

# Rank-65546 over GF(8)

January 15, 2021

## The equation

The equation of the surface is :

$$X_0^3 + X_1^3 + X_2^3 + X_0 X_1 X_2 = 0$$

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

The point rank of the equation over GF(8) is 1227133590

## General information

Number of lines	74
Number of points	81
Number of singular points	9
Number of Eckardt points	0
Number of double points	0
Number of single points	8
Number of points off lines	0
Number of Hesse planes	0
Number of axes	0
Type of points on lines	$9^{74}$
Type of lines on points	$10, 9^{72}, 1^8$

## Singular Points

The surface has 9 singular points:

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

$$1 : P_4 = \mathbf{P}(1, 1, 1, 1) = \mathbf{P}(1, 1, 1, 1)$$

$$2 : P_{20} = \mathbf{P}(1, 1, 1, 0) = \mathbf{P}(1, 1, 1, 0)$$

$$3 : P_{219} = \mathbf{P}(\gamma, \gamma, \gamma, 1) = \mathbf{P}(2, 2, 2, 1)$$

$$4 : P_{292} = \mathbf{P}(\gamma^5, \gamma^5, \gamma^5, 1) = \mathbf{P}(3, 3, 3, 1)$$

$$5 : P_{365} = \mathbf{P}(\gamma^2, \gamma^2, \gamma^2, 1) = \mathbf{P}(4, 4, 4, 1)$$

$$6 : P_{438} = \mathbf{P}(\gamma^3, \gamma^3, \gamma^3, 1) = \mathbf{P}(5, 5, 5, 1)$$

$$7 : P_{511} = \mathbf{P}(\gamma^6, \gamma^6, \gamma^6, 1) = \mathbf{P}(6, 6, 6, 1)$$

$$8 : P_{584} = \mathbf{P}(\gamma^4, \gamma^4, \gamma^4, 1) = \mathbf{P}(7, 7, 7, 1)$$

## The 74 Lines

The lines and their Pluecker coordinates are:

$$\begin{aligned}
\ell_0 &= \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{74} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{74} = \mathbf{Pl}(1, 0, 1, 0, 0, 1)_{665} \\
\ell_1 &= \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{145} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{145} = \mathbf{Pl}(0, 0, 0, 1, 1, 0)_{201} \\
\ell_2 &= \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{666} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{666} = \mathbf{Pl}(1, 0, 1, 1, 1, 1)_{1323} \\
\ell_3 &= \begin{bmatrix} 1 & 0 & 1 & \gamma^6 \\ 0 & 1 & 1 & \gamma^6 \end{bmatrix}_{3626} = \begin{bmatrix} 1 & 0 & 1 & 6 \\ 0 & 1 & 1 & 6 \end{bmatrix}_{3626} = \mathbf{Pl}(2, 0, 2, 6, 6, 1)_{3859} \\
\ell_4 &= \begin{bmatrix} 1 & 0 & 1 & \gamma^2 \\ 0 & 1 & 1 & \gamma^2 \end{bmatrix}_{2442} = \begin{bmatrix} 1 & 0 & 1 & 4 \\ 0 & 1 & 1 & 4 \end{bmatrix}_{2442} = \mathbf{Pl}(3, 0, 3, 4, 4, 1)_{2867} \\
\ell_5 &= \begin{bmatrix} 1 & 0 & 1 & \gamma^5 \\ 0 & 1 & 1 & \gamma^5 \end{bmatrix}_{1850} = \begin{bmatrix} 1 & 0 & 1 & 3 \\ 0 & 1 & 1 & 3 \end{bmatrix}_{1850} = \mathbf{Pl}(4, 0, 4, 3, 3, 1)_{2379} \\
\ell_6 &= \begin{bmatrix} 1 & 0 & 1 & \gamma^4 \\ 0 & 1 & 1 & \gamma^4 \end{bmatrix}_{4218} = \begin{bmatrix} 1 & 0 & 1 & 7 \\ 0 & 1 & 1 & 7 \end{bmatrix}_{4218} = \mathbf{Pl}(5, 0, 5, 7, 7, 1)_{4411} \\
\ell_7 &= \begin{bmatrix} 1 & 0 & 1 & \gamma \\ 0 & 1 & 1 & \gamma \end{bmatrix}_{1258} = \begin{bmatrix} 1 & 0 & 1 & 2 \\ 0 & 1 & 1 & 2 \end{bmatrix}_{1258} = \mathbf{Pl}(6, 0, 6, 2, 2, 1)_{1907} \\
\ell_8 &= \begin{bmatrix} 1 & 0 & 1 & \gamma^3 \\ 0 & 1 & 1 & \gamma^3 \end{bmatrix}_{3034} = \begin{bmatrix} 1 & 0 & 1 & 5 \\ 0 & 1 & 1 & 5 \end{bmatrix}_{3034} = \mathbf{Pl}(7, 0, 7, 5, 5, 1)_{3435} \\
\ell_9 &= \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{656} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{656} = \mathbf{Pl}(0, 1, 0, 0, 1, 0)_{89} \\
\ell_{10} &= \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{82} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{82} = \mathbf{Pl}(1, 1, 1, 0, 1, 1)_{1224} \\
\ell_{11} &= \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & \gamma^6 \end{bmatrix}_{122} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 6 \end{bmatrix}_{122} = \mathbf{Pl}(2, 6, 2, 0, 6, 1)_{3752} \\
\ell_{12} &= \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & \gamma^2 \end{bmatrix}_{106} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 4 \end{bmatrix}_{106} = \mathbf{Pl}(3, 4, 3, 0, 4, 1)_{2752} \\
\ell_{13} &= \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & \gamma^5 \end{bmatrix}_{98} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 3 \end{bmatrix}_{98} = \mathbf{Pl}(4, 3, 4, 0, 3, 1)_{2256} \\
\ell_{14} &= \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & \gamma^4 \end{bmatrix}_{130} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 7 \end{bmatrix}_{130} = \mathbf{Pl}(5, 7, 5, 0, 7, 1)_{4280} \\
\ell_{15} &= \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & \gamma \end{bmatrix}_{90} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 2 \end{bmatrix}_{90} = \mathbf{Pl}(6, 2, 6, 0, 2, 1)_{1768} \\
\ell_{16} &= \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & \gamma^3 \end{bmatrix}_{114} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 5 \end{bmatrix}_{114} = \mathbf{Pl}(7, 5, 7, 0, 5, 1)_{3288} \\
\ell_{17} &= \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4689} = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4689} = \mathbf{Pl}(0, 1, 0, 1, 0, 0)_{25} \\
\ell_{18} &= \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{658} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{658} = \mathbf{Pl}(1, 1, 1, 1, 0, 1)_{874} \\
\ell_{19} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^6 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{3578} = \begin{bmatrix} 1 & 0 & 1 & 6 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{3578} = \mathbf{Pl}(2, 6, 1, 6, 0, 1)_{1120}
\end{aligned}$$

$$\begin{aligned}
\ell_{20} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^2 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{2410} = \begin{bmatrix} 1 & 0 & 1 & 4 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{2410} = \mathbf{Pl}(3, 4, 1, 4, 0, 1)_{1023} \\
\ell_{21} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^5 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{1826} = \begin{bmatrix} 1 & 0 & 1 & 3 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{1826} = \mathbf{Pl}(4, 3, 1, 3, 0, 1)_{975} \\
\ell_{22} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^4 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{4162} = \begin{bmatrix} 1 & 0 & 1 & 7 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{4162} = \mathbf{Pl}(5, 7, 1, 7, 0, 1)_{1172} \\
\ell_{23} &= \begin{bmatrix} 1 & 0 & 1 & \gamma \\ 0 & 1 & 1 & 0 \end{bmatrix}_{1242} = \begin{bmatrix} 1 & 0 & 1 & 2 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{1242} = \mathbf{Pl}(6, 2, 1, 2, 0, 1)_{928} \\
\ell_{24} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^3 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{2994} = \begin{bmatrix} 1 & 0 & 1 & 5 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{2994} = \mathbf{Pl}(7, 5, 1, 5, 0, 1)_{1076} \\
\ell_{25} &= \begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{729} = \begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{729} = \mathbf{Pl}(0, 1, 0, 1, 1, 0)_{209} \\
\ell_{26} &= \begin{bmatrix} 1 & \gamma^3 & \gamma^2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{2773} = \begin{bmatrix} 1 & 5 & 4 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{2773} = \mathbf{Pl}(0, 4, 0, 5, 1, 0)_{272} \\
\ell_{27} &= \begin{bmatrix} 1 & 0 & 1 & \gamma \\ 0 & 1 & 1 & \gamma^5 \end{bmatrix}_{1266} = \begin{bmatrix} 1 & 0 & 1 & 2 \\ 0 & 1 & 1 & 3 \end{bmatrix}_{1266} = \mathbf{Pl}(1, 1, 6, 2, 3, 1)_{2666} \\
\ell_{28} &= \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & \gamma^4 \end{bmatrix}_{714} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 7 \end{bmatrix}_{714} = \mathbf{Pl}(2, 6, 1, 1, 7, 1)_{4473} \\
\ell_{29} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^3 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{3002} = \begin{bmatrix} 1 & 0 & 1 & 5 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{3002} = \mathbf{Pl}(3, 4, 7, 5, 1, 1)_{1702} \\
\ell_{30} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^6 \\ 0 & 1 & 1 & \gamma^3 \end{bmatrix}_{3618} = \begin{bmatrix} 1 & 0 & 1 & 6 \\ 0 & 1 & 1 & 5 \end{bmatrix}_{3618} = \mathbf{Pl}(4, 3, 2, 6, 5, 1)_{3509} \\
\ell_{31} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^5 \\ 0 & 1 & 1 & \gamma^2 \end{bmatrix}_{1858} = \begin{bmatrix} 1 & 0 & 1 & 3 \\ 0 & 1 & 1 & 4 \end{bmatrix}_{1858} = \mathbf{Pl}(5, 7, 4, 3, 4, 1)_{3090} \\
\ell_{32} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^2 \\ 0 & 1 & 1 & \gamma^6 \end{bmatrix}_{2458} = \begin{bmatrix} 1 & 0 & 1 & 4 \\ 0 & 1 & 1 & 6 \end{bmatrix}_{2458} = \mathbf{Pl}(6, 2, 3, 4, 6, 1)_{4057} \\
\ell_{33} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^4 \\ 0 & 1 & 1 & \gamma \end{bmatrix}_{4178} = \begin{bmatrix} 1 & 0 & 1 & 7 \\ 0 & 1 & 1 & 2 \end{bmatrix}_{4178} = \mathbf{Pl}(7, 5, 5, 7, 2, 1)_{2126} \\
\ell_{34} &= \begin{bmatrix} 1 & \gamma^4 & \gamma^6 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4087} = \begin{bmatrix} 1 & 7 & 6 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4087} = \mathbf{Pl}(0, 6, 0, 7, 1, 0)_{304} \\
\ell_{35} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^5 \\ 0 & 1 & 1 & \gamma \end{bmatrix}_{1842} = \begin{bmatrix} 1 & 0 & 1 & 3 \\ 0 & 1 & 1 & 2 \end{bmatrix}_{1842} = \mathbf{Pl}(1, 1, 4, 3, 2, 1)_{2092} \\
\ell_{36} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^4 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{4170} = \begin{bmatrix} 1 & 0 & 1 & 7 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{4170} = \mathbf{Pl}(2, 6, 5, 7, 1, 1)_{1631} \\
\ell_{37} &= \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & \gamma^3 \end{bmatrix}_{698} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 5 \end{bmatrix}_{698} = \mathbf{Pl}(3, 4, 1, 1, 5, 1)_{3480} \\
\ell_{38} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^3 \\ 0 & 1 & 1 & \gamma^6 \end{bmatrix}_{3042} = \begin{bmatrix} 1 & 0 & 1 & 5 \\ 0 & 1 & 1 & 6 \end{bmatrix}_{3042} = \mathbf{Pl}(4, 3, 7, 5, 6, 1)_{4237} \\
\ell_{39} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^2 \\ 0 & 1 & 1 & \gamma^5 \end{bmatrix}_{2434} = \begin{bmatrix} 1 & 0 & 1 & 4 \\ 0 & 1 & 1 & 3 \end{bmatrix}_{2434} = \mathbf{Pl}(5, 7, 3, 4, 3, 1)_{2558} \\
\ell_{40} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^6 \\ 0 & 1 & 1 & \gamma^2 \end{bmatrix}_{3610} = \begin{bmatrix} 1 & 0 & 1 & 6 \\ 0 & 1 & 1 & 4 \end{bmatrix}_{3610} = \mathbf{Pl}(6, 2, 2, 6, 4, 1)_{3021}
\end{aligned}$$

$$\begin{aligned}
\ell_{41} &= \begin{bmatrix} 1 & 0 & 1 & \gamma \\ 0 & 1 & 1 & \gamma^4 \end{bmatrix}_{1298} = \begin{bmatrix} 1 & 0 & 1 & 2 \\ 0 & 1 & 1 & 7 \end{bmatrix}_{1298} = \mathbf{Pl}(7, 5, 6, 2, 7, 1)_{4702} \\
\ell_{42} &= \begin{bmatrix} 1 & \gamma^6 & \gamma^4 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4598} = \begin{bmatrix} 1 & 6 & 7 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4598} = \mathbf{Pl}(0, 7, 0, 6, 1, 0)_{290} \\
\ell_{43} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^2 \\ 0 & 1 & 1 & \gamma^3 \end{bmatrix}_{2450} = \begin{bmatrix} 1 & 0 & 1 & 4 \\ 0 & 1 & 1 & 5 \end{bmatrix}_{2450} = \mathbf{Pl}(1, 1, 3, 4, 5, 1)_{3555} \\
\ell_{44} &= \begin{bmatrix} 1 & 0 & 1 & \gamma \\ 0 & 1 & 1 & \gamma^2 \end{bmatrix}_{1274} = \begin{bmatrix} 1 & 0 & 1 & 2 \\ 0 & 1 & 1 & 4 \end{bmatrix}_{1274} = \mathbf{Pl}(2, 6, 6, 2, 4, 1)_{3178} \\
\ell_{45} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^4 \\ 0 & 1 & 1 & \gamma^5 \end{bmatrix}_{4186} = \begin{bmatrix} 1 & 0 & 1 & 7 \\ 0 & 1 & 1 & 3 \end{bmatrix}_{4186} = \mathbf{Pl}(3, 4, 5, 7, 3, 1)_{2633} \\
\ell_{46} &= \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & \gamma \end{bmatrix}_{674} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 2 \end{bmatrix}_{674} = \mathbf{Pl}(4, 3, 1, 1, 2, 1)_{1962} \\
\ell_{47} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^6 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{3586} = \begin{bmatrix} 1 & 0 & 1 & 6 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{3586} = \mathbf{Pl}(5, 7, 2, 6, 1, 1)_{1501} \\
\ell_{48} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^3 \\ 0 & 1 & 1 & \gamma^4 \end{bmatrix}_{3050} = \begin{bmatrix} 1 & 0 & 1 & 5 \\ 0 & 1 & 1 & 7 \end{bmatrix}_{3050} = \mathbf{Pl}(6, 2, 7, 5, 7, 1)_{4736} \\
\ell_{49} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^5 \\ 0 & 1 & 1 & \gamma^6 \end{bmatrix}_{1874} = \begin{bmatrix} 1 & 0 & 1 & 3 \\ 0 & 1 & 1 & 6 \end{bmatrix}_{1874} = \mathbf{Pl}(7, 5, 4, 3, 6, 1)_{4107} \\
\ell_{50} &= \begin{bmatrix} 1 & \gamma & \gamma^5 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1970} = \begin{bmatrix} 1 & 2 & 3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1970} = \mathbf{Pl}(0, 3, 0, 2, 1, 0)_{226} \\
\ell_{51} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^3 \\ 0 & 1 & 1 & \gamma^2 \end{bmatrix}_{3026} = \begin{bmatrix} 1 & 0 & 1 & 5 \\ 0 & 1 & 1 & 4 \end{bmatrix}_{3026} = \mathbf{Pl}(1, 1, 7, 5, 4, 1)_{3191} \\
\ell_{52} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^2 \\ 0 & 1 & 1 & \gamma \end{bmatrix}_{2426} = \begin{bmatrix} 1 & 0 & 1 & 4 \\ 0 & 1 & 1 & 2 \end{bmatrix}_{2426} = \mathbf{Pl}(2, 6, 3, 4, 2, 1)_{2016} \\
\ell_{53} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^5 \\ 0 & 1 & 1 & \gamma^4 \end{bmatrix}_{1882} = \begin{bmatrix} 1 & 0 & 1 & 3 \\ 0 & 1 & 1 & 7 \end{bmatrix}_{1882} = \mathbf{Pl}(3, 4, 4, 3, 7, 1)_{4579} \\
\ell_{54} &= \begin{bmatrix} 1 & 0 & 1 & \gamma \\ 0 & 1 & 1 & 1 \end{bmatrix}_{1250} = \begin{bmatrix} 1 & 0 & 1 & 2 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{1250} = \mathbf{Pl}(4, 3, 6, 2, 1, 1)_{1640} \\
\ell_{55} &= \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & \gamma^6 \end{bmatrix}_{706} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 6 \end{bmatrix}_{706} = \mathbf{Pl}(5, 7, 1, 1, 6, 1)_{3951} \\
\ell_{56} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^4 \\ 0 & 1 & 1 & \gamma^3 \end{bmatrix}_{4202} = \begin{bmatrix} 1 & 0 & 1 & 7 \\ 0 & 1 & 1 & 5 \end{bmatrix}_{4202} = \mathbf{Pl}(6, 2, 5, 7, 5, 1)_{3616} \\
\ell_{57} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^6 \\ 0 & 1 & 1 & \gamma^5 \end{bmatrix}_{3602} = \begin{bmatrix} 1 & 0 & 1 & 6 \\ 0 & 1 & 1 & 3 \end{bmatrix}_{3602} = \mathbf{Pl}(7, 5, 2, 6, 3, 1)_{2483} \\
\ell_{58} &= \begin{bmatrix} 1 & \gamma^2 & \gamma^3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{3284} = \begin{bmatrix} 1 & 4 & 5 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{3284} = \mathbf{Pl}(0, 5, 0, 4, 1, 0)_{258} \\
\ell_{59} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^6 \\ 0 & 1 & 1 & \gamma^4 \end{bmatrix}_{3634} = \begin{bmatrix} 1 & 0 & 1 & 6 \\ 0 & 1 & 1 & 7 \end{bmatrix}_{3634} = \mathbf{Pl}(1, 1, 2, 6, 7, 1)_{4507} \\
\ell_{60} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^5 \\ 0 & 1 & 1 & \gamma^3 \end{bmatrix}_{1866} = \begin{bmatrix} 1 & 0 & 1 & 3 \\ 0 & 1 & 1 & 5 \end{bmatrix}_{1866} = \mathbf{Pl}(2, 6, 4, 3, 5, 1)_{3584} \\
\ell_{61} &= \begin{bmatrix} 1 & 0 & 1 & \gamma \\ 0 & 1 & 1 & \gamma^6 \end{bmatrix}_{1290} = \begin{bmatrix} 1 & 0 & 1 & 2 \\ 0 & 1 & 1 & 6 \end{bmatrix}_{1290} = \mathbf{Pl}(3, 4, 6, 2, 6, 1)_{4173}
\end{aligned}$$

$$\begin{aligned}
\ell_{62} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^4 \\ 0 & 1 & 1 & \gamma^2 \end{bmatrix}_{4194} = \begin{bmatrix} 1 & 0 & 1 & 7 \\ 0 & 1 & 1 & 4 \end{bmatrix}_{4194} = \mathbf{Pl}(4, 3, 5, 7, 4, 1)_{3124} \\
\ell_{63} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^3 \\ 0 & 1 & 1 & \gamma \end{bmatrix}_{3010} = \begin{bmatrix} 1 & 0 & 1 & 5 \\ 0 & 1 & 1 & 2 \end{bmatrix}_{3010} = \mathbf{Pl}(5, 7, 7, 5, 2, 1)_{2201} \\
\ell_{64} &= \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & \gamma^5 \end{bmatrix}_{682} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 3 \end{bmatrix}_{682} = \mathbf{Pl}(6, 2, 1, 1, 3, 1)_{2454} \\
\ell_{65} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^2 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{2418} = \begin{bmatrix} 1 & 0 & 1 & 4 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{2418} = \mathbf{Pl}(7, 5, 3, 4, 1, 1)_{1531} \\
\ell_{66} &= \begin{bmatrix} 1 & \gamma^5 & \gamma & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1459} = \begin{bmatrix} 1 & 3 & 2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1459} = \mathbf{Pl}(0, 2, 0, 3, 1, 0)_{240} \\
\ell_{67} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^4 \\ 0 & 1 & 1 & \gamma^6 \end{bmatrix}_{4210} = \begin{bmatrix} 1 & 0 & 1 & 7 \\ 0 & 1 & 1 & 6 \end{bmatrix}_{4210} = \mathbf{Pl}(1, 1, 5, 7, 6, 1)_{4122} \\
\ell_{68} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^3 \\ 0 & 1 & 1 & \gamma^5 \end{bmatrix}_{3018} = \begin{bmatrix} 1 & 0 & 1 & 5 \\ 0 & 1 & 1 & 3 \end{bmatrix}_{3018} = \mathbf{Pl}(2, 6, 7, 5, 3, 1)_{2695} \\
\ell_{69} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^6 \\ 0 & 1 & 1 & \gamma \end{bmatrix}_{3594} = \begin{bmatrix} 1 & 0 & 1 & 6 \\ 0 & 1 & 1 & 2 \end{bmatrix}_{3594} = \mathbf{Pl}(3, 4, 2, 6, 2, 1)_{1982} \\
\ell_{70} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^2 \\ 0 & 1 & 1 & \gamma^4 \end{bmatrix}_{2466} = \begin{bmatrix} 1 & 0 & 1 & 4 \\ 0 & 1 & 1 & 7 \end{bmatrix}_{2466} = \mathbf{Pl}(4, 3, 3, 4, 7, 1)_{4545} \\
\ell_{71} &= \begin{bmatrix} 1 & 0 & 1 & \gamma \\ 0 & 1 & 1 & \gamma^3 \end{bmatrix}_{1282} = \begin{bmatrix} 1 & 0 & 1 & 2 \\ 0 & 1 & 1 & 5 \end{bmatrix}_{1282} = \mathbf{Pl}(5, 7, 6, 2, 5, 1)_{3664} \\
\ell_{72} &= \begin{bmatrix} 1 & 0 & 1 & \gamma^5 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{1834} = \begin{bmatrix} 1 & 0 & 1 & 3 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{1834} = \mathbf{Pl}(6, 2, 4, 3, 1, 1)_{1565} \\
\ell_{73} &= \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & \gamma^2 \end{bmatrix}_{690} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 4 \end{bmatrix}_{690} = \mathbf{Pl}(7, 5, 1, 1, 4, 1)_{2952}
\end{aligned}$$

Rank of lines: ( 74, 145, 666, 3626, 2442, 1850, 4218, 1258, 3034, 656, 82, 122, 106, 98, 130, 90, 114, 4689, 658, 3578, 2410, 1826, 4162, 1242, 2994, 729, 2773, 1266, 714, 3002, 3618, 1858, 2458, 4178, 4087, 1842, 4170, 698, 3042, 2434, 3610, 1298, 4598, 2450, 1274, 4186, 674, 3586, 3050, 1874, ...1282, 1834, 690 )

Rank of points on Klein quadric: ( 665, 201, 1323, 3859, 2867, 2379, 4411, 1907, 3435, 89, 1224, 3752, 2752, 2256, 4280, 1768, 3288, 25, 874, 1120, 1023, 975, 1172, 928, 1076, 209, 272, 2666, 4473, 1702, 3509, 3090, 4057, 2126, 304, 2092, 1631, 3480, 4237, 2558, 3021, 4702, 290, 3555, 3178, 2633, 1962, 1501, 4736, 4107, ...3664, 1565, 2952 )

### 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 8 single points:

The single points on the surface are:

0 :  $P_4 = (1, 1, 1, 1)$  lies on line  $\ell_{25}$   
 1 :  $P_{20} = (1, 1, 1, 0)$  lies on line  $\ell_{25}$   
 2 :  $P_{219} = (2, 2, 2, 1)$  lies on line  $\ell_{25}$   
 3 :  $P_{292} = (3, 3, 3, 1)$  lies on line  $\ell_{25}$   
 4 :  $P_{365} = (4, 4, 4, 1)$  lies on line  $\ell_{25}$

5 :  $P_{438} = (5, 5, 5, 1)$  lies on line  $\ell_{25}$   
 6 :  $P_{511} = (6, 6, 6, 1)$  lies on line  $\ell_{25}$   
 7 :  $P_{584} = (7, 7, 7, 1)$  lies on line  $\ell_{25}$

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

[illegible]

Neighbor sets in the line intersection graph:

Line 0 intersects

Line	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{21}$
in point	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{19}$	$P_{19}$	$P_{19}$	$P_{19}$	$P_{19}$

Line 1 intersects

Line	$\ell_0$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	
in point	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_3$	$P_{83}$	$P_{92}$	$P_{101}$	$P_{110}$	$P_{119}$	$P_{128}$	$P_{137}$	$P_3$	$P_{83}$	$P_{92}$	$P_{101}$	

Line 2 intersects

Line	$\ell_0$	$\ell_1$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	
in point	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_{139}$	$P_{146}$	$P_{156}$	$P_{163}$	$P_{174}$	$P_{181}$	$P_{192}$	$P_{199}$	$P_{146}$	$P_{139}$	$P_{163}$	

Line 3 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	
in point	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_{203}$	$P_{212}$	$P_{217}$	$P_{226}$	$P_{239}$	$P_{248}$	$P_{253}$	$P_{262}$	$P_{217}$	$P_{226}$	$P_{203}$	

Line 4 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	
in point	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_{268}$	$P_{275}$	$P_{282}$	$P_{289}$	$P_{304}$	$P_{311}$	$P_{318}$	$P_{325}$	$P_{289}$	$P_{282}$	$P_{275}$	

Line 5 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	
in point	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_{333}$	$P_{342}$	$P_{351}$	$P_{360}$	$P_{361}$	$P_{370}$	$P_{379}$	$P_{388}$	$P_{361}$	$P_{370}$	$P_{379}$	

Line 6 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	
in point	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_{398}$	$P_{405}$	$P_{416}$	$P_{423}$	$P_{426}$	$P_{433}$	$P_{444}$	$P_{451}$	$P_{433}$	$P_{426}$	$P_{451}$	

Line 7 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	
in point	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_{463}$	$P_{472}$	$P_{477}$	$P_{486}$	$P_{491}$	$P_{500}$	$P_{505}$	$P_{514}$	$P_{505}$	$P_{514}$	$P_{491}$	

Line 8 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	
in point	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_5$	$P_{528}$	$P_{535}$	$P_{542}$	$P_{549}$	$P_{556}$	$P_{563}$	$P_{570}$	$P_{577}$	$P_{577}$	$P_{570}$	$P_{563}$	

Line 9 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$
in point	$P_{12}$	$P_3$	$P_{139}$	$P_{203}$	$P_{268}$	$P_{333}$	$P_{398}$	$P_{463}$	$P_{528}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_3$	$P_{139}$	$P_{203}$

Line 10 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$
in point	$P_{12}$	$P_{83}$	$P_{146}$	$P_{212}$	$P_{275}$	$P_{342}$	$P_{405}$	$P_{472}$	$P_{535}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{146}$	$P_{83}$	$P_{212}$

Line 11 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$
in point	$P_{12}$	$P_{92}$	$P_{156}$	$P_{217}$	$P_{282}$	$P_{351}$	$P_{416}$	$P_{477}$	$P_{542}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{217}$	$P_{282}$	$P_{156}$



Line 12 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$
in point	$P_{12}$	$P_{101}$	$P_{163}$	$P_{226}$	$P_{289}$	$P_{360}$	$P_{423}$	$P_{486}$	$P_{549}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{289}$	$P_{226}$

Line 13 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$
in point	$P_{12}$	$P_{110}$	$P_{174}$	$P_{239}$	$P_{304}$	$P_{361}$	$P_{426}$	$P_{491}$	$P_{556}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{361}$	$P_{426}$

Line 14 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$
in point	$P_{12}$	$P_{119}$	$P_{181}$	$P_{248}$	$P_{311}$	$P_{370}$	$P_{433}$	$P_{500}$	$P_{563}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{433}$	$P_{370}$

Line 15 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{16}$	$\ell_{17}$	$\ell_{18}$
in point	$P_{12}$	$P_{128}$	$P_{192}$	$P_{253}$	$P_{318}$	$P_{379}$	$P_{444}$	$P_{505}$	$P_{570}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{505}$	$P_{570}$

Line 16 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{17}$	$\ell_{18}$
in point	$P_{12}$	$P_{137}$	$P_{199}$	$P_{262}$	$P_{325}$	$P_{388}$	$P_{451}$	$P_{514}$	$P_{577}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{12}$	$P_{577}$	$P_{514}$

Line 17 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$
in point	$P_{19}$	$P_3$	$P_{146}$	$P_{217}$	$P_{289}$	$P_{361}$	$P_{433}$	$P_{505}$	$P_{577}$	$P_3$	$P_{146}$	$P_{217}$	$P_{289}$	$P_{361}$	$P_{433}$	$P_{505}$	$P_{577}$	$P_{19}$

Line 18 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$
in point	$P_{19}$	$P_{83}$	$P_{139}$	$P_{226}$	$P_{282}$	$P_{370}$	$P_{426}$	$P_{514}$	$P_{570}$	$P_{139}$	$P_{83}$	$P_{282}$	$P_{226}$	$P_{426}$	$P_{370}$	$P_{570}$	$P_{514}$	$P_{19}$

Line 19 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$
in point	$P_{19}$	$P_{92}$	$P_{163}$	$P_{203}$	$P_{275}$	$P_{379}$	$P_{451}$	$P_{491}$	$P_{563}$	$P_{203}$	$P_{275}$	$P_{92}$	$P_{163}$	$P_{491}$	$P_{563}$	$P_{379}$	$P_{451}$	$P_{19}$

Line 20 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$
in point	$P_{19}$	$P_{101}$	$P_{156}$	$P_{212}$	$P_{268}$	$P_{388}$	$P_{444}$	$P_{500}$	$P_{556}$	$P_{268}$	$P_{212}$	$P_{156}$	$P_{101}$	$P_{556}$	$P_{500}$	$P_{444}$	$P_{388}$	$P_{19}$

Line 21 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$
in point	$P_{19}$	$P_{110}$	$P_{181}$	$P_{253}$	$P_{325}$	$P_{333}$	$P_{405}$	$P_{477}$	$P_{549}$	$P_{333}$	$P_{405}$	$P_{477}$	$P_{549}$	$P_{110}$	$P_{181}$	$P_{253}$	$P_{325}$	$P_{19}$

Line 22 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$
in point	$P_{19}$	$P_{119}$	$P_{174}$	$P_{262}$	$P_{318}$	$P_{342}$	$P_{398}$	$P_{486}$	$P_{542}$	$P_{398}$	$P_{342}$	$P_{542}$	$P_{486}$	$P_{174}$	$P_{119}$	$P_{318}$	$P_{262}$	$P_{19}$

Line 23 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$
in point	$P_{19}$	$P_{128}$	$P_{199}$	$P_{239}$	$P_{311}$	$P_{351}$	$P_{423}$	$P_{463}$	$P_{535}$	$P_{463}$	$P_{535}$	$P_{351}$	$P_{423}$	$P_{239}$	$P_{311}$	$P_{128}$	$P_{199}$	$P_{19}$

Line 24 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{18}$
in point	$P_{19}$	$P_{137}$	$P_{192}$	$P_{248}$	$P_{304}$	$P_{360}$	$P_{416}$	$P_{472}$	$P_{528}$	$P_{528}$	$P_{472}$	$P_{416}$	$P_{360}$	$P_{304}$	$P_{248}$	$P_{192}$	$P_{137}$	$P_{19}$

Line 25 intersects

Line	$\ell_1$	$\ell_9$	$\ell_{17}$	$\ell_{26}$	$\ell_{34}$	$\ell_{42}$	$\ell_{50}$	$\ell_{58}$	$\ell_{66}$
in point	$P_3$	$P_3$	$P_3$	$P_3$	$P_3$	$P_3$	$P_3$	$P_3$	$P_3$

Line 26 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{30}$	$P_3$	$P_{156}$	$P_{239}$	$P_{318}$	$P_{370}$	$P_{451}$	$P_{472}$	$P_{549}$	$P_3$	$P_{472}$	$P_{156}$	$P_{549}$	$P_{239}$	$P_{370}$	$P_{318}$	$P_{451}$	$P_3$

Line 27 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{30}$	$P_{83}$	$P_{163}$	$P_{248}$	$P_{325}$	$P_{361}$	$P_{444}$	$P_{463}$	$P_{542}$	$P_{463}$	$P_{83}$	$P_{542}$	$P_{163}$	$P_{361}$	$P_{248}$	$P_{444}$	$P_{325}$	$P_{463}$

Line 28 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{30}$	$P_{92}$	$P_{139}$	$P_{253}$	$P_{304}$	$P_{388}$	$P_{433}$	$P_{486}$	$P_{535}$	$P_{139}$	$P_{535}$	$P_{92}$	$P_{486}$	$P_{304}$	$P_{433}$	$P_{253}$	$P_{388}$	$P_{486}$

Line 29 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{30}$	$P_{101}$	$P_{146}$	$P_{262}$	$P_{311}$	$P_{379}$	$P_{426}$	$P_{477}$	$P_{528}$	$P_{528}$	$P_{146}$	$P_{477}$	$P_{101}$	$P_{426}$	$P_{311}$	$P_{379}$	$P_{262}$	$P_{477}$

Line 30 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{30}$	$P_{110}$	$P_{192}$	$P_{203}$	$P_{282}$	$P_{342}$	$P_{423}$	$P_{500}$	$P_{577}$	$P_{203}$	$P_{342}$	$P_{282}$	$P_{423}$	$P_{110}$	$P_{500}$	$P_{192}$	$P_{577}$	$P_{423}$

Line 31 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{30}$	$P_{119}$	$P_{199}$	$P_{212}$	$P_{289}$	$P_{333}$	$P_{416}$	$P_{491}$	$P_{570}$	$P_{333}$	$P_{212}$	$P_{416}$	$P_{289}$	$P_{491}$	$P_{119}$	$P_{570}$	$P_{199}$	$P_{491}$

Line 32 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{30}$	$P_{128}$	$P_{174}$	$P_{217}$	$P_{268}$	$P_{360}$	$P_{405}$	$P_{514}$	$P_{563}$	$P_{268}$	$P_{405}$	$P_{217}$	$P_{360}$	$P_{174}$	$P_{563}$	$P_{128}$	$P_{514}$	$P_{405}$

Line 33 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{30}$	$P_{137}$	$P_{181}$	$P_{226}$	$P_{275}$	$P_{351}$	$P_{398}$	$P_{505}$	$P_{556}$	$P_{398}$	$P_{275}$	$P_{351}$	$P_{226}$	$P_{556}$	$P_{181}$	$P_{505}$	$P_{137}$	$P_{398}$

Line 34 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{37}$	$P_3$	$P_{163}$	$P_{253}$	$P_{311}$	$P_{342}$	$P_{416}$	$P_{514}$	$P_{556}$	$P_3$	$P_{342}$	$P_{416}$	$P_{163}$	$P_{556}$	$P_{311}$	$P_{253}$	$P_{514}$	$P_3$

Line 35 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{37}$	$P_{83}$	$P_{156}$	$P_{262}$	$P_{304}$	$P_{333}$	$P_{423}$	$P_{505}$	$P_{563}$	$P_{333}$	$P_{83}$	$P_{156}$	$P_{423}$	$P_{304}$	$P_{563}$	$P_{505}$	$P_{262}$	$P_{423}$

Line 36 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{37}$	$P_{92}$	$P_{146}$	$P_{239}$	$P_{325}$	$P_{360}$	$P_{398}$	$P_{500}$	$P_{570}$	$P_{398}$	$P_{146}$	$P_{92}$	$P_{360}$	$P_{239}$	$P_{500}$	$P_{570}$	$P_{325}$	$P_{398}$

Line 37 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{37}$	$P_{101}$	$P_{139}$	$P_{248}$	$P_{318}$	$P_{351}$	$P_{405}$	$P_{491}$	$P_{577}$	$P_{139}$	$P_{405}$	$P_{351}$	$P_{101}$	$P_{491}$	$P_{248}$	$P_{318}$	$P_{577}$	$P_{491}$

Line 38 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$
in point	$P_{37}$	$P_{110}$	$P_{199}$	$P_{217}$	$P_{275}$	$P_{370}$	$P_{444}$	$P_{486}$	$P_{528}$	$P_{528}$	$P_{275}$	$P_{217}$	$P_{486}$	$P_{110}$	$P_{370}$	$P_{444}$	$P_{199}$

Line 39 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$
in point	$P_{37}$	$P_{119}$	$P_{192}$	$P_{226}$	$P_{268}$	$P_{361}$	$P_{451}$	$P_{477}$	$P_{535}$	$P_{268}$	$P_{535}$	$P_{477}$	$P_{226}$	$P_{361}$	$P_{119}$	$P_{192}$	$P_{451}$

Line 40 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$
in point	$P_{37}$	$P_{128}$	$P_{181}$	$P_{203}$	$P_{289}$	$P_{388}$	$P_{426}$	$P_{472}$	$P_{542}$	$P_{203}$	$P_{472}$	$P_{542}$	$P_{289}$	$P_{426}$	$P_{181}$	$P_{128}$	$P_{388}$

Line 41 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$
in point	$P_{37}$	$P_{137}$	$P_{174}$	$P_{212}$	$P_{282}$	$P_{379}$	$P_{433}$	$P_{463}$	$P_{549}$	$P_{463}$	$P_{212}$	$P_{282}$	$P_{549}$	$P_{174}$	$P_{433}$	$P_{379}$	$P_{137}$

Line 42 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{48}$	$P_3$	$P_{174}$	$P_{248}$	$P_{275}$	$P_{388}$	$P_{423}$	$P_{477}$	$P_{570}$	$P_3$	$P_{275}$	$P_{477}$	$P_{423}$	$P_{174}$	$P_{248}$	$P_{570}$	$P_{388}$	$P_3$

Line 43 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{48}$	$P_{83}$	$P_{181}$	$P_{239}$	$P_{268}$	$P_{379}$	$P_{416}$	$P_{486}$	$P_{577}$	$P_{268}$	$P_{83}$	$P_{416}$	$P_{486}$	$P_{239}$	$P_{181}$	$P_{379}$	$P_{577}$	$P_{174}$

Line 44 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{48}$	$P_{92}$	$P_{192}$	$P_{262}$	$P_{289}$	$P_{370}$	$P_{405}$	$P_{463}$	$P_{556}$	$P_{463}$	$P_{405}$	$P_{92}$	$P_{289}$	$P_{556}$	$P_{370}$	$P_{192}$	$P_{262}$	$P_{174}$

Line 45 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{48}$	$P_{101}$	$P_{199}$	$P_{253}$	$P_{282}$	$P_{361}$	$P_{398}$	$P_{472}$	$P_{563}$	$P_{398}$	$P_{472}$	$P_{282}$	$P_{101}$	$P_{361}$	$P_{563}$	$P_{253}$	$P_{199}$	$P_{174}$

Line 46 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{48}$	$P_{110}$	$P_{139}$	$P_{212}$	$P_{311}$	$P_{360}$	$P_{451}$	$P_{505}$	$P_{542}$	$P_{139}$	$P_{212}$	$P_{542}$	$P_{360}$	$P_{110}$	$P_{311}$	$P_{505}$	$P_{451}$	$P_{174}$

Line 47 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{48}$	$P_{119}$	$P_{146}$	$P_{203}$	$P_{304}$	$P_{351}$	$P_{444}$	$P_{514}$	$P_{549}$	$P_{203}$	$P_{146}$	$P_{351}$	$P_{549}$	$P_{304}$	$P_{119}$	$P_{444}$	$P_{514}$	$P_{174}$

Line 48 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{48}$	$P_{128}$	$P_{156}$	$P_{226}$	$P_{325}$	$P_{342}$	$P_{433}$	$P_{491}$	$P_{528}$	$P_{528}$	$P_{342}$	$P_{156}$	$P_{226}$	$P_{491}$	$P_{433}$	$P_{128}$	$P_{325}$	$P_{174}$

Line 49 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{48}$	$P_{137}$	$P_{163}$	$P_{217}$	$P_{318}$	$P_{333}$	$P_{426}$	$P_{500}$	$P_{535}$	$P_{333}$	$P_{535}$	$P_{217}$	$P_{163}$	$P_{426}$	$P_{500}$	$P_{318}$	$P_{137}$	$P_{174}$

Line 50 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{55}$	$P_3$	$P_{181}$	$P_{262}$	$P_{282}$	$P_{360}$	$P_{444}$	$P_{491}$	$P_{535}$	$P_3$	$P_{535}$	$P_{282}$	$P_{360}$	$P_{491}$	$P_{181}$	$P_{444}$	$P_{262}$	$P_3$

Line 51 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{55}$	$P_{83}$	$P_{174}$	$P_{253}$	$P_{289}$	$P_{351}$	$P_{451}$	$P_{500}$	$P_{528}$	$P_{528}$	$P_{83}$	$P_{351}$	$P_{289}$	$P_{174}$	$P_{500}$	$P_{253}$	$P_{451}$	$P_{514}$

Line 52 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{55}$	$P_{92}$	$P_{199}$	$P_{248}$	$P_{268}$	$P_{342}$	$P_{426}$	$P_{505}$	$P_{549}$	$P_{268}$	$P_{342}$	$P_{92}$	$P_{549}$	$P_{426}$	$P_{248}$	$P_{505}$	$P_{199}$	$P_{514}$

Line 53 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{55}$	$P_{101}$	$P_{192}$	$P_{239}$	$P_{275}$	$P_{333}$	$P_{433}$	$P_{514}$	$P_{542}$	$P_{333}$	$P_{275}$	$P_{542}$	$P_{101}$	$P_{239}$	$P_{433}$	$P_{192}$	$P_{514}$	$P_{514}$

Line 54 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{55}$	$P_{110}$	$P_{146}$	$P_{226}$	$P_{318}$	$P_{388}$	$P_{416}$	$P_{463}$	$P_{563}$	$P_{463}$	$P_{146}$	$P_{416}$	$P_{226}$	$P_{110}$	$P_{563}$	$P_{318}$	$P_{388}$	$P_{514}$

Line 55 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{55}$	$P_{119}$	$P_{139}$	$P_{217}$	$P_{325}$	$P_{379}$	$P_{423}$	$P_{472}$	$P_{556}$	$P_{139}$	$P_{472}$	$P_{217}$	$P_{423}$	$P_{556}$	$P_{119}$	$P_{379}$	$P_{325}$	$P_{514}$

Line 56 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{55}$	$P_{128}$	$P_{163}$	$P_{212}$	$P_{304}$	$P_{370}$	$P_{398}$	$P_{477}$	$P_{577}$	$P_{398}$	$P_{212}$	$P_{477}$	$P_{163}$	$P_{304}$	$P_{370}$	$P_{128}$	$P_{577}$	$P_{514}$

Line 57 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{55}$	$P_{137}$	$P_{156}$	$P_{203}$	$P_{311}$	$P_{361}$	$P_{405}$	$P_{486}$	$P_{570}$	$P_{203}$	$P_{405}$	$P_{156}$	$P_{486}$	$P_{361}$	$P_{311}$	$P_{570}$	$P_{137}$	$P_{514}$

Line 58 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{66}$	$P_3$	$P_{192}$	$P_{212}$	$P_{325}$	$P_{351}$	$P_{426}$	$P_{486}$	$P_{563}$	$P_3$	$P_{212}$	$P_{351}$	$P_{486}$	$P_{426}$	$P_{563}$	$P_{192}$	$P_{325}$	$P_3$

Line 59 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{66}$	$P_{83}$	$P_{199}$	$P_{203}$	$P_{318}$	$P_{360}$	$P_{433}$	$P_{477}$	$P_{556}$	$P_{203}$	$P_{83}$	$P_{477}$	$P_{360}$	$P_{556}$	$P_{433}$	$P_{318}$	$P_{199}$	$P_{514}$

Line 60 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{66}$	$P_{92}$	$P_{174}$	$P_{226}$	$P_{311}$	$P_{333}$	$P_{444}$	$P_{472}$	$P_{577}$	$P_{333}$	$P_{472}$	$P_{92}$	$P_{226}$	$P_{174}$	$P_{311}$	$P_{444}$	$P_{577}$	$P_{514}$

Line 61 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{66}$	$P_{101}$	$P_{181}$	$P_{217}$	$P_{304}$	$P_{342}$	$P_{451}$	$P_{463}$	$P_{570}$	$P_{463}$	$P_{342}$	$P_{217}$	$P_{101}$	$P_{304}$	$P_{181}$	$P_{570}$	$P_{451}$	$P_{514}$

Line 62 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{66}$	$P_{110}$	$P_{156}$	$P_{248}$	$P_{289}$	$P_{379}$	$P_{398}$	$P_{514}$	$P_{535}$	$P_{398}$	$P_{535}$	$P_{156}$	$P_{289}$	$P_{110}$	$P_{248}$	$P_{379}$	$P_{514}$	$P_{514}$

Line 63 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{66}$	$P_{119}$	$P_{163}$	$P_{239}$	$P_{282}$	$P_{388}$	$P_{405}$	$P_{505}$	$P_{528}$	$P_{528}$	$P_{405}$	$P_{282}$	$P_{163}$	$P_{239}$	$P_{119}$	$P_{505}$	$P_{388}$	$P_{514}$

Line 64 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$
in point	$P_{66}$	$P_{128}$	$P_{139}$	$P_{262}$	$P_{275}$	$P_{361}$	$P_{416}$	$P_{500}$	$P_{549}$	$P_{139}$	$P_{275}$	$P_{416}$	$P_{549}$	$P_{361}$	$P_{500}$	$P_{128}$	$P_{262}$

Line 65 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$
in point	$P_{66}$	$P_{137}$	$P_{146}$	$P_{253}$	$P_{268}$	$P_{370}$	$P_{423}$	$P_{491}$	$P_{542}$	$P_{268}$	$P_{146}$	$P_{542}$	$P_{423}$	$P_{491}$	$P_{370}$	$P_{253}$	$P_{137}$

Line 66 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{73}$	$P_3$	$P_{199}$	$P_{226}$	$P_{304}$	$P_{379}$	$P_{405}$	$P_{500}$	$P_{542}$	$P_3$	$P_{405}$	$P_{542}$	$P_{226}$	$P_{304}$	$P_{500}$	$P_{379}$	$P_{199}$	$P_3$

Line 67 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{73}$	$P_{83}$	$P_{192}$	$P_{217}$	$P_{311}$	$P_{388}$	$P_{398}$	$P_{491}$	$P_{549}$	$P_{398}$	$P_{83}$	$P_{217}$	$P_{549}$	$P_{491}$	$P_{311}$	$P_{192}$	$P_{388}$	$P_{73}$

Line 68 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{73}$	$P_{92}$	$P_{181}$	$P_{212}$	$P_{318}$	$P_{361}$	$P_{423}$	$P_{514}$	$P_{528}$	$P_{528}$	$P_{212}$	$P_{92}$	$P_{423}$	$P_{361}$	$P_{181}$	$P_{318}$	$P_{514}$	$P_{73}$

Line 69 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{73}$	$P_{101}$	$P_{174}$	$P_{203}$	$P_{325}$	$P_{370}$	$P_{416}$	$P_{505}$	$P_{535}$	$P_{203}$	$P_{535}$	$P_{416}$	$P_{101}$	$P_{174}$	$P_{370}$	$P_{505}$	$P_{325}$	$P_{73}$

Line 70 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{73}$	$P_{110}$	$P_{163}$	$P_{262}$	$P_{268}$	$P_{351}$	$P_{433}$	$P_{472}$	$P_{570}$	$P_{268}$	$P_{472}$	$P_{351}$	$P_{163}$	$P_{110}$	$P_{433}$	$P_{570}$	$P_{262}$	$P_{73}$

Line 71 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{73}$	$P_{119}$	$P_{156}$	$P_{253}$	$P_{275}$	$P_{360}$	$P_{426}$	$P_{463}$	$P_{577}$	$P_{463}$	$P_{275}$	$P_{156}$	$P_{360}$	$P_{426}$	$P_{119}$	$P_{253}$	$P_{577}$	$P_{73}$

Line 72 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{73}$	$P_{128}$	$P_{146}$	$P_{248}$	$P_{282}$	$P_{333}$	$P_{451}$	$P_{486}$	$P_{556}$	$P_{333}$	$P_{146}$	$P_{282}$	$P_{486}$	$P_{556}$	$P_{248}$	$P_{128}$	$P_{451}$	$P_{73}$

Line 73 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{17}$
in point	$P_{73}$	$P_{137}$	$P_{139}$	$P_{239}$	$P_{289}$	$P_{342}$	$P_{444}$	$P_{477}$	$P_{563}$	$P_{139}$	$P_{342}$	$P_{477}$	$P_{289}$	$P_{239}$	$P_{563}$	$P_{444}$	$P_{137}$	$P_{73}$

The surface has 81 points:

The points on the surface are:

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

$$1 : P_4 = (1, 1, 1, 1)$$

$$2 : P_5 = (1, 1, 0, 0)$$

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

$$4 : P_{19} = (0, 1, 1, 0)$$

$$5 : P_{20} = (1, 1, 1, 0)$$

$$6 : P_{30} = (3, 2, 1, 0)$$

$$7 : P_{37} = (2, 3, 1, 0)$$

$$8 : P_{48} = (5, 4, 1, 0)$$

$$9 : P_{55} = (4, 5, 1, 0)$$

$$10 : P_{66} = (7, 6, 1, 0)$$

$$11 : P_{73} = (6, 7, 1, 0)$$

$$12 : P_{83} = (1, 1, 0, 1)$$

$$13 : P_{92} = (2, 2, 0, 1)$$

$$14 : P_{101} = (3, 3, 0, 1)$$

15 :  $P_{110} = (4, 4, 0, 1)$   
 16 :  $P_{119} = (5, 5, 0, 1)$   
 17 :  $P_{128} = (6, 6, 0, 1)$   
 18 :  $P_{137} = (7, 7, 0, 1)$   
 19 :  $P_{139} = (1, 0, 1, 1)$   
 20 :  $P_{146} = (0, 1, 1, 1)$   
 21 :  $P_{156} = (3, 2, 1, 1)$   
 22 :  $P_{163} = (2, 3, 1, 1)$   
 23 :  $P_{174} = (5, 4, 1, 1)$   
 24 :  $P_{181} = (4, 5, 1, 1)$   
 25 :  $P_{192} = (7, 6, 1, 1)$   
 26 :  $P_{199} = (6, 7, 1, 1)$   
 27 :  $P_{203} = (2, 0, 2, 1)$   
 28 :  $P_{212} = (3, 1, 2, 1)$   
 29 :  $P_{217} = (0, 2, 2, 1)$   
 30 :  $P_{219} = (2, 2, 2, 1)$   
 31 :  $P_{226} = (1, 3, 2, 1)$   
 32 :  $P_{239} = (6, 4, 2, 1)$   
 33 :  $P_{248} = (7, 5, 2, 1)$   
 34 :  $P_{253} = (4, 6, 2, 1)$   
 35 :  $P_{262} = (5, 7, 2, 1)$   
 36 :  $P_{268} = (3, 0, 3, 1)$   
 37 :  $P_{275} = (2, 1, 3, 1)$

38 :  $P_{282} = (1, 2, 3, 1)$   
 39 :  $P_{289} = (0, 3, 3, 1)$   
 40 :  $P_{292} = (3, 3, 3, 1)$   
 41 :  $P_{304} = (7, 4, 3, 1)$   
 42 :  $P_{311} = (6, 5, 3, 1)$   
 43 :  $P_{318} = (5, 6, 3, 1)$   
 44 :  $P_{325} = (4, 7, 3, 1)$   
 45 :  $P_{333} = (4, 0, 4, 1)$   
 46 :  $P_{342} = (5, 1, 4, 1)$   
 47 :  $P_{351} = (6, 2, 4, 1)$   
 48 :  $P_{360} = (7, 3, 4, 1)$   
 49 :  $P_{361} = (0, 4, 4, 1)$   
 50 :  $P_{365} = (4, 4, 4, 1)$   
 51 :  $P_{370} = (1, 5, 4, 1)$   
 52 :  $P_{379} = (2, 6, 4, 1)$   
 53 :  $P_{388} = (3, 7, 4, 1)$   
 54 :  $P_{398} = (5, 0, 5, 1)$   
 55 :  $P_{405} = (4, 1, 5, 1)$   
 56 :  $P_{416} = (7, 2, 5, 1)$   
 57 :  $P_{423} = (6, 3, 5, 1)$   
 58 :  $P_{426} = (1, 4, 5, 1)$   
 59 :  $P_{433} = (0, 5, 5, 1)$   
 60 :  $P_{438} = (5, 5, 5, 1)$

61 :  $P_{444} = (3, 6, 5, 1)$   
 62 :  $P_{451} = (2, 7, 5, 1)$   
 63 :  $P_{463} = (6, 0, 6, 1)$   
 64 :  $P_{472} = (7, 1, 6, 1)$   
 65 :  $P_{477} = (4, 2, 6, 1)$   
 66 :  $P_{486} = (5, 3, 6, 1)$   
 67 :  $P_{491} = (2, 4, 6, 1)$   
 68 :  $P_{500} = (3, 5, 6, 1)$   
 69 :  $P_{505} = (0, 6, 6, 1)$   
 70 :  $P_{511} = (6, 6, 6, 1)$   
 71 :  $P_{514} = (1, 7, 6, 1)$   
 72 :  $P_{528} = (7, 0, 7, 1)$   
 73 :  $P_{535} = (6, 1, 7, 1)$   
 74 :  $P_{542} = (5, 2, 7, 1)$   
 75 :  $P_{549} = (4, 3, 7, 1)$   
 76 :  $P_{556} = (3, 4, 7, 1)$   
 77 :  $P_{563} = (2, 5, 7, 1)$   
 78 :  $P_{570} = (1, 6, 7, 1)$   
 79 :  $P_{577} = (0, 7, 7, 1)$   
 80 :  $P_{584} = (7, 7, 7, 1)$