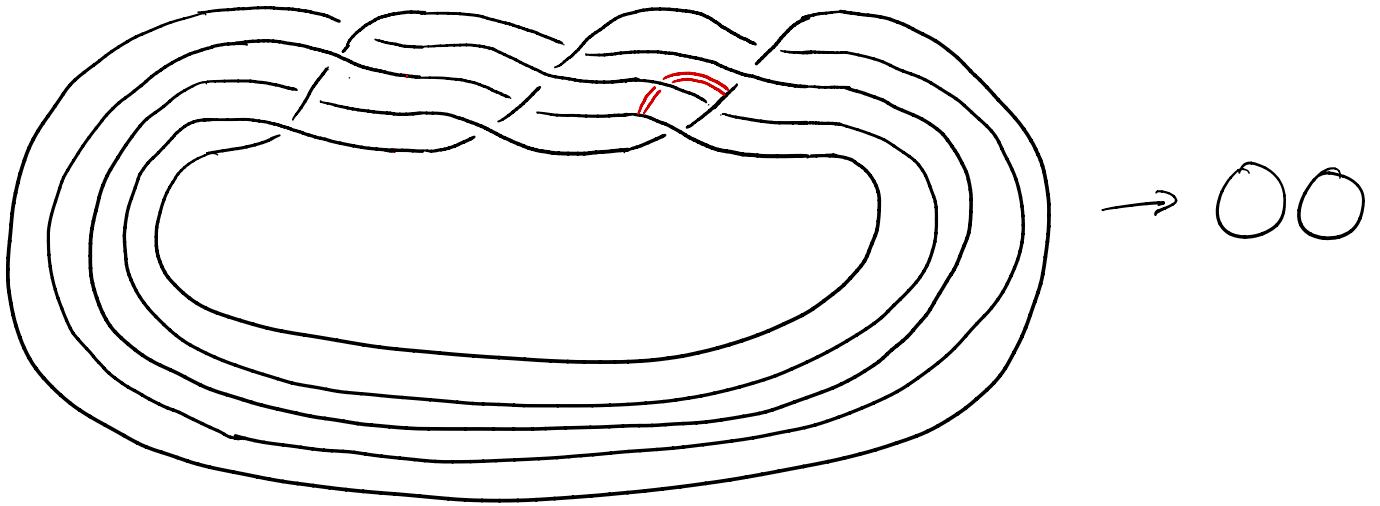
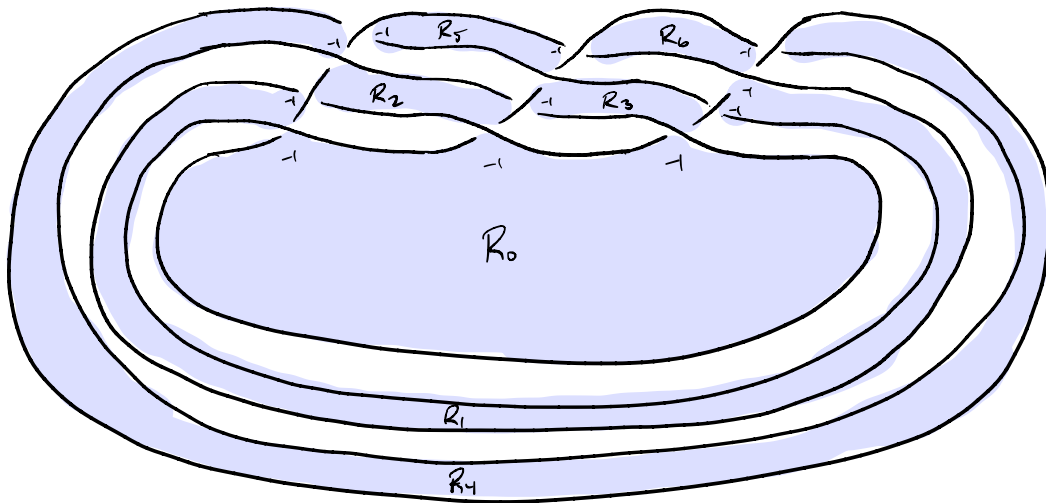


# Solutions

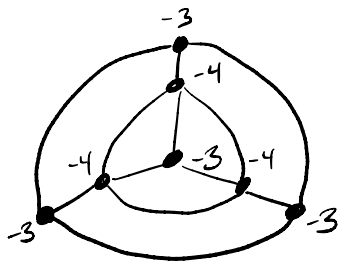
1.)



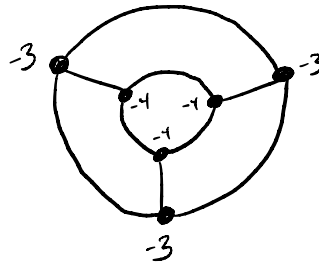
2.)



Tait graph



delete  $R_0$



$$\Rightarrow Q = \begin{bmatrix} -3 & 1 & 1 & 1 & & \\ & -3 & 1 & & 1 & \\ & & -3 & & & 1 \\ & & & & -4 & 1 & 1 \\ & & & & 1 & -4 & 1 \\ & & & & & 1 & -4 \end{bmatrix}$$

3.) Since  $L_{5,3}$  is  $\chi$ -slice and alternating,  $\exists$  a cubiquitous lattice embedding. It is given by:

$$\varphi(f_1) = e_1 - e_2 - e_3$$

$$\varphi(f_2) = e_3 - e_4 - e_5$$

$$\varphi(f_3) = e_5 - e_6 - e_1$$

$$\varphi(f_4) = e_2 - e_4 + e_5 + e_6$$

$$\varphi(f_5) = e_4 - e_6 + e_1 + e_2$$

$$\varphi(f_6) = e_6 - e_2 + e_3 + e_4$$