$$

$$\sigma_3 \rightarrow \begin{pmatrix} -1 & 0 & 0 & \sqrt{t} & 0 \\ 0 & -1 & \sqrt{t} & 0 & 0 \\ 0 & 0 & t & 0 & 0 \\ 0 & 0 & 0 & t & 0 \\ 0 & 0 & \sqrt{t} & 0 & t \end{pmatrix}$$

$$e_3 = \begin{pmatrix} 0 & 0 & d & 0 & 0 \\ 0 & 0 & d & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & d & 0 & 0 \end{pmatrix}$$

$$\sigma_4 \rightarrow \begin{pmatrix} t & 0 & 0 & 0 & 0 \\ \sqrt{t} & -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & \sqrt{t} \\ \sqrt{t} & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 0 & t \end{pmatrix}$$

$$e_4 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ d & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & d \\ d & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

$$\sigma_5 \rightarrow \begin{pmatrix} -1 & \sqrt{t} & 0 & 0 & 0 \\ 0 & t & 0 & 0 & 0 \\ 0 & 0 & t & 0 & 0 \\ 0 & 0 & \sqrt{t} & -1 & 0 \\ 0 & 0 & \sqrt{t} & 0 & t \end{pmatrix}$$

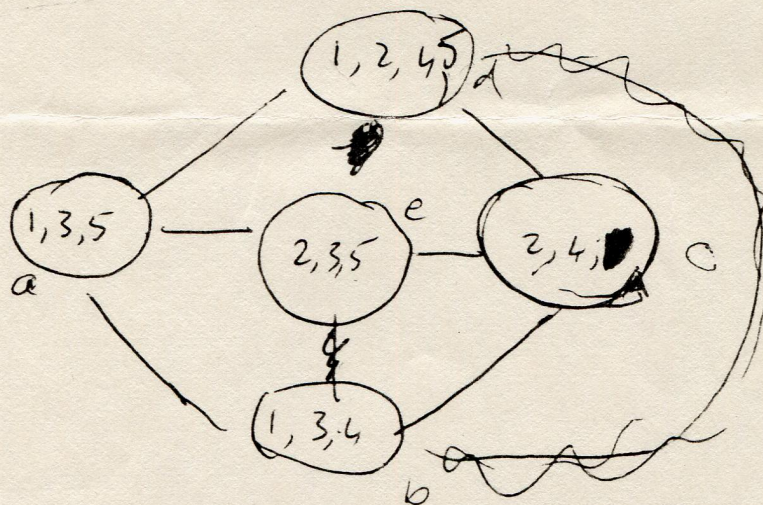
$$e_5 = \begin{pmatrix} 0 & d & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & d & 0 & 0 \\ 0 & 0 & d & 0 & 0 \end{pmatrix}$$

let's be ambitious - can you even get rid of $\sqrt{t}$?
- probably

$$\begin{pmatrix}
 1+q & 0 & 0 & 0 & 0 \\
 0 & 1+q & 0 & 0 & 0 \\
 0 & 0 & 1+q & 0 & 0 \\
 0 & 0 & 0 & 1+q & 0 \\
 \sqrt{q} & 0 & 0 & 0 & 0
 \end{pmatrix}$$

1, 3,

0



$$\binom{5}{2} = \frac{5 \cdot 4}{2}$$

$$\alpha = \frac{\sqrt{q}}{1+q}$$

$$e_1 = \begin{pmatrix}
 0 & 0 & 0 & 0 & 1 \\
 0 & 0 & 1 & 0 & 0 \\
 0 & 0 & 1 & 0 & 0 \\
 0 & 0 & 1 & 0 & 0 \\
 0 & 0 & 0 & 0 & 1
 \end{pmatrix}$$

$$e_4 = \begin{pmatrix}
 1 & 0 & 0 & 0 & 0 \\
 1 & 0 & 0 & 0 & 0 \\
 0 & 0 & 0 & 0 & 1 \\
 1 & 0 & 0 & 0 & 0 \\
 0 & 0 & 0 & 0 & 1
 \end{pmatrix}$$

$$e_2 = \begin{pmatrix}
 1 & 0 & 0 & 0 & 0 \\
 0 & 1 & 0 & 0 & 0 \\
 0 & 1 & 0 & 0 & 0 \\
 1 & 0 & 0 & 0 & 0 \\
 1 & 0 & 0 & 0 & 0
 \end{pmatrix}$$

$$e_5 = \begin{pmatrix}
 0 & 1 & 0 & 1 & 0 \\
 0 & 1 & 0 & 0 & 0 \\
 0 & 0 & 0 & 1 & 0 \\
 0 & 0 & 0 & 1 & 0 \\
 0 & 0 & 0 & 0 & 0
 \end{pmatrix}$$

$$e_3 = \begin{pmatrix}
 0 & 0 & 0 & 1 & 0 \\
 0 & 0 & 1 & 0 & 0 \\
 0 & 0 & 1 & 0 & 0 \\
 0 & 0 & 0 & 1 & 0 \\
 0 & 0 & 1 & 0 & 0
 \end{pmatrix}$$

$$e_6 = \begin{pmatrix}
 0 & 1 & 0 & 0 & 0 \\
 0 & 1 & 0 & 0 & 0 \\
 0 & 0 & 1 & 0 & 0 \\
 0 & 0 & 1 & 0 & 0 \\
 0 & 0 & 1 & 0 & 0
 \end{pmatrix}$$

yes better rep of $M_{0,6}$

(2)

$$e_1 = \begin{pmatrix} 0 & 0 & 0 & 0 & \frac{t}{1+t} \\ 0 & 0 & \frac{1}{1+t} & 0 & 0 \\ 0 & 0 & -\frac{1}{1+t} & 0 & 0 \\ 0 & 0 & \frac{1}{1+t} & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

$$g_1 = \begin{pmatrix} -1 & 0 & 0 & 0 & t \\ 0 & -1 & 1 & 0 & 0 \\ 0 & 0 & t & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 \\ 0 & 0 & 0 & 0 & t \end{pmatrix}$$

$$e_2 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & \frac{t}{1+t} & 0 & 0 & 0 \\ \frac{1}{1+t} & 0 & 0 & 0 & 0 \\ \frac{1}{1+t} & 0 & 0 & 0 & 0 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} t & 0 & 0 & 0 & 0 \\ 0 & t & 0 & 0 & 0 \\ 0 & t & -1 & 0 & 0 \\ 1 & 0 & 0 & -1 & 0 \\ 1 & 0 & 0 & 0 & -1 \end{pmatrix}$$

$$e_3 = \begin{pmatrix} 0 & 0 & 0 & \frac{t}{1+t} & 0 \\ 0 & 0 & \frac{1}{1+t} & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & \frac{1}{1+t} & 0 & 0 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} -1 & 0 & 0 & t & 0 \\ 0 & -1 & 1 & 0 & 0 \\ 0 & 0 & t & 0 & 0 \\ 0 & 0 & 0 & t & 0 \\ 0 & 0 & 1 & 0 & -1 \end{pmatrix}$$

$$e_4 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ \frac{1}{1+t} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{t}{1+t} \\ \frac{1}{1+t} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

$$g_4 = \begin{pmatrix} t & 0 & 0 & 0 & 0 \\ 1 & -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & t \\ 1 & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 0 & t \end{pmatrix}$$

$$e_5 = \begin{pmatrix} 0 & \frac{t}{1+t} & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & \frac{1}{1+t} & 0 & 0 \\ 0 & 0 & \frac{1}{1+t} & 0 & 0 \end{pmatrix}$$

$$g_5 = \begin{pmatrix} -1 & t & 0 & 0 & 0 \\ 0 & t & 0 & 0 & 0 \\ 0 & 0 & t & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 \\ 0 & 0 & 1 & 0 & -1 \end{pmatrix}$$

$$e_i = \frac{1}{1+t} (g_i + 1)$$

$$g_i = (1+t)e_i - 1$$

$$g_i = (1+t)e_i - 1$$

$$\bar{g}_1 = \begin{pmatrix} -1 & 0 & 0 & 0 & 1 \\ 0 & -1 & \bar{x} & 0 & 0 \\ 0 & 0 & \bar{x} & 0 & 0 \\ 0 & 0 & \bar{x} & -1 & 0 \\ 0 & 0 & 0 & 0 & \bar{x} \end{pmatrix}$$

$$\bar{g}_1 = (\bar{x}+1)e_1 - 1$$

$$(\bar{x}+1)\left(\frac{1}{1+\bar{x}}\right) = \frac{\bar{x}(1+\bar{x})}{1+\bar{x}} = \bar{x}$$

$$(\bar{x}+1)\left(\frac{\bar{x}}{1+\bar{x}}\right) = 1$$

$$\bar{g}_2 = \begin{pmatrix} \bar{x} & 0 & 0 & 0 & 0 \\ 0 & \bar{x} & 0 & 0 & 0 \\ 0 & 1 & -1 & 0 & 0 \\ \bar{x} & 0 & 0 & -1 & 0 \\ \bar{x} & 0 & 0 & 0 & -1 \end{pmatrix}$$

$$\bar{g}_3 = \begin{pmatrix} -1 & 0 & 0 & 1 & 0 \\ 0 & -1 & \bar{x} & 0 & 0 \\ 0 & 0 & \bar{x} & 0 & 0 \\ 0 & 0 & 0 & \bar{x} & 0 \\ 0 & 0 & \bar{x} & 0 & -1 \end{pmatrix}$$

$$\bar{g}_4 = \begin{pmatrix} \bar{x} & 0 & 0 & 0 & 0 \\ \bar{x} & -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 \\ \bar{x} & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 0 & \bar{x} \end{pmatrix}$$

$$\bar{g}_5 = \begin{pmatrix} -1 & 1 & 0 & 0 & 0 \\ 0 & \bar{x} & 0 & 0 & 0 \\ 0 & 0 & \bar{x} & 0 & 0 \\ 0 & 0 & \bar{x} & -1 & 0 \\ 0 & 0 & \bar{x} & 0 & -1 \end{pmatrix}$$