Rank-4 over GF(4)

January 14, 2021

General information

Points on lines:
$$5^{41}$$

Lines on points:
$$9^5, 5^{32}$$

Singular Points

The surface has 21 singular points:

$$S_0 = P_1 = \mathbf{P}(0,1,0,0) = \mathbf{P}(0,1,0,0)$$
$$S_1 = P_2 = \mathbf{P}(0,0,1,0) = \mathbf{P}(0,0,1,0)$$
$$S_2 = P_3 = \mathbf{P}(0,0,0,1) = \mathbf{P}(0,0,0,1)$$
$$S_3 = P_{11} = \mathbf{P}(0,1,1,0) = \mathbf{P}(0,1,1,0)$$
$$S_4 = P_{15} = \mathbf{P}(0,\omega,1,0) = \mathbf{P}(0,2,1,0)$$
$$S_5 = P_{19} = \mathbf{P}(0,\omega^2,1,0) = \mathbf{P}(0,3,1,0)$$
$$S_6 = P_{26} = \mathbf{P}(0,1,0,1) = \mathbf{P}(0,1,0,1)$$
$$S_7 = P_{30} = \mathbf{P}(0,\omega,0,1) = \mathbf{P}(0,2,0,1)$$
$$S_8 = P_{34} = \mathbf{P}(0,\omega^2,0,1) = \mathbf{P}(0,3,0,1)$$
$$S_9 = P_{38} = \mathbf{P}(0,0,1,1) = \mathbf{P}(0,0,1,1)$$
$$S_{10} = P_{42} = \mathbf{P}(0,1,1,1) = \mathbf{P}(0,1,1,1)$$
$$S_{11} = P_{45} = \mathbf{P}(0,\omega,1,1) = \mathbf{P}(0,2,1,1)$$
$$S_{12} = P_{49} = \mathbf{P}(0,\omega^2,1,1) = \mathbf{P}(0,3,1,1)$$
$$S_{13} = P_{53} = \mathbf{P}(0,0,\omega,1) = \mathbf{P}(0,0,2,1)$$
$$S_{14} = P_{57} = \mathbf{P}(0,1,\omega,1) = \mathbf{P}(0,1,2,1)$$
$$S_{15} = P_{61} = \mathbf{P}(0,\omega,\omega,1) = \mathbf{P}(0,2,2,1)$$
$$S_{16} = P_{65} = \mathbf{P}(0,\omega^2,\omega,1) = \mathbf{P}(0,3,2,1)$$
$$S_{17} = P_{69} = \mathbf{P}(0,0,\omega^2,1) = \mathbf{P}(0,0,3,1)$$
$$S_{18} = P_{73} = \mathbf{P}(0,1,\omega^2,1) = \mathbf{P}(0,1,3,1)$$
$$S_{19} = P_{77} = \mathbf{P}(0,\omega,\omega^2,1) = \mathbf{P}(0,2,3,1)$$
$$S_{20} = P_{81} = \mathbf{P}(0,\omega^2,\omega^2,1) = \mathbf{P}(0,3,3,1)$$

The 41 Lines

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{16} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{16} = \mathbf{Pl}(0,0,1,0,0,0)_2$$

$$\ell_1 = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{array}\right]_{336} = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{array}\right]_{336} = \mathbf{Pl}(0,0,0,0,0,1)_{101}$$

$$\ell_2 = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{20} = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{20} = \mathbf{Pl}(0,0,0,0,1,0)_{25}$$

$$\ell_3 = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{17} = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{17} = \mathbf{Pl}(0,0,1,0,1,0)_{32}$$

$$\ell_4 = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & \omega^2 \end{array}\right]_{19} = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 3 \end{array}\right]_{19} = \mathbf{Pl}(0,0,2,0,1,0)_{39}$$

$$\ell_5 = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & \omega \end{array}\right]_{18} = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 2 \end{array}\right]_{18} = \mathbf{Pl}(0,0,3,0,1,0)_{46}$$

$$\ell_6 = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{340} = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{340} = \mathbf{Pl}(0,0,0,1,0,0)_{9}$$

$$\ell_7 = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{337} = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{337} = \mathbf{Pl}(0,0,0,1,0,1)_{129}$$

$$\ell_8 = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \omega^2 \end{array}\right]_{339} = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 3 \end{array}\right]_{339} = \mathbf{Pl}(0,0,0,3,0,1)_{143}$$

$$\ell_9 = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \omega \end{array}\right]_{338} = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 2 \end{array}\right]_{338} = \mathbf{Pl}(0,0,0,2,0,1)_{136}$$

$$\ell_{10} = \left[\begin{array}{cccc} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{356} = \left[\begin{array}{cccc} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{356} = \mathbf{Pl}(0,1,0,0,0,0)_{1}$$

$$\ell_{11} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{array}\right]_{100} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{array}\right]_{100} = \mathbf{Pl}(0,1,1,0,0,0)_{6}$$

$$\ell_{12} = \left[\begin{array}{cccc} 1 & 0 & 0 & \omega^2 \\ 0 & 0 & 1 & 0 \end{array}\right]_{268} = \left[\begin{array}{cccc} 1 & 0 & 0 & 3 \\ 0 & 0 & 1 & 0 \end{array}\right]_{268} = \mathbf{Pl}(0,3,1,0,0,0)_{8}$$

$$\ell_{13} = \left[\begin{array}{cccc} 1 & 0 & 0 & \omega \\ 0 & 0 & 1 & 0 \end{array}\right]_{184} = \left[\begin{array}{cccc} 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 0 \end{array}\right]_{184} = \mathbf{Pl}(0,2,1,0,0,0)_{7}$$

$$\ell_{14} = \left[\begin{array}{cccc} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{array}\right]_{341} = \left[\begin{array}{cccc} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{array}\right]_{341} = \mathbf{Pl}(0,1,0,0,0,1)_{105}$$

$$\ell_{15} = \left[\begin{array}{cccc} 0 & 1 & 0 & \omega^2 \\ 0 & 0 & 1 & 0 \end{array}\right]_{351} = \left[\begin{array}{cccc} 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & 0 \end{array}\right]_{351} = \mathbf{Pl}(0,3,0,0,0,1)_{107}$$

$$\ell_{16} = \left[\begin{array}{cccc} 0 & 1 & 0 & \omega \\ 0 & 0 & 1 & 0 \end{array}\right]_{346} = \left[\begin{array}{cccc} 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 0 \end{array}\right]_{346} = \mathbf{Pl}(0,2,0,0,0,1)_{106}$$

$$\ell_{17} = \left[\begin{array}{cccc} 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{104} = \left[\begin{array}{cccc} 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{104} = \mathbf{Pl}(0,1,0,0,1,0)_{29}$$

$$\ell_{18} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{array}\right]_{101} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{array}\right]_{101} = \mathbf{Pl}(0,1,1,0,1,0)_{36}$$

$$\ell_{19} = \left[\begin{array}{cccc} 1 & 0 & 0 & \omega^2 \\ 0 & 0 & 1 & \omega^2 \end{array}\right]_{271} = \left[\begin{array}{cccc} 1 & 0 & 0 & 3 \\ 0 & 0 & 1 & 3 \end{array}\right]_{271} = \mathbf{Pl}(0,1,2,0,1,0)_{43}$$

$$\ell_{20} = \left[\begin{array}{cccc} 1 & 0 & 0 & \omega \\ 0 & 0 & 1 & \omega \end{array}\right]_{186} = \left[\begin{array}{cccc} 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 2 \end{array}\right]_{186} = \mathbf{Pl}(0,1,3,0,1,0)_{50}$$

$$\ell_{21} = \left[\begin{array}{cccc} 1 & 0 & \omega^2 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{272} = \left[\begin{array}{cccc} 1 & 0 & 3 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{272} = \mathbf{Pl}(0,3,0,0,1,0)_{31}$$

$$\ell_{22} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{102} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{102} = \mathbf{Pl}(0,3,3,0,1,0)_{52}$$

$$\ell_{23} = \begin{bmatrix} 1 & 0 & 0 & \omega^2 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{269} = \begin{bmatrix} 1 & 0 & 0 & 3 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{269} = \mathbf{Pl}(0,3,1,0,1,0)_{38}$$

$$\ell_{24} = \begin{bmatrix} 1 & 0 & 0 & \omega \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{187} = \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{187} = \mathbf{Pl}(0,3,2,0,1,0)_{45}$$

$$\ell_{25} = \begin{bmatrix} 1 & 0 & \omega & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{188} = \begin{bmatrix} 1 & 0 & 2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{188} = \mathbf{Pl}(0,2,0,0,1,0)_{30}$$

$$\ell_{26} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{103} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{103} = \mathbf{Pl}(0,2,2,0,1,0)_{44}$$

$$\ell_{27} = \begin{bmatrix} 1 & 0 & 0 & \omega^2 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{270} = \begin{bmatrix} 1 & 0 & 0 & 3 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{270} = \mathbf{Pl}(0,2,3,0,1,0)_{51}$$

$$\ell_{28} = \begin{bmatrix} 1 & 0 & 0 & \omega \\ 0 & 0 & 1 & 1 \end{bmatrix}_{185} = \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{185} = \mathbf{Pl}(0,2,1,0,1,0)_{37}$$

$$\ell_{29} = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{345} = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{345} = \mathbf{Pl}(0,1,0,1,0,0)_{13}$$

$$\ell_{30} = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{342} = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{342} = \mathbf{Pl}(0,1,0,1,0,1)_{133}$$

$$\ell_{31} = \begin{bmatrix} 0 & 1 & 0 & \omega^2 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{354} = \begin{bmatrix} 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{354} = \mathbf{Pl}(0,3,0,3,0,1)_{149}$$

$$\ell_{32} = \begin{bmatrix} 0 & 1 & 0 & \omega \\ 0 & 0 & 1 & \omega \end{bmatrix}_{348} = \begin{bmatrix} 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{348} = \mathbf{Pl}(0,2,0,2,0,1)_{141}$$

$$\ell_{33} = \begin{bmatrix} 0 & 1 & \omega^2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{355} = \begin{bmatrix} 0 & 1 & 3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{355} = \mathbf{Pl}(0,3,0,1,0,0)_{15}$$

$$\ell_{34} = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{343} = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{343} = \mathbf{Pl}(0,1,0,2,0,1)_{140}$$

$$\ell_{35} = \begin{bmatrix} 0 & 1 & 0 & \omega^2 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{352} = \begin{bmatrix} 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{352} = \mathbf{Pl}(0,3,0,1,0,1)_{135}$$

$$\ell_{36} = \begin{bmatrix} 0 & 1 & 0 & \omega \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{349} = \begin{bmatrix} 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{349} = \mathbf{Pl}(0,2,0,3,0,1)_{148}$$

$$\ell_{37} = \begin{bmatrix} 0 & 1 & \omega & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{350} = \begin{bmatrix} 0 & 1 & 2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{350} = \mathbf{Pl}(0,2,0,1,0,0)_{14}$$

$$\ell_{38} = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{344} = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{344} = \mathbf{Pl}(0,1,0,3,0,1)_{147}$$

$$\ell_{39} = \begin{bmatrix} 0 & 1 & 0 & \omega^2 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{353} = \begin{bmatrix} 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{353} = \mathbf{Pl}(0,3,0,2,0,1)_{142}$$

$$\ell_{40} = \begin{bmatrix} 0 & 1 & 0 & \omega \\ 0 & 0 & 1 & 1 \end{bmatrix}_{347} = \begin{bmatrix} 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{347} = \mathbf{Pl}(0,2,0,1,0,1)_{134}$$

Rank of lines: (16, 336, 20, 17, 19, 18, 340, 337, 339, 338, 356, 100, 268, 184, 341, 351, 346, 104, 101, 271, 186, 272, 102, 269, 187, 188, 103, 270, 185, 345, 342, 354, 348, 355, 343, 352, 349, 350, 344, 353, 347)
Rank of points on Klein quadric: (2, 101, 25, 32, 39, 46, 9, 129, 143, 136, 1, 6, 8, 7, 105, 107, 106, 29, 36, 43, 50, 31, 52, 38, 45, 30, 44, 51, 37, 13, 133, 149, 141, 15, 140, 135, 148, 14, 147, 142, 134)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 0 Double points:
The double points on the surface are:

Single Points

The surface has 0 single points:
The single points on the surface are:

The single points on the surface are:

Points on surface but on no line

The surface has 0 points not on any line:

	0	1	2	3	4	5	6	7	8	9

The points on the surface but not on lines are:

Line Intersection Graph

```
    0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
 0 |0 1 1 1 1 1 1 0 0 0 0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  0  0  0
 1 |1 0 0 0 0 0 1 1 1 1 1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1
 2 |1 0 0 1 1 1 1 0 0 0 1  1  1  1  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  1  0  0  0  1  0  0  0
 3 |1 0 1 0 1 1 0 1 0 0 1  1  1  1  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  0  1  0  0  0  0  1  0  0  0  0  1
 4 |1 0 1 1 0 1 0 0 1 0 1  1  1  1  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  0  0  1  0  0  0  0  1  0  1  0  0
 5 |1 0 1 1 1 0 0 0 0 1 1  1  1  1  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  1  0  1  0  0  0  0  1  0
 6 |0 1 1 0 0 0 0 1 1 1 1  0  0  0  1  1  1  0  0  0  1  0  0  0  1  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1
 7 |0 1 0 1 0 0 1 0 1 1 1  0  0  0  1  1  1  0  1  0  0  0  0  1  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  1
 8 |0 1 0 0 1 0 1 1 0 1 1  0  0  0  1  1  1  0  0  1  0  0  0  0  1  0  1  0  0  1  1  1  1  1  1  1  1  1  1  1  1
 9 |0 1 0 0 0 1 1 1 1 0 1  0  0  0  1  1  1  0  0  0  1  0  1  0  0  0  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1
10 |1 1 1 1 1 1 1 1 1 1 0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
11 |1 1 1 1 1 1 0 0 0 0 1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  0  0  0  0
12 |1 1 1 1 1 1 0 0 0 0 1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  0  0  0  0
13 |1 1 1 1 1 1 0 0 0 0 1  1  1  0  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  0  0  0  0
14 |1 1 0 0 0 0 1 1 1 1 1  1  1  1  0  1  1  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1
15 |1 1 0 0 0 0 1 1 1 1 1  1  1  1  1  0  1  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1
16 |1 1 0 0 0 0 1 1 1 1 1  1  1  1  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1
17 |1 0 1 1 1 1 1 0 0 0 1  1  1  1  0  0  0  0  1  1  1  1  1  1  1  1  1  1  1  0  0  0  1  0  0  0  1  0  0  0
18 |1 0 1 1 1 1 0 1 0 0 1  1  1  1  0  0  0  1  0  1  1  1  1  1  1  1  1  1  1  0  1  0  0  0  0  1  0  0  0  0  1
19 |1 0 1 1 1 1 0 0 1 0 1  1  1  1  0  0  0  1  1  0  1  1  1  1  1  1  1  1  1  0  0  1  0  0  0  0  1  0  1  0  0
20 |1 0 1 1 1 1 0 0 0 1 1  1  1  1  0  0  0  1  1  1  0  1  1  1  1  1  1  1  1  0  0  0  1  0  1  0  0  0  0  1  0
21 |1 0 1 1 1 1 1 0 0 0 1  1  1  1  0  0  0  1  1  1  1  0  1  1  1  1  1  1  1  0  0  0  1  0  0  0  1  0  0  0
22 |1 0 1 1 1 1 0 0 0 1 1  1  1  1  0  0  0  1  1  1  1  1  0  1  1  1  1  1  1  0  0  0  1  0  1  0  0  0  0  1  0
23 |1 0 1 1 1 1 0 1 0 0 1  1  1  1  0  0  0  1  1  1  1  1  1  0  1  1  1  1  1  0  1  0  0  0  0  1  0  0  0  0  1
24 |1 0 1 1 1 1 0 0 1 0 1  1  1  1  0  0  0  1  1  1  1  1  1  1  0  1  1  1  1  0  0  1  0  0  0  0  1  0  1  0  0
25 |1 0 1 1 1 1 1 0 0 0 1  1  1  1  0  0  0  1  1  1  1  1  1  1  1  0  1  1  1  0  0  0  1  0  0  0  1  0  0  0
26 |1 0 1 1 1 1 0 0 1 0 1  1  1  1  0  0  0  1  1  1  1  1  1  1  1  1  0  1  1  0  0  1  0  0  0  0  1  0  1  0  0
27 |1 0 1 1 1 1 0 0 0 1 1  1  1  1  0  0  0  1  1  1  1  1  1  1  1  1  1  0  1  0  0  0  1  0  1  0  0  0  0  1  0
28 |1 0 1 1 1 1 0 1 0 0 1  1  1  1  0  0  0  1  1  1  1  1  1  1  1  1  1  1  0  0  1  0  0  0  0  1  0  0  0  0  1
29 |0 1 1 0 0 0 1 1 1 1 1  0  0  0  1  1  1  0  0  0  1  0  0  0  1  0  0  0  1  0  1  1  1  1  1  1  1  1  1  1  1
30 |0 1 0 1 0 0 1 1 1 1 1  0  0  0  1  1  1  0  1  0  1  0  0  0  1  0  0  0  1  1  0  1  1  1  1  1  1  1  1  1  1
31 |0 1 0 0 1 0 1 1 1 1 1  0  0  0  1  1  1  0  0  1  0  1  0  1  0  0  1  0  0  1  1  0  1  1  1  1  1  1  1  1  1
32 |0 1 0 0 0 1 1 1 1 1 1  0  0  0  1  1  1  0  0  0  1  0  1  0  0  0  1  0  1  1  1  0  1  1  1  1  1  1  1  1  1
33 |0 1 1 0 0 0 1 1 1 1 1  0  0  0  1  1  1  0  0  0  1  0  0  0  1  0  0  0  1  1  1  1  0  1  1  1  1  1  1  1  1
34 |0 1 0 0 0 1 1 1 1 1 1  0  0  0  1  1  1  0  0  0  1  0  1  0  0  0  1  0  1  1  1  1  1  0  1  1  1  1  1  1  1
35 |0 1 0 1 0 0 1 1 1 1 1  0  0  0  1  1  1  0  1  0  0  0  0  1  0  0  0  1  1  1  1  1  1  1  0  1  1  1  1  1  1
36 |0 1 0 0 1 0 1 1 1 1 1  0  0  0  1  1  1  0  0  1  0  1  0  1  0  0  1  0  0  1  1  1  1  1  1  0  1  1  1  1  1
37 |0 1 1 0 0 0 1 1 1 1 1  0  0  0  1  1  1  0  0  0  1  0  0  0  1  0  0  0  1  1  1  1  1  1  1  1  0  1  1  1  1
38 |0 1 0 0 1 0 1 1 1 1 1  0  0  0  1  1  1  0  0  1  0  1  0  1  0  0  1  0  1  1  1  1  1  1  1  1  1  0  1  1
39 |0 1 0 0 0 1 1 1 1 1 1  0  0  0  1  1  1  0  0  0  1  0  1  0  0  0  1  0  1  1  1  1  1  1  1  1  1  1  0  1
40 |0 1 0 1 0 0 1 1 1 1 1  0  0  0  1  1  1  0  1  0  0  0  0  1  0  0  0  1  1  1  1  1  1  1  1  1  1  1  1  0
```

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}
in point	P_2	P_0	P_0	P_0	P_0	P_2	P_2	P_2	P_2	P_2	P_2	P_2	P_8	P_8	P_8	P_8	P_9	P_9	P_9	P_9	P_{10}	P_{10}

Line 1 intersects

Line	ℓ_0	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}	ℓ_{37}
in point	P_2	P_1	P_1	P_1	P_1	P_2	P_2	P_2	P_2	P_2	P_2	P_2	P_{11}	P_{11}	P_{11}	P_{11}	P_{15}	P_{15}	P_{15}	P_{15}	P_{19}

Line 2 intersects

Line	ℓ_0	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}	ℓ_{28}
in point	P_0	P_0	P_0	P_0	P_3	P_3	P_{23}	P_{24}	P_{25}	P_3	P_{23}	P_{24}	P_{25}	P_3	P_{23}	P_{24}	P_{25}	P_3	P_{23}	P_{24}	P_{25}

Line 3 intersects

Line	ℓ_0	ℓ_2	ℓ_4	ℓ_5	ℓ_7	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}
in point	P_0	P_0	P_0	P_0	P_{38}	P_{38}	P_{39}	P_{40}	P_{41}	P_{39}	P_{38}	P_{41}	P_{40}	P_{40}	P_{41}	P_{38}	P_{39}	P_{41}	P_{40}	P_{39}

Line 4 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_5	ℓ_8	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}
in point	P_0	P_0	P_0	P_0	P_{53}	P_{53}	P_{54}	P_{55}	P_{56}	P_{55}	P_{56}	P_{53}	P_{54}	P_{56}	P_{55}	P_{54}	P_{53}	P_{54}	P_{53}	P_{56}

Line 5 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}
in point	P_0	P_0	P_0	P_0	P_{69}	P_{69}	P_{70}	P_{71}	P_{72}	P_{72}	P_{71}	P_{70}	P_{69}	P_{70}	P_{69}	P_{72}	P_{71}	P_{71}	P_{72}	P_{69}

Line 6 intersects

Line	ℓ_1	ℓ_2	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{21}	ℓ_{25}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}	ℓ_{37}
in point	P_1	P_3	P_1	P_1	P_1	P_3	P_{26}	P_{30}	P_{34}	P_3	P_3	P_3	P_3	P_{26}	P_{30}	P_{34}	P_3	P_{26}	P_{30}	P_{34}	P_3

Line 7 intersects

Line	ℓ_1	ℓ_3	ℓ_6	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{18}	ℓ_{23}	ℓ_{28}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}
in point	P_1	P_{38}	P_1	P_1	P_1	P_{38}	P_{42}	P_{45}	P_{49}	P_{38}	P_{38}	P_{38}	P_{42}	P_{38}	P_{49}	P_{45}	P_{45}	P_{49}	P_{38}	P_{42}

Line 8 intersects

Line	ℓ_1	ℓ_4	ℓ_6	ℓ_7	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{19}	ℓ_{24}	ℓ_{26}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}
in point	P_1	P_{53}	P_1	P_1	P_1	P_{53}	P_{57}	P_{61}	P_{65}	P_{53}	P_{53}	P_{53}	P_{61}	P_{65}	P_{53}	P_{57}	P_{65}	P_{61}	P_{57}	P_{53}

Line 9 intersects

Line	ℓ_1	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{20}	ℓ_{22}	ℓ_{27}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}
in point	P_1	P_{69}	P_1	P_1	P_1	P_{69}	P_{73}	P_{77}	P_{81}	P_{69}	P_{69}	P_{69}	P_{81}	P_{77}	P_{73}	P_{69}	P_{73}	P_{69}	P_{81}	P_{77}

Line 10 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}
in point	P_2	P_2	P_3	P_{38}	P_{53}	P_{69}	P_3	P_{38}	P_{53}	P_{69}	P_2	P_2	P_2	P_2	P_2	P_2	P_3	P_{38}	P_{53}	P_{69}	P_3

Line 11 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_{10}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{2}
in point	P_2	P_2	P_{23}	P_{39}	P_{54}	P_{70}	P_2	P_2	P_2	P_2	P_2	P_2	P_{39}	P_{23}	P_{70}	P_{54}	P_{70}	P_{23}	P_{54}	P_{39}	$P_{}$

Line 12 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_{10}	ℓ_{11}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{2}
in point	P_2	P_2	P_{24}	P_{40}	P_{55}	P_{71}	P_2	P_2	P_2	P_2	P_2	P_2	P_{55}	P_{71}	P_{24}	P_{40}	P_{40}	P_{55}	P_{24}	P_{71}	$P_{}$

Line 13 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{2}
in point	P_2	P_2	P_{25}	P_{41}	P_{56}	P_{72}	P_2	P_2	P_2	P_2	P_2	P_2	P_{72}	P_{56}	P_{41}	P_{25}	P_{56}	P_{41}	P_{72}	P_{25}	$P_{}$

Line 14 intersects

Line	ℓ_0	ℓ_1	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{15}	ℓ_{16}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}	ℓ_{3}
in point	P_2	P_2	P_{26}	P_{42}	P_{57}	P_{73}	P_2	P_2	P_2	P_2	P_2	P_2	P_{42}	P_{26}	P_{73}	P_{57}	P_{73}	P_{26}	P_{57}	P_{42}	$P_{}$

Line 15 intersects

Line	ℓ_0	ℓ_1	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{16}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}	ℓ_3
in point	P_2	P_2	P_{30}	P_{45}	P_{61}	P_{77}	P_2	P_2	P_2	P_2	P_2	P_2	P_{61}	P_{77}	P_{30}	P_{45}	P_{45}	P_{61}	P_{30}	P_{77}	P

Line 16 intersects

Line	ℓ_0	ℓ_1	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}	ℓ_3
in point	P_2	P_2	P_{34}	P_{49}	P_{65}	P_{81}	P_2	P_2	P_2	P_2	P_2	P_2	P_{81}	P_{65}	P_{49}	P_{34}	P_{65}	P_{49}	P_{81}	P_{34}	P

Line 17 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}	ℓ_{28}
in point	P_8	P_3	P_{39}	P_{55}	P_{72}	P_3	P_3	P_{39}	P_{55}	P_{72}	P_8	P_8	P_8	P_3	P_{55}	P_{72}	P_{39}	P_3	P_{72}	P_{39}	P_{55}

Line 18 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_7	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}
in point	P_8	P_{23}	P_{38}	P_{56}	P_{71}	P_{38}	P_{38}	P_{23}	P_{71}	P_{56}	P_8	P_8	P_8	P_{56}	P_{23}	P_{38}	P_{71}	P_{71}	P_{23}	P_{56}

Line 19 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_8	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}
in point	P_8	P_{24}	P_{41}	P_{53}	P_{70}	P_{53}	P_{53}	P_{70}	P_{24}	P_{41}	P_8	P_8	P_8	P_{70}	P_{41}	P_{24}	P_{53}	P_{41}	P_{53}	P_{24}

Line 20 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}
in point	P_8	P_{25}	P_{40}	P_{54}	P_{69}	P_{69}	P_{69}	P_{54}	P_{40}	P_{25}	P_8	P_8	P_8	P_{40}	P_{69}	P_{54}	P_{25}	P_{54}	P_{40}	P_{69}

Line 21 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}	ℓ_{28}
in point	P_9	P_3	P_{40}	P_{56}	P_{70}	P_3	P_3	P_{70}	P_{40}	P_{56}	P_3	P_{56}	P_{70}	P_{40}	P_9	P_9	P_9	P_3	P_{40}	P_{56}	P_{70}

Line 22 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}
in point	P_9	P_{23}	P_{41}	P_{55}	P_{69}	P_{69}	P_{69}	P_{23}	P_{55}	P_{41}	P_{55}	P_{23}	P_{41}	P_{69}	P_9	P_9	P_9	P_{41}	P_{23}	P_{69}

Line 23 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_7	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{24}	ℓ_{25}	ℓ_{26}	ℓ_{27}
in point	P_9	P_{24}	P_{38}	P_{54}	P_{72}	P_{38}	P_{38}	P_{54}	P_{24}	P_{72}	P_{72}	P_{38}	P_{24}	P_{54}	P_9	P_9	P_9	P_{54}	P_{72}	P_{24}

Line 24 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_8	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{25}	ℓ_{26}	ℓ_{27}
in point	P_9	P_{25}	P_{39}	P_{53}	P_{71}	P_{53}	P_{53}	P_{39}	P_{71}	P_{25}	P_{39}	P_{71}	P_{53}	P_{25}	P_9	P_9	P_9	P_{71}	P_{53}	P_{39}

Line 25 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{26}	ℓ_{27}
in point	P_{10}	P_3	P_{41}	P_{54}	P_{71}	P_3	P_3	P_{54}	P_{71}	P_{41}	P_3	P_{71}	P_{41}	P_{54}	P_3	P_{41}	P_{54}	P_{71}	P_{10}	P_{10}

Line 26 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_8	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{27}
in point	P_{10}	P_{23}	P_{40}	P_{53}	P_{72}	P_{53}	P_{53}	P_{23}	P_{40}	P_{72}	P_{72}	P_{23}	P_{53}	P_{40}	P_{40}	P_{23}	P_{72}	P_{53}	P_{10}	P_{10}

Line 27 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}
in point	P_{10}	P_{24}	P_{39}	P_{56}	P_{69}	P_{69}	P_{69}	P_{39}	P_{24}	P_{56}	P_{39}	P_{56}	P_{24}	P_{69}	P_{56}	P_{69}	P_{24}	P_{39}	P_{10}	P_{10}

Line 28 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_7	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}
in point	P_{10}	P_{25}	P_{38}	P_{55}	P_{70}	P_{38}	P_{38}	P_{70}	P_{55}	P_{25}	P_{55}	P_{38}	P_{70}	P_{25}	P_{70}	P_{55}	P_{38}	P_{25}	P_{10}	P_{1}

Line 29 intersects

Line	ℓ_1	ℓ_2	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{21}	ℓ_{25}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}	ℓ_{3}
in point	P_{11}	P_3	P_3	P_{42}	P_{61}	P_{81}	P_3	P_{42}	P_{61}	P_{81}	P_3	P_3	P_3	P_{11}	P_{11}	P_{11}	P_3	P_{61}	P_{81}	P_{42}	

Line 30 intersects

Line	ℓ_1	ℓ_3	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{18}	ℓ_{23}	ℓ_{28}	ℓ_{29}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}
in point	P_{11}	P_{38}	P_{26}	P_{38}	P_{65}	P_{77}	P_{38}	P_{26}	P_{77}	P_{65}	P_{38}	P_{38}	P_{38}	P_{11}	P_{11}	P_{11}	P_{65}	P_{26}	P_{38}	P_{7}

Line 31 intersects

Line	ℓ_1	ℓ_4	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{19}	ℓ_{24}	ℓ_{26}	ℓ_{29}	ℓ_{30}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}
in point	P_{11}	P_{53}	P_{30}	P_{49}	P_{53}	P_{73}	P_{53}	P_{53}	P_{30}	P_{49}	P_{53}	P_{53}	P_{53}	P_{11}	P_{11}	P_{11}	P_{73}	P_{49}	P_{30}	P_{5}

Line 32 intersects

Line	ℓ_1	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{20}	ℓ_{22}	ℓ_{27}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{36}
in point	P_{11}	P_{69}	P_{34}	P_{45}	P_{57}	P_{69}	P_{69}	P_{57}	P_{45}	P_{34}	P_{69}	P_{69}	P_{69}	P_{11}	P_{11}	P_{11}	P_{45}	P_{69}	P_{57}	P_{3}

Line 33 intersects

Line	ℓ_1	ℓ_2	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{21}	ℓ_{25}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{34}	ℓ_{35}	ℓ_{36}	ℓ_{3}
in point	P_{15}	P_3	P_3	P_{45}	P_{65}	P_{73}	P_3	P_{73}	P_{45}	P_{65}	P_3	P_3	P_3	P_3	P_{65}	P_{73}	P_{45}	P_{15}	P_{15}	P_{15}	

Line 34 intersects

Line	ℓ_1	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{20}	ℓ_{22}	ℓ_{27}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{35}	ℓ_{36}
in point	P_{15}	P_{69}	P_{26}	P_{49}	P_{61}	P_{69}	P_{69}	P_{26}	P_{61}	P_{49}	P_{69}	P_{69}	P_{69}	P_{61}	P_{26}	P_{49}	P_{69}	P_{15}	P_{15}	P_{1}

Line 35 intersects

Line	ℓ_1	ℓ_3	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{18}	ℓ_{23}	ℓ_{28}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{36}
in point	P_{15}	P_{38}	P_{30}	P_{38}	P_{57}	P_{81}	P_{38}	P_{57}	P_{30}	P_{81}	P_{38}	P_{38}	P_{38}	P_{81}	P_{38}	P_{30}	P_{57}	P_{15}	P_{15}	P_{1}

Line 36 intersects

Line	ℓ_1	ℓ_4	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{19}	ℓ_{24}	ℓ_{26}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}
in point	P_{15}	P_{53}	P_{34}	P_{42}	P_{53}	P_{77}	P_{53}	P_{42}	P_{77}	P_{34}	P_{53}	P_{53}	P_{53}	P_{42}	P_{77}	P_{53}	P_{34}	P_{15}	P_{15}	P_{1}

Line 37 intersects

Line	ℓ_1	ℓ_2	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{21}	ℓ_{25}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}	ℓ_{3}
in point	P_{19}	P_3	P_3	P_{49}	P_{57}	P_{77}	P_3	P_{57}	P_{77}	P_{49}	P_3	P_3	P_3	P_3	P_{77}	P_{49}	P_{57}	P_3	P_{49}	P_{57}	

Line 38 intersects

Line	ℓ_1	ℓ_4	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{19}	ℓ_{24}	ℓ_{26}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}
in point	P_{19}	P_{53}	P_{26}	P_{45}	P_{53}	P_{81}	P_{53}	P_{26}	P_{45}	P_{81}	P_{53}	P_{53}	P_{53}	P_{81}	P_{26}	P_{53}	P_{45}	P_{45}	P_{26}	P_{8}

Line 39 intersects

Line	ℓ_1	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{20}	ℓ_{22}	ℓ_{27}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}
in point	P_{19}	P_{69}	P_{30}	P_{42}	P_{65}	P_{69}	P_{69}	P_{42}	P_{30}	P_{65}	P_{69}	P_{69}	P_{69}	P_{42}	P_{65}	P_{30}	P_{69}	P_{65}	P_{69}	P_{3}

Line 40 intersects

Line	ℓ_1	ℓ_3	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{18}	ℓ_{23}	ℓ_{28}	ℓ_{29}	ℓ_{30}	ℓ_{31}	ℓ_{32}	ℓ_{33}	ℓ_{34}	ℓ_{35}
in point	P_{19}	P_{38}	P_{34}	P_{38}	P_{61}	P_{73}	P_{38}	P_{73}	P_{61}	P_{34}	P_{38}	P_{38}	P_{38}	P_{61}	P_{38}	P_{73}	P_{34}	P_{73}	P_{61}	P_{3}

The surface has 37 points:
The points on the surface are:

$0 : P_0 = (1, 0, 0, 0)$

$1 : P_1 = (0, 1, 0, 0)$

$2 : P_2 = (0, 0, 1, 0)$

$3 : P_3 = (0, 0, 0, 1)$

$4 : P_8 = (1, 0, 1, 0)$

$5 : P_9 = (2, 0, 1, 0)$

$6 : P_{10} = (3, 0, 1, 0)$

$7 : P_{11} = (0, 1, 1, 0)$

$8 : P_{15} = (0, 2, 1, 0)$

$9 : P_{19} = (0, 3, 1, 0)$

$10 : P_{23} = (1, 0, 0, 1)$

$11 : P_{24} = (2, 0, 0, 1)$

$12 : P_{25} = (3, 0, 0, 1)$

$13 : P_{26} = (0, 1, 0, 1)$

$14 : P_{30} = (0, 2, 0, 1)$

$15 : P_{34} = (0, 3, 0, 1)$

$16 : P_{38} = (0, 0, 1, 1)$

$17 : P_{39} = (1, 0, 1, 1)$

$18 : P_{40} = (2, 0, 1, 1)$

$19 : P_{41} = (3, 0, 1, 1)$

$20 : P_{42} = (0, 1, 1, 1)$

$21 : P_{45} = (0, 2, 1, 1)$

$22 : P_{49} = (0, 3, 1, 1)$

$23 : P_{53} = (0, 0, 2, 1)$

$24 : P_{54} = (1, 0, 2, 1)$

$25 : P_{55} = (2, 0, 2, 1)$

$26 : P_{56} = (3, 0, 2, 1)$

$27 : P_{57} = (0, 1, 2, 1)$

$28 : P_{61} = (0, 2, 2, 1)$

$29 : P_{65} = (0, 3, 2, 1)$

$30 : P_{69} = (0, 0, 3, 1)$

$31 : P_{70} = (1, 0, 3, 1)$

$32 : P_{71} = (2, 0, 3, 1)$

$33 : P_{72} = (3, 0, 3, 1)$

$34 : P_{73} = (0, 1, 3, 1)$

$35 : P_{77} = (0, 2, 3, 1)$

$36 : P_{81} = (0, 3, 3, 1)$