

# Rank-21 over GF(4)

January 15, 2021

## The equation

The equation of the surface is :

$$X_0^3 + X_1^3 = 0$$

( 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 )

The point rank of the equation over GF(4) is 21

## General information

Number of lines	61
Number of points	53
Number of singular points	5
Number of Eckardt points	0
Number of double points	0
Number of single points	0
Number of points off lines	0
Number of Hesse planes	0
Number of axes	0
Type of points on lines	$5^{61}$
Type of lines on points	$13^5, 5^{48}$

## Singular Points

The surface has 5 singular points:

$$0 : P_2 = \mathbf{P}(0, 0, 1, 0) = \mathbf{P}(0, 0, 1, 0)$$

$$1 : P_3 = \mathbf{P}(0, 0, 0, 1) = \mathbf{P}(0, 0, 0, 1)$$

$$2 : P_{38} = \mathbf{P}(0, 0, 1, 1) = \mathbf{P}(0, 0, 1, 1)$$

$$3 : P_{53} = \mathbf{P}(0, 0, \omega, 1) = \mathbf{P}(0, 0, 2, 1)$$

$$4 : P_{69} = \mathbf{P}(0, 0, \omega^2, 1) = \mathbf{P}(0, 0, 3, 1)$$

## The 61 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \left[ \begin{array}{cccc} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{array} \right]_{37} = \left[ \begin{array}{cccc} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{array} \right]_{37} = \mathbf{Pl}(0, 0, 1, 0, 0, 1)_{108}$$

$$\begin{aligned}
\ell_1 &= \begin{bmatrix} 1 & \omega & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{58} = \begin{bmatrix} 1 & 2 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{58} = \mathbf{Pl}(0, 0, 3, 0, 0, 1)_{122} \\
\ell_2 &= \begin{bmatrix} 1 & \omega^2 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{79} = \begin{bmatrix} 1 & 3 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{79} = \mathbf{Pl}(0, 0, 2, 0, 0, 1)_{115} \\
\ell_3 &= \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{356} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{356} = \mathbf{Pl}(0, 1, 0, 0, 0, 0)_1 \\
\ell_4 &= \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{121} = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{121} = \mathbf{Pl}(0, 1, 1, 0, 0, 1)_{112} \\
\ell_5 &= \begin{bmatrix} 1 & \omega^2 & 0 & \omega^2 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{331} = \begin{bmatrix} 1 & 3 & 0 & 3 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{331} = \mathbf{Pl}(0, 1, 2, 0, 0, 1)_{119} \\
\ell_6 &= \begin{bmatrix} 1 & \omega & 0 & \omega \\ 0 & 0 & 1 & 0 \end{bmatrix}_{226} = \begin{bmatrix} 1 & 2 & 0 & 2 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{226} = \mathbf{Pl}(0, 1, 3, 0, 0, 1)_{126} \\
\ell_7 &= \begin{bmatrix} 1 & \omega & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{142} = \begin{bmatrix} 1 & 2 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{142} = \mathbf{Pl}(0, 3, 3, 0, 0, 1)_{128} \\
\ell_8 &= \begin{bmatrix} 1 & 1 & 0 & \omega^2 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{289} = \begin{bmatrix} 1 & 1 & 0 & 3 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{289} = \mathbf{Pl}(0, 3, 1, 0, 0, 1)_{114} \\
\ell_9 &= \begin{bmatrix} 1 & \omega^2 & 0 & \omega \\ 0 & 0 & 1 & 0 \end{bmatrix}_{247} = \begin{bmatrix} 1 & 3 & 0 & 2 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{247} = \mathbf{Pl}(0, 3, 2, 0, 0, 1)_{121} \\
\ell_{10} &= \begin{bmatrix} 1 & \omega^2 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{163} = \begin{bmatrix} 1 & 3 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{163} = \mathbf{Pl}(0, 2, 2, 0, 0, 1)_{120} \\
\ell_{11} &= \begin{bmatrix} 1 & \omega & 0 & \omega^2 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{310} = \begin{bmatrix} 1 & 2 & 0 & 3 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{310} = \mathbf{Pl}(0, 2, 3, 0, 0, 1)_{127} \\
\ell_{12} &= \begin{bmatrix} 1 & 1 & 0 & \omega \\ 0 & 0 & 1 & 0 \end{bmatrix}_{205} = \begin{bmatrix} 1 & 1 & 0 & 2 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{205} = \mathbf{Pl}(0, 2, 1, 0, 0, 1)_{113} \\
\ell_{13} &= \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{41} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{41} = \mathbf{Pl}(0, 0, 0, 1, 1, 0)_{53} \\
\ell_{14} &= \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{38} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{38} = \mathbf{Pl}(0, 0, 1, 1, 1, 1)_{198} \\
\ell_{15} &= \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{40} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{40} = \mathbf{Pl}(0, 0, 2, 3, 3, 1)_{325} \\
\ell_{16} &= \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{39} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{39} = \mathbf{Pl}(0, 0, 3, 2, 2, 1)_{272} \\
\ell_{17} &= \begin{bmatrix} 1 & \omega^2 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{83} = \begin{bmatrix} 1 & 3 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{83} = \mathbf{Pl}(0, 0, 0, 3, 1, 0)_{67} \\
\ell_{18} &= \begin{bmatrix} 1 & \omega^2 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{80} = \begin{bmatrix} 1 & 3 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{80} = \mathbf{Pl}(0, 0, 1, 1, 2, 1)_{258} \\
\ell_{19} &= \begin{bmatrix} 1 & \omega^2 & 0 & 0 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{82} = \begin{bmatrix} 1 & 3 & 0 & 0 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{82} = \mathbf{Pl}(0, 0, 2, 3, 1, 1)_{205} \\
\ell_{20} &= \begin{bmatrix} 1 & \omega^2 & 0 & 0 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{81} = \begin{bmatrix} 1 & 3 & 0 & 0 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{81} = \mathbf{Pl}(0, 0, 3, 2, 3, 1)_{332} \\
\ell_{21} &= \begin{bmatrix} 1 & \omega & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{62} = \begin{bmatrix} 1 & 2 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{62} = \mathbf{Pl}(0, 0, 0, 2, 1, 0)_{60}
\end{aligned}$$

$$\begin{aligned}
\ell_{22} &= \begin{bmatrix} 1 & \omega & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{59} = \begin{bmatrix} 1 & 2 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{59} = \mathbf{Pl}(0, 0, 1, 1, 3, 1)_{318} \\
\ell_{23} &= \begin{bmatrix} 1 & \omega & 0 & 0 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{61} = \begin{bmatrix} 1 & 2 & 0 & 0 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{61} = \mathbf{Pl}(0, 0, 2, 3, 2, 1)_{265} \\
\ell_{24} &= \begin{bmatrix} 1 & \omega & 0 & 0 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{60} = \begin{bmatrix} 1 & 2 & 0 & 0 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{60} = \mathbf{Pl}(0, 0, 3, 2, 1, 1)_{212} \\
\ell_{25} &= \begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{125} = \begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{125} = \mathbf{Pl}(0, 1, 0, 1, 1, 0)_{57} \\
\ell_{26} &= \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{122} = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{122} = \mathbf{Pl}(0, 1, 1, 1, 1, 1)_{202} \\
\ell_{27} &= \begin{bmatrix} 1 & 1 & 0 & \omega^2 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{292} = \begin{bmatrix} 1 & 1 & 0 & 3 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{292} = \mathbf{Pl}(0, 3, 2, 3, 3, 1)_{331} \\
\ell_{28} &= \begin{bmatrix} 1 & 1 & 0 & \omega \\ 0 & 0 & 1 & \omega \end{bmatrix}_{207} = \begin{bmatrix} 1 & 1 & 0 & 2 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{207} = \mathbf{Pl}(0, 2, 3, 2, 2, 1)_{277} \\
\ell_{29} &= \begin{bmatrix} 1 & \omega^2 & \omega^2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{335} = \begin{bmatrix} 1 & 3 & 3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{335} = \mathbf{Pl}(0, 3, 0, 3, 1, 0)_{73} \\
\ell_{30} &= \begin{bmatrix} 1 & \omega^2 & 0 & \omega^2 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{332} = \begin{bmatrix} 1 & 3 & 0 & 3 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{332} = \mathbf{Pl}(0, 1, 1, 1, 2, 1)_{262} \\
\ell_{31} &= \begin{bmatrix} 1 & \omega^2 & 0 & \omega \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{250} = \begin{bmatrix} 1 & 3 & 0 & 2 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{250} = \mathbf{Pl}(0, 3, 2, 3, 1, 1)_{211} \\
\ell_{32} &= \begin{bmatrix} 1 & \omega^2 & 0 & 1 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{165} = \begin{bmatrix} 1 & 3 & 0 & 1 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{165} = \mathbf{Pl}(0, 2, 3, 2, 3, 1)_{337} \\
\ell_{33} &= \begin{bmatrix} 1 & \omega & \omega & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{230} = \begin{bmatrix} 1 & 2 & 2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{230} = \mathbf{Pl}(0, 2, 0, 2, 1, 0)_{65} \\
\ell_{34} &= \begin{bmatrix} 1 & \omega & 0 & \omega \\ 0 & 0 & 1 & 1 \end{bmatrix}_{227} = \begin{bmatrix} 1 & 2 & 0 & 2 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{227} = \mathbf{Pl}(0, 1, 1, 1, 3, 1)_{322} \\
\ell_{35} &= \begin{bmatrix} 1 & \omega & 0 & 1 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{145} = \begin{bmatrix} 1 & 2 & 0 & 1 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{145} = \mathbf{Pl}(0, 3, 2, 3, 2, 1)_{271} \\
\ell_{36} &= \begin{bmatrix} 1 & \omega & 0 & \omega^2 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{312} = \begin{bmatrix} 1 & 2 & 0 & 3 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{312} = \mathbf{Pl}(0, 2, 3, 2, 1, 1)_{217} \\
\ell_{37} &= \begin{bmatrix} 1 & \omega & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{146} = \begin{bmatrix} 1 & 2 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{146} = \mathbf{Pl}(0, 1, 0, 2, 1, 0)_{64} \\
\ell_{38} &= \begin{bmatrix} 1 & \omega & 0 & \omega \\ 0 & 0 & 1 & \omega \end{bmatrix}_{228} = \begin{bmatrix} 1 & 2 & 0 & 2 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{228} = \mathbf{Pl}(0, 1, 3, 2, 1, 1)_{216} \\
\ell_{39} &= \begin{bmatrix} 1 & \omega & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{143} = \begin{bmatrix} 1 & 2 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{143} = \mathbf{Pl}(0, 3, 1, 1, 3, 1)_{324} \\
\ell_{40} &= \begin{bmatrix} 1 & \omega & 0 & \omega^2 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{313} = \begin{bmatrix} 1 & 2 & 0 & 3 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{313} = \mathbf{Pl}(0, 2, 2, 3, 2, 1)_{270} \\
\ell_{41} &= \begin{bmatrix} 1 & 1 & \omega^2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{293} = \begin{bmatrix} 1 & 1 & 3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{293} = \mathbf{Pl}(0, 3, 0, 1, 1, 0)_{59} \\
\ell_{42} &= \begin{bmatrix} 1 & 1 & 0 & \omega \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{208} = \begin{bmatrix} 1 & 1 & 0 & 2 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{208} = \mathbf{Pl}(0, 2, 2, 3, 3, 1)_{330}
\end{aligned}$$

$$\begin{aligned}
\ell_{43} &= \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{123} = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{123} = \mathbf{Pl}(0, 1, 3, 2, 2, 1)_{276} \\
\ell_{44} &= \begin{bmatrix} 1 & 1 & 0 & \omega^2 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{290} = \begin{bmatrix} 1 & 1 & 0 & 3 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{290} = \mathbf{Pl}(0, 3, 1, 1, 1, 1)_{204} \\
\ell_{45} &= \begin{bmatrix} 1 & \omega^2 & \omega & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{251} = \begin{bmatrix} 1 & 3 & 2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{251} = \mathbf{Pl}(0, 2, 0, 3, 1, 0)_{72} \\
\ell_{46} &= \begin{bmatrix} 1 & \omega^2 & 0 & \omega^2 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{333} = \begin{bmatrix} 1 & 3 & 0 & 3 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{333} = \mathbf{Pl}(0, 1, 3, 2, 3, 1)_{336} \\
\ell_{47} &= \begin{bmatrix} 1 & \omega^2 & 0 & \omega \\ 0 & 0 & 1 & 1 \end{bmatrix}_{248} = \begin{bmatrix} 1 & 3 & 0 & 2 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{248} = \mathbf{Pl}(0, 3, 1, 1, 2, 1)_{264} \\
\ell_{48} &= \begin{bmatrix} 1 & \omega^2 & 0 & 1 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{166} = \begin{bmatrix} 1 & 3 & 0 & 1 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{166} = \mathbf{Pl}(0, 2, 2, 3, 1, 1)_{210} \\
\ell_{49} &= \begin{bmatrix} 1 & \omega^2 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{167} = \begin{bmatrix} 1 & 3 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{167} = \mathbf{Pl}(0, 1, 0, 3, 1, 0)_{71} \\
\ell_{50} &= \begin{bmatrix} 1 & \omega^2 & 0 & \omega^2 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{334} = \begin{bmatrix} 1 & 3 & 0 & 3 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{334} = \mathbf{Pl}(0, 1, 2, 3, 1, 1)_{209} \\
\ell_{51} &= \begin{bmatrix} 1 & \omega^2 & 0 & \omega \\ 0 & 0 & 1 & \omega \end{bmatrix}_{249} = \begin{bmatrix} 1 & 3 & 0 & 2 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{249} = \mathbf{Pl}(0, 3, 3, 2, 3, 1)_{338} \\
\ell_{52} &= \begin{bmatrix} 1 & \omega^2 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{164} = \begin{bmatrix} 1 & 3 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{164} = \mathbf{Pl}(0, 2, 1, 1, 2, 1)_{263} \\
\ell_{53} &= \begin{bmatrix} 1 & \omega & \omega^2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{314} = \begin{bmatrix} 1 & 2 & 3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{314} = \mathbf{Pl}(0, 3, 0, 2, 1, 0)_{66} \\
\ell_{54} &= \begin{bmatrix} 1 & \omega & 0 & \omega \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{229} = \begin{bmatrix} 1 & 2 & 0 & 2 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{229} = \mathbf{Pl}(0, 1, 2, 3, 2, 1)_{269} \\
\ell_{55} &= \begin{bmatrix} 1 & \omega & 0 & 1 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{144} = \begin{bmatrix} 1 & 2 & 0 & 1 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{144} = \mathbf{Pl}(0, 3, 3, 2, 1, 1)_{218} \\
\ell_{56} &= \begin{bmatrix} 1 & \omega & 0 & \omega^2 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{311} = \begin{bmatrix} 1 & 2 & 0 & 3 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{311} = \mathbf{Pl}(0, 2, 1, 1, 3, 1)_{323} \\
\ell_{57} &= \begin{bmatrix} 1 & 1 & \omega & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{209} = \begin{bmatrix} 1 & 1 & 2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{209} = \mathbf{Pl}(0, 2, 0, 1, 1, 0)_{58} \\
\ell_{58} &= \begin{bmatrix} 1 & 1 & 0 & \omega^2 \\ 0 & 0 & 1 & \omega \end{bmatrix}_{291} = \begin{bmatrix} 1 & 1 & 0 & 3 \\ 0 & 0 & 1 & 2 \end{bmatrix}_{291} = \mathbf{Pl}(0, 3, 3, 2, 2, 1)_{278} \\
\ell_{59} &= \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & \omega^2 \end{bmatrix}_{124} = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 3 \end{bmatrix}_{124} = \mathbf{Pl}(0, 1, 2, 3, 3, 1)_{329} \\
\ell_{60} &= \begin{bmatrix} 1 & 1 & 0 & \omega \\ 0 & 0 & 1 & 1 \end{bmatrix}_{206} = \begin{bmatrix} 1 & 1 & 0 & 2 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{206} = \mathbf{Pl}(0, 2, 1, 1, 1, 1)_{203}
\end{aligned}$$

Rank of lines: ( 37, 58, 79, 356, 121, 331, 226, 142, 289, 247, 163, 310, 205, 41, 38, 40, 39, 83, 80, 82, 81, 62, 59, 61, 60, 125, 122, 292, 207, 335, 332, 250, 165, 230, 227, 145, 312, 146, 228, 143, 313, 293, 208, 123, 290, 251, 333, 248, 166, 167, ...291, 124, 206 )

Rank of points on Klein quadric: ( 108, 122, 115, 1, 112, 119, 126, 128, 114, 121, 120, 127, 113, 53, 198, 325, 272, 67, 258, 205, 332, 60, 318, 265, 212, 57, 202, 331, 277, 73, 262, 211, 337, 65, 322, 271, 217, 64, 216, 324, 270, 59, 330, 276, 204, 72, 336, 264, 210, 71, ...278, 329, 203 )

**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:

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	41	42	43	44	45	46	47						
0	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	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0						
1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0							
2	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1						
3	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	1	1	1	1	1	1	1	1	1	1	1	1	1							
4	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0				
5	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1					
6	1	1	1	1	1	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0					
7	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0					
8	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0		
9	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1			
10	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1			
11	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0					
12	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
13	1	0	0	1	1	0	0	1	0	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	0	0		
14	1	0	0	1	1	0	0	1	1	0	1	1	0	1	0	0	0	1	0	0	0	1	0	0	1	1	1	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1	0	1	1	1	1	0	0	1			
15	1	0	0	1	1	0	0	1	1	1	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	1	1	1	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1	1	1	1	1	0	0	0		
16	1	0	0	1	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	1	1	1	1	0	1	0		
17	0	0	1	1	0	1	0	0	0	0	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1		
18	0	0	1	1	0	1	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	1	1	1	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	1			
19	0	0	1	1	0	1	0	0	0	1	0	1	1	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	1	1	1	1	0	0	1	0	0	0	0	1	0	1	0	0	0	1	1	1				
20	0	0	1	1	0	1	0	0	0	0	1	1	1	1	0	0	0	0	1	0	0	0	0	1	0	0	0	1	1	1	1	1	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	1	1	1			
21	0	1	0	1	0	0	1	0	0	0	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	0	0	0	1	0	0
22	0	1	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	1	
23	0	1	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0		
24	0	1	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	1	0		
25	1	0	0	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	1	0	0	0		
26	1	0	0	1	1	1	1	1	1	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1	0	1	1	1	1	0	0	1		
27	1	0	0	1	1	1	1	1	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0		
28	1	0	0	1	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	1	1	1	0	1	0	0	0		
29	0	0	1	1	0	1	0	0	0	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	0	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1	1	1	1	1	1		
30	0	0	1	1	0	1	0	0	1	1	1	1	1	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	1	1	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	1	1	1	1		
31	0	0	1	1	0	1	0	0	0	1	0	1	1	1	1	0	0	1	0	0	0	1	0	0	0	1	0	1	1	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	1	1	1		
32	0	0	1	1	0	1	0	0	0	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	1		
33	0	1	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	0	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0		
34	0	1	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	1	1	1	1	1	0	1	0	0	0	1	0	0	0	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	1		
35	0	1	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	1	1	1	1	0	0	1	0	0	0	1	0	0	0	1	0	1	1	0	1	1	1	1	1	1	1	0	1	0	0	0	0	0		
36	0	1	0	1	0	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	1	0	0	0	1	0	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	1	0	0		
37	0	1	0	1	0	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1</																		

Neighbor sets in the line intersection graph:

Line 0 intersects

Line	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{41}$	$\ell_{42}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_5$	$P_5$	$P_5$	$P_5$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{17}$	$P_{17}$

Line 1 intersects

Line	$\ell_0$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_7$	$P_7$	$P_7$	$P_7$	$P_{14}$	$P_{14}$	$P_{14}$	$P_{14}$	$P_{16}$	$P_{16}$

Line 2 intersects

Line	$\ell_0$	$\ell_1$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{45}$	$\ell_{46}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_6$	$P_6$	$P_6$	$P_6$	$P_{13}$	$P_{13}$	$P_{13}$	$P_{13}$	$P_{18}$	$P_{18}$

Line 3 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{21}$	$\ell_{22}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_3$	$P_{38}$	$P_{53}$	$P_{69}$	$P_3$	$P_{38}$	$P_{53}$	$P_{69}$	$P_3$	$P_3$

Line 4 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{41}$	$\ell_{42}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_{27}$	$P_4$	$P_{58}$	$P_{74}$	$P_4$	$P_{27}$	$P_{74}$	$P_{58}$	$P_{74}$	$P_{74}$

Line 5 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{45}$	$\ell_{46}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_{28}$	$P_{43}$	$P_{59}$	$P_{75}$	$P_{43}$	$P_{28}$	$P_{75}$	$P_{59}$	$P_{75}$	$P_{75}$

Line 6 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_{29}$	$P_{44}$	$P_{60}$	$P_{76}$	$P_{44}$	$P_{29}$	$P_{76}$	$P_{60}$	$P_{76}$	$P_{76}$

Line 7 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_{31}$	$P_{46}$	$P_{62}$	$P_{78}$	$P_{62}$	$P_{78}$	$P_{31}$	$P_{46}$	$P_{46}$	$P_{46}$

Line 8 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{41}$	$\ell_{42}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_{32}$	$P_{47}$	$P_{63}$	$P_{79}$	$P_{63}$	$P_{79}$	$P_{32}$	$P_{47}$	$P_{47}$	$P_{47}$

Line 9 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{45}$	$\ell_{46}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_{33}$	$P_{48}$	$P_{64}$	$P_{80}$	$P_{64}$	$P_{80}$	$P_{33}$	$P_{48}$	$P_{48}$	$P_{48}$

Line 10 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{11}$	$\ell_{12}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{45}$	$\ell_{46}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_{35}$	$P_{50}$	$P_{66}$	$P_{82}$	$P_{82}$	$P_{66}$	$P_{50}$	$P_{35}$	$P_{66}$	$P_{66}$

Line 11 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{12}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_{36}$	$P_{51}$	$P_{67}$	$P_{83}$	$P_{83}$	$P_{67}$	$P_{51}$	$P_{36}$	$P_{67}$	$P_{67}$

Line 12 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{41}$	$\ell_{44}$
in point	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_2$	$P_{37}$	$P_{52}$	$P_{68}$	$P_{84}$	$P_{84}$	$P_{68}$	$P_{52}$	$P_{37}$	$P_{68}$	$P_{32}$

Line 13 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{21}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{29}$	$\ell_{33}$	$\ell_{37}$	$\ell_{41}$	$\ell_{42}$	$\ell_{43}$	$\ell_{44}$
in point	$P_5$	$P_3$	$P_{27}$	$P_{32}$	$P_{37}$	$P_5$	$P_5$	$P_5$	$P_3$	$P_3$	$P_3$	$P_{27}$	$P_{32}$	$P_{37}$	$P_3$	$P_3$	$P_3$	$P_3$	$P_{37}$	$P_{27}$	$P_{32}$

Line 14 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$	$\ell_{22}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{30}$	$\ell_{34}$	$\ell_{39}$	$\ell_{41}$	$\ell_{42}$	$\ell_{43}$	$\ell_{44}$
in point	$P_5$	$P_{38}$	$P_4$	$P_{47}$	$P_{52}$	$P_5$	$P_5$	$P_5$	$P_{38}$	$P_{38}$	$P_4$	$P_{38}$	$P_{52}$	$P_{47}$	$P_{38}$	$P_{38}$	$P_{38}$	$P_{47}$	$P_4$	$P_{52}$	$P_{32}$

Line 15 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{16}$	$\ell_{19}$	$\ell_{23}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{31}$	$\ell_{35}$	$\ell_{40}$	$\ell_{41}$	$\ell_{42}$	$\ell_{43}$	$\ell_{44}$
in point	$P_5$	$P_{53}$	$P_{58}$	$P_{63}$	$P_{68}$	$P_5$	$P_5$	$P_5$	$P_{53}$	$P_{53}$	$P_{63}$	$P_{68}$	$P_{53}$	$P_{58}$	$P_{53}$	$P_{53}$	$P_{53}$	$P_{53}$	$P_{68}$	$P_{53}$	$P_{63}$

Line 16 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{20}$	$\ell_{24}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{32}$	$\ell_{36}$	$\ell_{38}$	$\ell_{41}$	$\ell_{42}$	$\ell_{43}$	$\ell_{44}$
in point	$P_5$	$P_{69}$	$P_{74}$	$P_{79}$	$P_{84}$	$P_5$	$P_5$	$P_5$	$P_{69}$	$P_{69}$	$P_{84}$	$P_{79}$	$P_{74}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{74}$	$P_{79}$	$P_{69}$	$P_{32}$

Line 17 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{13}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{21}$	$\ell_{25}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{33}$	$\ell_{37}$	$\ell_{41}$	$\ell_{45}$	$\ell_{46}$	$\ell_{47}$
in point	$P_6$	$P_3$	$P_{28}$	$P_{33}$	$P_{35}$	$P_3$	$P_6$	$P_6$	$P_6$	$P_3$	$P_3$	$P_3$	$P_{28}$	$P_{33}$	$P_{35}$	$P_3$	$P_3$	$P_3$	$P_3$	$P_{28}$	$P_{33}$

Line 18 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{14}$	$\ell_{17}$	$\ell_{19}$	$\ell_{20}$	$\ell_{22}$	$\ell_{26}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{34}$	$\ell_{39}$	$\ell_{44}$	$\ell_{45}$	$\ell_{46}$	$\ell_{47}$
in point	$P_6$	$P_{38}$	$P_{43}$	$P_{48}$	$P_{50}$	$P_{38}$	$P_6$	$P_6$	$P_6$	$P_{38}$	$P_{38}$	$P_{43}$	$P_{38}$	$P_{50}$	$P_{48}$	$P_{38}$	$P_{38}$	$P_{38}$	$P_{48}$	$P_{50}$	$P_{32}$

Line 19 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{15}$	$\ell_{17}$	$\ell_{18}$	$\ell_{20}$	$\ell_{23}$	$\ell_{27}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{35}$	$\ell_{40}$	$\ell_{42}$	$\ell_{45}$	$\ell_{46}$	$\ell_{47}$
in point	$P_6$	$P_{53}$	$P_{59}$	$P_{64}$	$P_{66}$	$P_{53}$	$P_6$	$P_6$	$P_6$	$P_{53}$	$P_{53}$	$P_{64}$	$P_{66}$	$P_{53}$	$P_{59}$	$P_{53}$	$P_{53}$	$P_{53}$	$P_{66}$	$P_{64}$	$P_{32}$

Line 20 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{24}$	$\ell_{28}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{36}$	$\ell_{38}$	$\ell_{43}$	$\ell_{45}$	$\ell_{46}$	$\ell_{47}$
in point	$P_6$	$P_{69}$	$P_{75}$	$P_{80}$	$P_{82}$	$P_{69}$	$P_6$	$P_6$	$P_6$	$P_{69}$	$P_{69}$	$P_{82}$	$P_{80}$	$P_{75}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{75}$	$P_{69}$	$P_{32}$

Line 21 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{13}$	$\ell_{17}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{25}$	$\ell_{29}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{40}$	$\ell_{41}$
in point	$P_7$	$P_3$	$P_{29}$	$P_{31}$	$P_{36}$	$P_3$	$P_3$	$P_7$	$P_7$	$P_7$	$P_3$	$P_3$	$P_3$	$P_{29}$	$P_{31}$	$P_{36}$	$P_3$	$P_{29}$	$P_{31}$	$P_{36}$	$P_3$

Line 22 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{14}$	$\ell_{18}$	$\ell_{21}$	$\ell_{23}$	$\ell_{24}$	$\ell_{26}$	$\ell_{30}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{40}$	$\ell_{41}$
in point	$P_7$	$P_{38}$	$P_{44}$	$P_{46}$	$P_{51}$	$P_{38}$	$P_{38}$	$P_7$	$P_7$	$P_7$	$P_{38}$	$P_{38}$	$P_{44}$	$P_{38}$	$P_{51}$	$P_{46}$	$P_{46}$	$P_{51}$	$P_{38}$	$P_{44}$	$P_{32}$

Line 23 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{15}$	$\ell_{19}$	$\ell_{21}$	$\ell_{22}$	$\ell_{24}$	$\ell_{27}$	$\ell_{31}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{40}$	$\ell_{41}$
in point	$P_7$	$P_{53}$	$P_{60}$	$P_{62}$	$P_{67}$	$P_{53}$	$P_{53}$	$P_7$	$P_7$	$P_7$	$P_{53}$	$P_{53}$	$P_{62}$	$P_{67}$	$P_{53}$	$P_{60}$	$P_{67}$	$P_{62}$	$P_{60}$	$P_{53}$	$P_{32}$

Line 24 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{16}$	$\ell_{20}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{28}$	$\ell_{32}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{40}$	$\ell_{41}$
in point	$P_7$	$P_{69}$	$P_{76}$	$P_{78}$	$P_{83}$	$P_{69}$	$P_{69}$	$P_7$	$P_7$	$P_7$	$P_{69}$	$P_{69}$	$P_{83}$	$P_{78}$	$P_{76}$	$P_{69}$	$P_{76}$	$P_{69}$	$P_{83}$	$P_{78}$	$P_{32}$



Line 25 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{21}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{29}$	$\ell_{33}$	$\ell_{37}$	$\ell_{41}$	$\ell_{42}$	$\ell_{43}$	$\ell_{44}$
in point	$P_{12}$	$P_3$	$P_4$	$P_{63}$	$P_{84}$	$P_3$	$P_4$	$P_{63}$	$P_{84}$	$P_3$	$P_3$	$P_{12}$	$P_{12}$	$P_{12}$	$P_3$	$P_3$	$P_3$	$P_3$	$P_4$	$P_{63}$	$P_{84}$

Line 26 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$	$\ell_{22}$	$\ell_{25}$	$\ell_{27}$	$\ell_{28}$	$\ell_{30}$	$\ell_{34}$	$\ell_{39}$	$\ell_{41}$	$\ell_{42}$	$\ell_{43}$	$\ell_{44}$
in point	$P_{12}$	$P_{38}$	$P_{27}$	$P_{79}$	$P_{68}$	$P_{27}$	$P_{38}$	$P_{68}$	$P_{79}$	$P_{38}$	$P_{38}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{38}$	$P_{38}$	$P_{38}$	$P_{68}$	$P_{79}$	$P_{27}$	$P_{43}$

Line 27 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{19}$	$\ell_{23}$	$\ell_{25}$	$\ell_{26}$	$\ell_{28}$	$\ell_{31}$	$\ell_{35}$	$\ell_{40}$	$\ell_{41}$	$\ell_{42}$	$\ell_{43}$	$\ell_{44}$
in point	$P_{12}$	$P_{53}$	$P_{74}$	$P_{32}$	$P_{52}$	$P_{32}$	$P_{52}$	$P_{53}$	$P_{74}$	$P_{53}$	$P_{53}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{53}$	$P_{53}$	$P_{53}$	$P_{74}$	$P_{53}$	$P_{53}$	$P_{53}$

Line 28 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{20}$	$\ell_{24}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{32}$	$\ell_{36}$	$\ell_{38}$	$\ell_{41}$	$\ell_{42}$	$\ell_{43}$	$\ell_{44}$
in point	$P_{12}$	$P_{69}$	$P_{58}$	$P_{47}$	$P_{37}$	$P_{37}$	$P_{47}$	$P_{58}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{47}$	$P_{37}$	$P_{69}$	$P_{69}$

Line 29 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{13}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{21}$	$\ell_{25}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{33}$	$\ell_{37}$	$\ell_{41}$	$\ell_{45}$	$\ell_{46}$	$\ell_{47}$
in point	$P_{13}$	$P_3$	$P_{43}$	$P_{64}$	$P_{82}$	$P_3$	$P_3$	$P_{43}$	$P_{64}$	$P_{82}$	$P_3$	$P_3$	$P_{13}$	$P_{13}$	$P_{13}$	$P_3$	$P_3$	$P_3$	$P_3$	$P_{64}$	$P_{82}$

Line 30 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{14}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{22}$	$\ell_{26}$	$\ell_{29}$	$\ell_{31}$	$\ell_{32}$	$\ell_{34}$	$\ell_{39}$	$\ell_{44}$	$\ell_{45}$	$\ell_{46}$	$\ell_{47}$
in point	$P_{13}$	$P_{38}$	$P_{28}$	$P_{80}$	$P_{66}$	$P_{38}$	$P_{28}$	$P_{38}$	$P_{66}$	$P_{80}$	$P_{38}$	$P_{38}$	$P_{13}$	$P_{13}$	$P_{13}$	$P_{38}$	$P_{38}$	$P_{38}$	$P_{66}$	$P_{28}$	$P_{47}$

Line 31 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{15}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{23}$	$\ell_{27}$	$\ell_{29}$	$\ell_{30}$	$\ell_{32}$	$\ell_{35}$	$\ell_{40}$	$\ell_{42}$	$\ell_{45}$	$\ell_{46}$	$\ell_{47}$
in point	$P_{13}$	$P_{53}$	$P_{75}$	$P_{33}$	$P_{50}$	$P_{53}$	$P_{33}$	$P_{50}$	$P_{53}$	$P_{75}$	$P_{53}$	$P_{53}$	$P_{13}$	$P_{13}$	$P_{13}$	$P_{53}$	$P_{53}$	$P_{53}$	$P_{75}$	$P_{50}$	$P_{47}$

Line 32 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{24}$	$\ell_{28}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{36}$	$\ell_{38}$	$\ell_{43}$	$\ell_{45}$	$\ell_{46}$	$\ell_{47}$
in point	$P_{13}$	$P_{69}$	$P_{59}$	$P_{48}$	$P_{35}$	$P_{69}$	$P_{35}$	$P_{48}$	$P_{59}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{13}$	$P_{13}$	$P_{13}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{48}$	$P_{69}$	$P_{69}$

Line 33 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{13}$	$\ell_{17}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{25}$	$\ell_{29}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{40}$	$\ell_{47}$
in point	$P_{14}$	$P_3$	$P_{44}$	$P_{62}$	$P_{83}$	$P_3$	$P_3$	$P_3$	$P_{44}$	$P_{62}$	$P_{83}$	$P_3$	$P_3$	$P_{14}$	$P_{14}$	$P_{14}$	$P_3$	$P_{62}$	$P_{83}$	$P_{44}$	$P_{47}$

Line 34 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{14}$	$\ell_{18}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{26}$	$\ell_{30}$	$\ell_{33}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{40}$	$\ell_{47}$
in point	$P_{14}$	$P_{38}$	$P_{29}$	$P_{78}$	$P_{67}$	$P_{38}$	$P_{38}$	$P_{29}$	$P_{38}$	$P_{67}$	$P_{78}$	$P_{38}$	$P_{38}$	$P_{14}$	$P_{14}$	$P_{14}$	$P_{67}$	$P_{29}$	$P_{38}$	$P_{78}$	$P_{47}$

Line 35 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{15}$	$\ell_{19}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{27}$	$\ell_{31}$	$\ell_{33}$	$\ell_{34}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{40}$	$\ell_{47}$
in point	$P_{14}$	$P_{53}$	$P_{76}$	$P_{31}$	$P_{51}$	$P_{53}$	$P_{53}$	$P_{31}$	$P_{51}$	$P_{53}$	$P_{76}$	$P_{53}$	$P_{53}$	$P_{14}$	$P_{14}$	$P_{14}$	$P_{76}$	$P_{51}$	$P_{31}$	$P_{51}$	$P_{51}$

Line 36 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{16}$	$\ell_{20}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{28}$	$\ell_{32}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{40}$	$\ell_{47}$
in point	$P_{14}$	$P_{69}$	$P_{60}$	$P_{46}$	$P_{36}$	$P_{69}$	$P_{69}$	$P_{36}$	$P_{46}$	$P_{60}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{14}$	$P_{14}$	$P_{14}$	$P_{46}$	$P_{69}$	$P_{60}$	$P_{36}$	$P_{36}$

Line 37 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{13}$	$\ell_{17}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{25}$	$\ell_{29}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{38}$	$\ell_{39}$	$\ell_{40}$	$\ell_{47}$
in point	$P_{16}$	$P_3$	$P_{76}$	$P_{46}$	$P_{67}$	$P_3$	$P_3$	$P_3$	$P_{46}$	$P_{67}$	$P_{76}$	$P_3$	$P_3$	$P_3$	$P_{67}$	$P_{76}$	$P_{46}$	$P_{16}$	$P_{16}$	$P_{16}$	$P_{16}$

Line 38 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{16}$	$\ell_{20}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{28}$	$\ell_{32}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{39}$	$\ell_{40}$
in point	$P_{16}$	$P_{69}$	$P_{29}$	$P_{62}$	$P_{51}$	$P_{69}$	$P_{69}$	$P_{29}$	$P_{51}$	$P_{62}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{62}$	$P_{29}$	$P_{51}$	$P_{69}$	$P_{16}$	$P_{16}$	$P_{16}$

Line 39 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{14}$	$\ell_{18}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{26}$	$\ell_{30}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{40}$
in point	$P_{16}$	$P_{38}$	$P_{60}$	$P_{31}$	$P_{83}$	$P_{38}$	$P_{38}$	$P_{31}$	$P_{38}$	$P_{60}$	$P_{83}$	$P_{38}$	$P_{38}$	$P_{83}$	$P_{38}$	$P_{31}$	$P_{60}$	$P_{16}$	$P_{16}$	$P_{16}$

Line 40 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{15}$	$\ell_{19}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{27}$	$\ell_{31}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$
in point	$P_{16}$	$P_{53}$	$P_{44}$	$P_{78}$	$P_{36}$	$P_{53}$	$P_{53}$	$P_{36}$	$P_{44}$	$P_{53}$	$P_{78}$	$P_{53}$	$P_{53}$	$P_{44}$	$P_{78}$	$P_{53}$	$P_{36}$	$P_{16}$	$P_{16}$	$P_{16}$

Line 41 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{21}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{29}$	$\ell_{33}$	$\ell_{37}$	$\ell_{42}$	$\ell_{43}$	$\ell_{44}$
in point	$P_{17}$	$P_3$	$P_{74}$	$P_{47}$	$P_{68}$	$P_3$	$P_{47}$	$P_{68}$	$P_{74}$	$P_3$	$P_3$	$P_3$	$P_{68}$	$P_{74}$	$P_{47}$	$P_3$	$P_3$	$P_3$	$P_{17}$	$P_{17}$	$P_{17}$

Line 42 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{19}$	$\ell_{23}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{31}$	$\ell_{35}$	$\ell_{40}$	$\ell_{41}$	$\ell_{43}$
in point	$P_{17}$	$P_{53}$	$P_4$	$P_{79}$	$P_{37}$	$P_{37}$	$P_4$	$P_{53}$	$P_{79}$	$P_{53}$	$P_{53}$	$P_4$	$P_{79}$	$P_{53}$	$P_{37}$	$P_{53}$	$P_{53}$	$P_{53}$	$P_{17}$	$P_{17}$

Line 43 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{20}$	$\ell_{24}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{32}$	$\ell_{36}$	$\ell_{38}$	$\ell_{41}$	$\ell_{42}$
in point	$P_{17}$	$P_{69}$	$P_{27}$	$P_{63}$	$P_{52}$	$P_{27}$	$P_{52}$	$P_{63}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{63}$	$P_{27}$	$P_{52}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{17}$	$P_{17}$

Line 44 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$	$\ell_{22}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{30}$	$\ell_{34}$	$\ell_{39}$	$\ell_{41}$	$\ell_{42}$
in point	$P_{17}$	$P_{38}$	$P_{58}$	$P_{32}$	$P_{84}$	$P_{32}$	$P_{38}$	$P_{58}$	$P_{84}$	$P_{38}$	$P_{38}$	$P_{84}$	$P_{38}$	$P_{32}$	$P_{58}$	$P_{38}$	$P_{38}$	$P_{38}$	$P_{17}$	$P_{17}$

Line 45 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{13}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{21}$	$\ell_{25}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{33}$	$\ell_{37}$	$\ell_{41}$	$\ell_{46}$	$\ell_{47}$
in point	$P_{18}$	$P_3$	$P_{75}$	$P_{48}$	$P_{66}$	$P_3$	$P_3$	$P_{48}$	$P_{66}$	$P_{75}$	$P_3$	$P_3$	$P_3$	$P_{66}$	$P_{75}$	$P_{48}$	$P_3$	$P_3$	$P_3$	$P_{18}$	$P_{18}$

Line 46 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{24}$	$\ell_{28}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{36}$	$\ell_{38}$	$\ell_{43}$	$\ell_{45}$
in point	$P_{18}$	$P_{69}$	$P_{28}$	$P_{64}$	$P_{50}$	$P_{69}$	$P_{28}$	$P_{50}$	$P_{64}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{64}$	$P_{28}$	$P_{50}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{18}$

Line 47 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{14}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{22}$	$\ell_{26}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{34}$	$\ell_{39}$	$\ell_{44}$	$\ell_{45}$
in point	$P_{18}$	$P_{38}$	$P_{59}$	$P_{33}$	$P_{82}$	$P_{38}$	$P_{33}$	$P_{38}$	$P_{59}$	$P_{82}$	$P_{38}$	$P_{38}$	$P_{82}$	$P_{38}$	$P_{33}$	$P_{59}$	$P_{38}$	$P_{38}$	$P_{38}$	$P_{18}$

Line 48 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{15}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{23}$	$\ell_{27}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{35}$	$\ell_{40}$	$\ell_{42}$	$\ell_{45}$
in point	$P_{18}$	$P_{53}$	$P_{43}$	$P_{80}$	$P_{35}$	$P_{53}$	$P_{35}$	$P_{43}$	$P_{53}$	$P_{80}$	$P_{53}$	$P_{53}$	$P_{43}$	$P_{80}$	$P_{53}$	$P_{35}$	$P_{53}$	$P_{53}$	$P_{53}$	$P_{18}$

Line 49 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{13}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{21}$	$\ell_{25}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{33}$	$\ell_{37}$	$\ell_{41}$	$\ell_{45}$
in point	$P_{20}$	$P_3$	$P_{59}$	$P_{80}$	$P_{50}$	$P_3$	$P_3$	$P_{50}$	$P_{59}$	$P_{80}$	$P_3$	$P_3$	$P_3$	$P_{80}$	$P_{50}$	$P_{59}$	$P_3$	$P_3$	$P_3$	$P_5$

Line 50 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{15}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{23}$	$\ell_{27}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{35}$	$\ell_{40}$	$\ell_{42}$	$\ell_{45}$
in point	$P_{20}$	$P_{53}$	$P_{28}$	$P_{48}$	$P_{82}$	$P_{53}$	$P_{28}$	$P_{48}$	$P_{53}$	$P_{82}$	$P_{53}$	$P_{53}$	$P_{82}$	$P_{28}$	$P_{53}$	$P_{48}$	$P_{53}$	$P_{53}$	$P_{53}$	$P_{48}$

Line 51 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{24}$	$\ell_{28}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{36}$	$\ell_{38}$	$\ell_{43}$	$\ell_{45}$
in point	$P_{20}$	$P_{69}$	$P_{43}$	$P_{33}$	$P_{66}$	$P_{69}$	$P_{33}$	$P_{43}$	$P_{66}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{43}$	$P_{66}$	$P_{33}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{69}$

Line 52 intersects

Line	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{10}$	$\ell_{14}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{22}$	$\ell_{26}$	$\ell_{29}$	$\ell_{30}$	$\ell_{31}$	$\ell_{32}$	$\ell_{34}$	$\ell_{39}$	$\ell_{44}$	$\ell_{45}$
in point	$P_{20}$	$P_{38}$	$P_{75}$	$P_{64}$	$P_{35}$	$P_{38}$	$P_{35}$	$P_{38}$	$P_{64}$	$P_{75}$	$P_{38}$	$P_{38}$	$P_{64}$	$P_{38}$	$P_{75}$	$P_{35}$	$P_{38}$	$P_{38}$	$P_{38}$	$P_{75}$

Line 53 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{13}$	$\ell_{17}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{25}$	$\ell_{29}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{41}$
in point	$P_{21}$	$P_3$	$P_{60}$	$P_{78}$	$P_{51}$	$P_3$	$P_3$	$P_3$	$P_{51}$	$P_{60}$	$P_{78}$	$P_3$	$P_3$	$P_3$	$P_{78}$	$P_{51}$	$P_{60}$	$P_3$	$P_{51}$	$P_{60}$	$P_{78}$

Line 54 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{15}$	$\ell_{19}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{27}$	$\ell_{31}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{41}$
in point	$P_{21}$	$P_{53}$	$P_{29}$	$P_{46}$	$P_{83}$	$P_{53}$	$P_{53}$	$P_{29}$	$P_{46}$	$P_{53}$	$P_{83}$	$P_{53}$	$P_{53}$	$P_{83}$	$P_{29}$	$P_{53}$	$P_{46}$	$P_{46}$	$P_{29}$	$P_{83}$	$P_{53}$

Line 55 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{16}$	$\ell_{20}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{28}$	$\ell_{32}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{41}$
in point	$P_{21}$	$P_{69}$	$P_{44}$	$P_{31}$	$P_{67}$	$P_{69}$	$P_{69}$	$P_{31}$	$P_{44}$	$P_{67}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{44}$	$P_{67}$	$P_{31}$	$P_{69}$	$P_{67}$	$P_{69}$	$P_{31}$	$P_{67}$

Line 56 intersects

Line	$\ell_1$	$\ell_3$	$\ell_6$	$\ell_7$	$\ell_{11}$	$\ell_{14}$	$\ell_{18}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{26}$	$\ell_{30}$	$\ell_{33}$	$\ell_{34}$	$\ell_{35}$	$\ell_{36}$	$\ell_{37}$	$\ell_{38}$	$\ell_{39}$	$\ell_{41}$
in point	$P_{21}$	$P_{38}$	$P_{76}$	$P_{62}$	$P_{36}$	$P_{38}$	$P_{38}$	$P_{36}$	$P_{38}$	$P_{62}$	$P_{76}$	$P_{38}$	$P_{38}$	$P_{62}$	$P_{38}$	$P_{76}$	$P_{36}$	$P_{76}$	$P_{62}$	$P_{38}$	$P_{76}$

Line 57 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{21}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{29}$	$\ell_{33}$	$\ell_{37}$	$\ell_{41}$	$\ell_{42}$	$\ell_{44}$
in point	$P_{22}$	$P_3$	$P_{58}$	$P_{79}$	$P_{52}$	$P_3$	$P_{52}$	$P_{58}$	$P_{79}$	$P_3$	$P_3$	$P_3$	$P_{79}$	$P_{52}$	$P_{58}$	$P_3$	$P_3$	$P_3$	$P_3$	$P_{79}$	$P_{52}$

Line 58 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{20}$	$\ell_{24}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{32}$	$\ell_{36}$	$\ell_{38}$	$\ell_{41}$	$\ell_{42}$	$\ell_{44}$
in point	$P_{22}$	$P_{69}$	$P_4$	$P_{32}$	$P_{68}$	$P_{32}$	$P_4$	$P_{68}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_4$	$P_{68}$	$P_{32}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{69}$	$P_{68}$	$P_4$	$P_{68}$

Line 59 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{19}$	$\ell_{23}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{31}$	$\ell_{35}$	$\ell_{40}$	$\ell_{41}$	$\ell_{42}$	$\ell_{44}$
in point	$P_{22}$	$P_{53}$	$P_{27}$	$P_{47}$	$P_{84}$	$P_{27}$	$P_{47}$	$P_{53}$	$P_{84}$	$P_{53}$	$P_{53}$	$P_{84}$	$P_{27}$	$P_{53}$	$P_{47}$	$P_{53}$	$P_{53}$	$P_{53}$	$P_{53}$	$P_{47}$	$P_{53}$

Line 60 intersects

Line	$\ell_0$	$\ell_3$	$\ell_4$	$\ell_8$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$	$\ell_{22}$	$\ell_{25}$	$\ell_{26}$	$\ell_{27}$	$\ell_{28}$	$\ell_{30}$	$\ell_{34}$	$\ell_{39}$	$\ell_{41}$	$\ell_{42}$	$\ell_{44}$
in point	$P_{22}$	$P_{38}$	$P_{74}$	$P_{63}$	$P_{37}$	$P_{37}$	$P_{38}$	$P_{63}$	$P_{74}$	$P_{38}$	$P_{38}$	$P_{63}$	$P_{38}$	$P_{74}$	$P_{37}$	$P_{38}$	$P_{38}$	$P_{38}$	$P_{74}$	$P_{37}$	$P_{63}$

The surface has 53 points:

The points on the surface are:

$$\begin{array}{lll}
0 : P_2 = (0, 0, 1, 0) & 5 : P_7 = (3, 1, 0, 0) & 10 : P_{17} = (2, 2, 1, 0) \\
1 : P_3 = (0, 0, 0, 1) & 6 : P_{12} = (1, 1, 1, 0) & 11 : P_{18} = (3, 2, 1, 0) \\
2 : P_4 = (1, 1, 1, 1) & 7 : P_{13} = (2, 1, 1, 0) & 12 : P_{20} = (1, 3, 1, 0) \\
3 : P_5 = (1, 1, 0, 0) & 8 : P_{14} = (3, 1, 1, 0) & 13 : P_{21} = (2, 3, 1, 0) \\
4 : P_6 = (2, 1, 0, 0) & 9 : P_{16} = (1, 2, 1, 0) & 14 : P_{22} = (3, 3, 1, 0)
\end{array}$$

15 :  $P_{27} = (1, 1, 0, 1)$   
 16 :  $P_{28} = (2, 1, 0, 1)$   
 17 :  $P_{29} = (3, 1, 0, 1)$   
 18 :  $P_{31} = (1, 2, 0, 1)$   
 19 :  $P_{32} = (2, 2, 0, 1)$   
 20 :  $P_{33} = (3, 2, 0, 1)$   
 21 :  $P_{35} = (1, 3, 0, 1)$   
 22 :  $P_{36} = (2, 3, 0, 1)$   
 23 :  $P_{37} = (3, 3, 0, 1)$   
 24 :  $P_{38} = (0, 0, 1, 1)$   
 25 :  $P_{43} = (2, 1, 1, 1)$   
 26 :  $P_{44} = (3, 1, 1, 1)$   
 27 :  $P_{46} = (1, 2, 1, 1)$

28 :  $P_{47} = (2, 2, 1, 1)$   
 29 :  $P_{48} = (3, 2, 1, 1)$   
 30 :  $P_{50} = (1, 3, 1, 1)$   
 31 :  $P_{51} = (2, 3, 1, 1)$   
 32 :  $P_{52} = (3, 3, 1, 1)$   
 33 :  $P_{53} = (0, 0, 2, 1)$   
 34 :  $P_{58} = (1, 1, 2, 1)$   
 35 :  $P_{59} = (2, 1, 2, 1)$   
 36 :  $P_{60} = (3, 1, 2, 1)$   
 37 :  $P_{62} = (1, 2, 2, 1)$   
 38 :  $P_{63} = (2, 2, 2, 1)$   
 39 :  $P_{64} = (3, 2, 2, 1)$   
 40 :  $P_{66} = (1, 3, 2, 1)$

41 :  $P_{67} = (2, 3, 2, 1)$   
 42 :  $P_{68} = (3, 3, 2, 1)$   
 43 :  $P_{69} = (0, 0, 3, 1)$   
 44 :  $P_{74} = (1, 1, 3, 1)$   
 45 :  $P_{75} = (2, 1, 3, 1)$   
 46 :  $P_{76} = (3, 1, 3, 1)$   
 47 :  $P_{78} = (1, 2, 3, 1)$   
 48 :  $P_{79} = (2, 2, 3, 1)$   
 49 :  $P_{80} = (3, 2, 3, 1)$   
 50 :  $P_{82} = (1, 3, 3, 1)$   
 51 :  $P_{83} = (2, 3, 3, 1)$   
 52 :  $P_{84} = (3, 3, 3, 1)$