Rank-74295 over GF(32)

January 15, 2021

The equation

The equation of the surface is :

$$X_2^3 + X_0^2X_1 + X_0^2X_2 + X_1^2X_3 + X_0X_3^2 + X_0X_1X_2 = 0$$

(0, 0, 1, 0, 1, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(32) is 1142982693

General information

Number of lines	2
Number of points	1057
Number of singular points	1
Number of Eckardt points	0
Number of double points	0
Number of single points	66
Number of points off lines	991
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33^2
Type of lines on points	1^{66}, 0^{991}

Singular Points

The surface has 1 singular points:

$0: \ P_{36} = \mathbf{P}(1,0,1,0) = \mathbf{P}(1,0,1,0)$

The 2 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \left[\begin{array}{cccc} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \end{array}\right]_{1057} = \left[\begin{array}{cccc} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \end{array}\right]_{1057} = \mathbf{Pl}(1,0,0,0,0,1)_{34850}$$

$$\ell_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{33} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{33} = \mathbf{Pl}(1,0,1,0,1,0)_{1153}$$

Rank of lines: (1057, 33)
Rank of points on Klein quadric: (34850, 1153)

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 66 single points:
The single points on the surface are:

0 : $P_0 = (1,0,0,0)$ lies on line ℓ_1
1 : $P_1 = (0,1,0,0)$ lies on line ℓ_0
2 : $P_4 = (1,1,1,1)$ lies on line ℓ_1
3 : $P_{36} = (1,0,1,0)$ lies on line ℓ_0
4 : $P_{68} = (1,1,1,0)$ lies on line ℓ_0
5 : $P_{100} = (1,2,1,0)$ lies on line ℓ_0
6 : $P_{132} = (1,3,1,0)$ lies on line ℓ_0
7 : $P_{164} = (1,4,1,0)$ lies on line ℓ_0
8 : $P_{196} = (1,5,1,0)$ lies on line ℓ_0
9 : $P_{228} = (1,6,1,0)$ lies on line ℓ_0
10 : $P_{260} = (1,7,1,0)$ lies on line ℓ_0
11 : $P_{292} = (1,8,1,0)$ lies on line ℓ_0
12 : $P_{324} = (1,9,1,0)$ lies on line ℓ_0
13 : $P_{356} = (1,10,1,0)$ lies on line ℓ_0
14 : $P_{388} = (1,11,1,0)$ lies on line ℓ_0
15 : $P_{420} = (1,12,1,0)$ lies on line ℓ_0
16 : $P_{452} = (1,13,1,0)$ lies on line ℓ_0
17 : $P_{484} = (1,14,1,0)$ lies on line ℓ_0
18 : $P_{516} = (1,15,1,0)$ lies on line ℓ_0
19 : $P_{548} = (1,16,1,0)$ lies on line ℓ_0
20 : $P_{580} = (1,17,1,0)$ lies on line ℓ_0
21 : $P_{612} = (1,18,1,0)$ lies on line ℓ_0
22 : $P_{644} = (1,19,1,0)$ lies on line ℓ_0
23 : $P_{676} = (1,20,1,0)$ lies on line ℓ_0
24 : $P_{708} = (1,21,1,0)$ lies on line ℓ_0
25 : $P_{740} = (1,22,1,0)$ lies on line ℓ_0
26 : $P_{772} = (1,23,1,0)$ lies on line ℓ_0
27 : $P_{804} = (1,24,1,0)$ lies on line ℓ_0
28 : $P_{836} = (1,25,1,0)$ lies on line ℓ_0
29 : $P_{868} = (1,26,1,0)$ lies on line ℓ_0
30 : $P_{900} = (1,27,1,0)$ lies on line ℓ_0
31 : $P_{932} = (1,28,1,0)$ lies on line ℓ_0
32 : $P_{964} = (1,29,1,0)$ lies on line ℓ_0
33 : $P_{996} = (1,30,1,0)$ lies on line ℓ_0
34 : $P_{1028} = (1,31,1,0)$ lies on line ℓ_0
35 : $P_{2114} = (0,1,1,1)$ lies on line ℓ_1
36 : $P_{2115} = (2,1,1,1)$ lies on line ℓ_1
37 : $P_{2116} = (3,1,1,1)$ lies on line ℓ_1
38 : $P_{2117} = (4,1,1,1)$ lies on line ℓ_1
39 : $P_{2118} = (5,1,1,1)$ lies on line ℓ_1
40 : $P_{2119} = (6,1,1,1)$ lies on line ℓ_1
41 : $P_{2120} = (7,1,1,1)$ lies on line ℓ_1
42 : $P_{2121} = (8,1,1,1)$ lies on line ℓ_1
43 : $P_{2122} = (9,1,1,1)$ lies on line ℓ_1
44 : $P_{2123} = (10,1,1,1)$ lies on line ℓ_1
45 : $P_{2124} = (11,1,1,1)$ lies on line ℓ_1
46 : $P_{2125} = (12,1,1,1)$ lies on line ℓ_1
47 : $P_{2126} = (13,1,1,1)$ lies on line ℓ_1
48 : $P_{2127} = (14,1,1,1)$ lies on line ℓ_1
49 : $P_{2128} = (15,1,1,1)$ lies on line ℓ_1
50 : $P_{2129} = (16,1,1,1)$ lies on line ℓ_1
51 : $P_{2130} = (17,1,1,1)$ lies on line ℓ_1
52 : $P_{2131} = (18,1,1,1)$ lies on line ℓ_1
53 : $P_{2132} = (19,1,1,1)$ lies on line ℓ_1
54 : $P_{2133} = (20,1,1,1)$ lies on line ℓ_1
55 : $P_{2134} = (21,1,1,1)$ lies on line ℓ_1
56 : $P_{2135} = (22,1,1,1)$ lies on line ℓ_1
57 : $P_{2136} = (23,1,1,1)$ lies on line ℓ_1
58 : $P_{2137} = (24,1,1,1)$ lies on line ℓ_1
59 : $P_{2138} = (25,1,1,1)$ lies on line ℓ_1

60 : $P_{2139} = (26, 1, 1, 1)$ lies on line ℓ_1
61 : $P_{2140} = (27, 1, 1, 1)$ lies on line ℓ_1
62 : $P_{2141} = (28, 1, 1, 1)$ lies on line ℓ_1
63 : $P_{2142} = (29, 1, 1, 1)$ lies on line ℓ_1
64 : $P_{2143} = (30, 1, 1, 1)$ lies on line ℓ_1
65 : $P_{2144} = (31, 1, 1, 1)$ lies on line ℓ_1

The single points on the surface are:

Points on surface but on no line

The surface has 991 points not on any line:
The points on the surface but not on lines are:

0 : $P_3 = (0, 0, 0, 1)$
1 : $P_{127} = (28, 2, 1, 0)$
2 : $P_{149} = (18, 3, 1, 0)$
3 : $P_{186} = (23, 4, 1, 0)$
4 : $P_{204} = (9, 5, 1, 0)$
5 : $P_{239} = (12, 6, 1, 0)$
6 : $P_{273} = (14, 7, 1, 0)$
7 : $P_{295} = (4, 8, 1, 0)$
8 : $P_{345} = (22, 9, 1, 0)$
9 : $P_{371} = (16, 10, 1, 0)$
10 : $P_{412} = (25, 11, 1, 0)$
11 : $P_{434} = (15, 12, 1, 0)$
12 : $P_{458} = (7, 13, 1, 0)$
13 : $P_{496} = (13, 14, 1, 0)$
14 : $P_{521} = (6, 15, 1, 0)$
15 : $P_{571} = (24, 16, 1, 0)$
16 : $P_{590} = (11, 17, 1, 0)$
17 : $P_{640} = (29, 18, 1, 0)$
18 : $P_{645} = (2, 19, 1, 0)$
19 : $P_{701} = (26, 20, 1, 0)$
20 : $P_{737} = (30, 21, 1, 0)$
21 : $P_{744} = (5, 22, 1, 0)$
22 : $P_{779} = (8, 23, 1, 0)$
23 : $P_{813} = (10, 24, 1, 0)$
24 : $P_{852} = (17, 25, 1, 0)$
25 : $P_{898} = (31, 26, 1, 0)$
26 : $P_{920} = (21, 27, 1, 0)$
27 : $P_{950} = (19, 28, 1, 0)$
28 : $P_{966} = (3, 29, 1, 0)$
29 : $P_{1022} = (27, 30, 1, 0)$
30 : $P_{1047} = (20, 31, 1, 0)$
31 : $P_{1167} = (13, 3, 0, 1)$
32 : $P_{1171} = (17, 3, 0, 1)$
33 : $P_{1230} = (12, 5, 0, 1)$
34 : $P_{1245} = (27, 5, 0, 1)$
35 : $P_{1305} = (23, 7, 0, 1)$
36 : $P_{1309} = (27, 7, 0, 1)$
37 : $P_{1349} = (3, 9, 0, 1)$
38 : $P_{1353} = (7, 9, 0, 1)$
39 : $P_{1415} = (5, 11, 0, 1)$
40 : $P_{1431} = (21, 11, 0, 1)$
41 : $P_{1445} = (3, 12, 0, 1)$
42 : $P_{1446} = (4, 12, 0, 1)$
43 : $P_{1555} = (17, 15, 0, 1)$
44 : $P_{1566} = (28, 15, 0, 1)$
45 : $P_{1604} = (2, 17, 0, 1)$
46 : $P_{1628} = (26, 17, 0, 1)$
47 : $P_{1658} = (24, 18, 0, 1)$
48 : $P_{1660} = (26, 18, 0, 1)$
49 : $P_{1732} = (2, 21, 0, 1)$
50 : $P_{1754} = (24, 21, 0, 1)$
51 : $P_{1810} = (16, 23, 0, 1)$
52 : $P_{1815} = (21, 23, 0, 1)$
53 : $P_{1839} = (13, 24, 0, 1)$
54 : $P_{1854} = (28, 24, 0, 1)$
55 : $P_{1895} = (5, 26, 0, 1)$
56 : $P_{1906} = (16, 26, 0, 1)$
57 : $P_{1958} = (4, 28, 0, 1)$
58 : $P_{1961} = (7, 28, 0, 1)$
59 : $P_{2062} = (12, 31, 0, 1)$
60 : $P_{2073} = (23, 31, 0, 1)$
61 : $P_{2185} = (8, 3, 1, 1)$
62 : $P_{2186} = (9, 3, 1, 1)$
63 : $P_{2251} = (10, 5, 1, 1)$
64 : $P_{2252} = (11, 5, 1, 1)$
65 : $P_{2307} = (2, 7, 1, 1)$
66 : $P_{2308} = (3, 7, 1, 1)$
67 : $P_{2357} = (20, 8, 1, 1)$
68 : $P_{2358} = (21, 8, 1, 1)$
69 : $P_{2429} = (28, 10, 1, 1)$
70 : $P_{2430} = (29, 10, 1, 1)$
71 : $P_{2495} = (30, 12, 1, 1)$
72 : $P_{2496} = (31, 12, 1, 1)$
73 : $P_{2551} = (22, 14, 1, 1)$
74 : $P_{2552} = (23, 14, 1, 1)$
75 : $P_{2639} = (14, 17, 1, 1)$
76 : $P_{2640} = (15, 17, 1, 1)$
77 : $P_{2695} = (6, 19, 1, 1)$
78 : $P_{2696} = (7, 19, 1, 1)$
79 : $P_{2757} = (4, 21, 1, 1)$

80 : $P_{2758} = (5, 21, 1, 1)$
81 : $P_{2829} = (12, 23, 1, 1)$
82 : $P_{2830} = (13, 23, 1, 1)$
83 : $P_{2875} = (26, 24, 1, 1)$
84 : $P_{2876} = (27, 24, 1, 1)$
85 : $P_{2931} = (18, 26, 1, 1)$
86 : $P_{2932} = (19, 26, 1, 1)$
87 : $P_{2993} = (16, 28, 1, 1)$
88 : $P_{2994} = (17, 28, 1, 1)$
89 : $P_{3065} = (24, 30, 1, 1)$
90 : $P_{3066} = (25, 30, 1, 1)$
91 : $P_{3112} = (7, 0, 2, 1)$
92 : $P_{3126} = (21, 0, 2, 1)$
93 : $P_{3200} = (31, 2, 2, 1)$
94 : $P_{3316} = (19, 6, 2, 1)$
95 : $P_{3322} = (25, 6, 2, 1)$
96 : $P_{3346} = (17, 7, 2, 1)$
97 : $P_{3347} = (18, 7, 2, 1)$
98 : $P_{3466} = (9, 11, 2, 1)$
99 : $P_{3488} = (31, 11, 2, 1)$
100 : $P_{3502} = (13, 12, 2, 1)$
101 : $P_{3506} = (17, 12, 2, 1)$
102 : $P_{3534} = (13, 13, 2, 1)$
103 : $P_{3540} = (19, 13, 2, 1)$
104 : $P_{3591} = (6, 15, 2, 1)$
105 : $P_{3603} = (18, 15, 2, 1)$
106 : $P_{3690} = (9, 18, 2, 1)$
107 : $P_{3713} = (0, 19, 2, 1)$
108 : $P_{3734} = (21, 19, 2, 1)$
109 : $P_{3847} = (6, 23, 2, 1)$
110 : $P_{3866} = (25, 23, 2, 1)$
111 : $P_{3971} = (2, 27, 2, 1)$
112 : $P_{3976} = (7, 27, 2, 1)$
113 : $P_{4241} = (16, 3, 3, 1)$
114 : $P_{4296} = (7, 5, 3, 1)$
115 : $P_{4314} = (25, 5, 3, 1)$
116 : $P_{4330} = (9, 6, 3, 1)$
117 : $P_{4349} = (28, 6, 3, 1)$
118 : $P_{4454} = (5, 10, 3, 1)$
119 : $P_{4471} = (22, 10, 3, 1)$
120 : $P_{4481} = (0, 11, 3, 1)$
121 : $P_{4498} = (17, 11, 3, 1)$
122 : $P_{4517} = (4, 12, 3, 1)$
123 : $P_{4535} = (22, 12, 3, 1)$
124 : $P_{4547} = (2, 13, 3, 1)$
125 : $P_{4570} = (25, 13, 3, 1)$
126 : $P_{4585} = (8, 14, 3, 1)$
127 : $P_{4595} = (18, 14, 3, 1)$
128 : $P_{4611} = (2, 15, 3, 1)$
129 : $P_{4638} = (29, 15, 3, 1)$
130 : $P_{4645} = (4, 16, 3, 1)$
131 : $P_{4669} = (28, 16, 3, 1)$
132 : $P_{4690} = (17, 17, 3, 1)$
133 : $P_{4699} = (26, 17, 3, 1)$
134 : $P_{4774} = (5, 20, 3, 1)$
135 : $P_{4787} = (18, 20, 3, 1)$
136 : $P_{4842} = (9, 22, 3, 1)$
137 : $P_{4846} = (13, 22, 3, 1)$
138 : $P_{4936} = (7, 25, 3, 1)$
139 : $P_{4955} = (26, 25, 3, 1)$
140 : $P_{4964} = (3, 26, 3, 1)$
141 : $P_{4974} = (13, 26, 3, 1)$
142 : $P_{5009} = (16, 27, 3, 1)$
143 : $P_{5022} = (29, 27, 3, 1)$
144 : $P_{5033} = (8, 28, 3, 1)$
145 : $P_{5174} = (21, 0, 4, 1)$
146 : $P_{5181} = (28, 0, 4, 1)$
147 : $P_{5221} = (4, 2, 4, 1)$
148 : $P_{5238} = (21, 2, 4, 1)$
149 : $P_{5299} = (18, 4, 4, 1)$
150 : $P_{5409} = (0, 8, 4, 1)$
151 : $P_{5437} = (28, 8, 4, 1)$
152 : $P_{5452} = (11, 9, 4, 1)$
153 : $P_{5644} = (11, 15, 4, 1)$
154 : $P_{5651} = (18, 15, 4, 1)$
155 : $P_{5799} = (6, 20, 4, 1)$
156 : $P_{5801} = (8, 20, 4, 1)$
157 : $P_{5834} = (9, 21, 4, 1)$
158 : $P_{5837} = (12, 21, 4, 1)$
159 : $P_{5927} = (6, 24, 4, 1)$
160 : $P_{5941} = (20, 24, 4, 1)$
161 : $P_{5997} = (12, 26, 4, 1)$
162 : $P_{6012} = (27, 26, 4, 1)$
163 : $P_{6025} = (8, 27, 4, 1)$
164 : $P_{6044} = (27, 27, 4, 1)$
165 : $P_{6154} = (9, 31, 4, 1)$
166 : $P_{6165} = (20, 31, 4, 1)$
167 : $P_{6254} = (13, 2, 5, 1)$
168 : $P_{6263} = (22, 2, 5, 1)$
169 : $P_{6278} = (5, 3, 5, 1)$
170 : $P_{6300} = (27, 3, 5, 1)$
171 : $P_{6350} = (13, 5, 5, 1)$
172 : $P_{6372} = (3, 6, 5, 1)$
173 : $P_{6390} = (21, 6, 5, 1)$
174 : $P_{6564} = (3, 12, 5, 1)$
175 : $P_{6573} = (12, 12, 5, 1)$
176 : $P_{6609} = (16, 13, 5, 1)$
177 : $P_{6616} = (23, 13, 5, 1)$
178 : $P_{6642} = (17, 14, 5, 1)$
179 : $P_{6650} = (25, 14, 5, 1)$
180 : $P_{6657} = (0, 15, 5, 1)$
181 : $P_{6669} = (12, 15, 5, 1)$
182 : $P_{6727} = (6, 17, 5, 1)$
183 : $P_{6742} = (21, 17, 5, 1)$
184 : $P_{6828} = (11, 20, 5, 1)$
185 : $P_{6840} = (23, 20, 5, 1)$
186 : $P_{6923} = (10, 23, 5, 1)$
187 : $P_{6988} = (11, 25, 5, 1)$

188 : $P_{7004} = (27, 25, 5, 1)$
189 : $P_{7025} = (16, 26, 5, 1)$
190 : $P_{7034} = (25, 26, 5, 1)$
191 : $P_{7045} = (4, 27, 5, 1)$
192 : $P_{7047} = (6, 27, 5, 1)$
193 : $P_{7114} = (9, 29, 5, 1)$
194 : $P_{7122} = (17, 29, 5, 1)$
195 : $P_{7146} = (9, 30, 5, 1)$
196 : $P_{7147} = (10, 30, 5, 1)$
197 : $P_{7173} = (4, 31, 5, 1)$
198 : $P_{7191} = (22, 31, 5, 1)$
199 : $P_{7222} = (21, 0, 6, 1)$
200 : $P_{7228} = (27, 0, 6, 1)$
201 : $P_{7365} = (4, 5, 6, 1)$
202 : $P_{7379} = (18, 5, 6, 1)$
203 : $P_{7404} = (11, 6, 6, 1)$
204 : $P_{7438} = (13, 7, 6, 1)$
205 : $P_{7455} = (30, 7, 6, 1)$
206 : $P_{7503} = (14, 9, 6, 1)$
207 : $P_{7515} = (26, 9, 6, 1)$
208 : $P_{7621} = (4, 13, 6, 1)$
209 : $P_{7638} = (21, 13, 6, 1)$
210 : $P_{7677} = (28, 14, 6, 1)$
211 : $P_{7691} = (10, 15, 6, 1)$
212 : $P_{7699} = (18, 15, 6, 1)$
213 : $P_{7779} = (2, 18, 6, 1)$
214 : $P_{7804} = (27, 18, 6, 1)$
215 : $P_{7828} = (19, 19, 6, 1)$
216 : $P_{7829} = (20, 19, 6, 1)$
217 : $P_{7916} = (11, 22, 6, 1)$
218 : $P_{7919} = (14, 22, 6, 1)$
219 : $P_{7942} = (5, 23, 6, 1)$
220 : $P_{7950} = (13, 23, 6, 1)$
221 : $P_{7974} = (5, 24, 6, 1)$
222 : $P_{7979} = (10, 24, 6, 1)$
223 : $P_{8007} = (6, 25, 6, 1)$
224 : $P_{8021} = (20, 25, 6, 1)$
225 : $P_{8035} = (2, 26, 6, 1)$
226 : $P_{8063} = (30, 26, 6, 1)$
227 : $P_{8088} = (23, 27, 6, 1)$
228 : $P_{8093} = (28, 27, 6, 1)$
229 : $P_{8097} = (0, 28, 6, 1)$
230 : $P_{8123} = (26, 28, 6, 1)$
231 : $P_{8180} = (19, 30, 6, 1)$
232 : $P_{8184} = (23, 30, 6, 1)$
233 : $P_{8289} = (0, 2, 7, 1)$
234 : $P_{8292} = (3, 2, 7, 1)$
235 : $P_{8350} = (29, 3, 7, 1)$
236 : $P_{8352} = (31, 3, 7, 1)$
237 : $P_{8369} = (16, 4, 7, 1)$
238 : $P_{8380} = (27, 4, 7, 1)$
239 : $P_{8429} = (12, 6, 7, 1)$
240 : $P_{8448} = (31, 6, 7, 1)$
241 : $P_{8457} = (8, 7, 7, 1)$
242 : $P_{8558} = (13, 10, 7, 1)$
243 : $P_{8569} = (24, 10, 7, 1)$
244 : $P_{8638} = (29, 12, 7, 1)$
245 : $P_{8668} = (27, 13, 7, 1)$
246 : $P_{8671} = (30, 13, 7, 1)$
247 : $P_{8676} = (3, 14, 7, 1)$
248 : $P_{8703} = (30, 14, 7, 1)$
249 : $P_{8720} = (15, 15, 7, 1)$
250 : $P_{8729} = (24, 15, 7, 1)$
251 : $P_{8738} = (1, 16, 7, 1)$
252 : $P_{8745} = (8, 16, 7, 1)$
253 : $P_{8930} = (1, 22, 7, 1)$
254 : $P_{8945} = (16, 22, 7, 1)$
255 : $P_{8963} = (2, 23, 7, 1)$
256 : $P_{8974} = (13, 23, 7, 1)$
257 : $P_{9000} = (7, 24, 7, 1)$
258 : $P_{9008} = (15, 24, 7, 1)$
259 : $P_{9155} = (2, 29, 7, 1)$
260 : $P_{9165} = (12, 29, 7, 1)$
261 : $P_{9368} = (23, 3, 8, 1)$
262 : $P_{9375} = (30, 3, 8, 1)$
263 : $P_{9518} = (13, 8, 8, 1)$
264 : $P_{9581} = (12, 10, 8, 1)$
265 : $P_{9588} = (19, 10, 8, 1)$
266 : $P_{9633} = (0, 12, 8, 1)$
267 : $P_{9650} = (17, 12, 8, 1)$
268 : $P_{9670} = (5, 13, 8, 1)$
269 : $P_{9689} = (24, 13, 8, 1)$
270 : $P_{9716} = (19, 14, 8, 1)$
271 : $P_{9719} = (22, 14, 8, 1)$
272 : $P_{9798} = (5, 17, 8, 1)$
273 : $P_{9802} = (9, 17, 8, 1)$
274 : $P_{9848} = (23, 18, 8, 1)$
275 : $P_{9853} = (28, 18, 8, 1)$
276 : $P_{9864} = (7, 19, 8, 1)$
277 : $P_{9865} = (8, 19, 8, 1)$
278 : $P_{9902} = (13, 20, 8, 1)$
279 : $P_{9913} = (24, 20, 8, 1)$
280 : $P_{9975} = (22, 22, 8, 1)$
281 : $P_{10026} = (9, 24, 8, 1)$
282 : $P_{10031} = (14, 24, 8, 1)$
283 : $P_{10063} = (14, 25, 8, 1)$
284 : $P_{10070} = (21, 25, 8, 1)$
285 : $P_{10120} = (7, 27, 8, 1)$
286 : $P_{10143} = (30, 27, 8, 1)$
287 : $P_{10162} = (17, 28, 8, 1)$
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694 : $P_{23888} = (15, 9, 22, 1)$
695 : $P_{23892} = (19, 9, 22, 1)$
696 : $P_{23919} = (14, 10, 22, 1)$
697 : $P_{23926} = (21, 10, 22, 1)$
698 : $P_{24047} = (14, 14, 22, 1)$
699 : $P_{24058} = (25, 14, 22, 1)$
700 : $P_{24078} = (13, 15, 22, 1)$
701 : $P_{24081} = (16, 15, 22, 1)$
702 : $P_{24104} = (7, 16, 22, 1)$
703 : $P_{24118} = (21, 16, 22, 1)$
704 : $P_{24139} = (10, 17, 22, 1)$
705 : $P_{24142} = (13, 17, 22, 1)$
706 : $P_{24233} = (8, 20, 22, 1)$
707 : $P_{24243} = (18, 20, 22, 1)$
708 : $P_{24261} = (4, 21, 22, 1)$
709 : $P_{24283} = (26, 21, 22, 1)$
710 : $P_{24307} = (18, 22, 22, 1)$
711 : $P_{24325} = (4, 23, 22, 1)$
712 : $P_{24331} = (10, 23, 22, 1)$
713 : $P_{24432} = (15, 26, 22, 1)$
714 : $P_{24444} = (27, 26, 22, 1)$
715 : $P_{24500} = (19, 28, 22, 1)$
716 : $P_{24507} = (26, 28, 22, 1)$
717 : $P_{24535} = (22, 29, 22, 1)$
718 : $P_{24538} = (25, 29, 22, 1)$
719 : $P_{24585} = (8, 31, 22, 1)$
720 : $P_{24594} = (17, 31, 22, 1)$
721 : $P_{24674} = (1, 2, 23, 1)$
722 : $P_{24703} = (30, 2, 23, 1)$
723 : $P_{24747} = (10, 4, 23, 1)$
724 : $P_{24753} = (16, 4, 23, 1)$
725 : $P_{24775} = (6, 5, 23, 1)$
726 : $P_{24806} = (5, 6, 23, 1)$
727 : $P_{24814} = (13, 6, 23, 1)$

728 : $P_{24875} = (10, 8, 23, 1)$
729 : $P_{24877} = (12, 8, 23, 1)$
730 : $P_{24906} = (9, 9, 23, 1)$
731 : $P_{24925} = (28, 9, 23, 1)$
732 : $P_{24999} = (6, 12, 23, 1)$
733 : $P_{25004} = (11, 12, 23, 1)$
734 : $P_{25025} = (0, 13, 23, 1)$
735 : $P_{25037} = (12, 13, 23, 1)$
736 : $P_{25221} = (4, 19, 23, 1)$
737 : $P_{25245} = (28, 19, 23, 1)$
738 : $P_{25250} = (1, 20, 23, 1)$
739 : $P_{25251} = (2, 20, 23, 1)$
740 : $P_{25285} = (4, 21, 23, 1)$
741 : $P_{25294} = (13, 21, 23, 1)$
742 : $P_{25318} = (5, 22, 23, 1)$
743 : $P_{25324} = (11, 22, 23, 1)$
744 : $P_{25375} = (30, 23, 23, 1)$
745 : $P_{25475} = (2, 27, 23, 1)$
746 : $P_{25489} = (16, 27, 23, 1)$
747 : $P_{25514} = (9, 28, 23, 1)$
748 : $P_{25528} = (23, 28, 23, 1)$
749 : $P_{25701} = (4, 2, 24, 1)$
750 : $P_{25710} = (13, 2, 24, 1)$
751 : $P_{25762} = (1, 4, 24, 1)$
752 : $P_{25780} = (19, 4, 24, 1)$
753 : $P_{25905} = (16, 8, 24, 1)$
754 : $P_{25912} = (23, 8, 24, 1)$
755 : $P_{25967} = (14, 10, 24, 1)$
756 : $P_{25979} = (26, 10, 24, 1)$
757 : $P_{25996} = (11, 11, 24, 1)$
758 : $P_{26008} = (23, 11, 24, 1)$
759 : $P_{26158} = (13, 16, 24, 1)$
760 : $P_{26159} = (14, 16, 24, 1)$
761 : $P_{26197} = (20, 17, 24, 1)$
762 : $P_{26290} = (17, 20, 24, 1)$
763 : $P_{26300} = (27, 20, 24, 1)$
764 : $P_{26380} = (11, 23, 24, 1)$
765 : $P_{26393} = (24, 23, 24, 1)$
766 : $P_{26420} = (19, 24, 24, 1)$
767 : $P_{26448} = (15, 25, 24, 1)$
768 : $P_{26450} = (17, 25, 24, 1)$
769 : $P_{26480} = (15, 26, 24, 1)$
770 : $P_{26485} = (20, 26, 24, 1)$
771 : $P_{26497} = (0, 27, 24, 1)$
772 : $P_{26523} = (26, 27, 24, 1)$
773 : $P_{26545} = (16, 28, 24, 1)$
774 : $P_{26556} = (27, 28, 24, 1)$
775 : $P_{26562} = (1, 29, 24, 1)$
776 : $P_{26565} = (4, 29, 24, 1)$
777 : $P_{26664} = (7, 0, 25, 1)$
778 : $P_{26670} = (13, 0, 25, 1)$
779 : $P_{26755} = (2, 3, 25, 1)$
780 : $P_{26784} = (31, 3, 25, 1)$
781 : $P_{26998} = (21, 10, 25, 1)$
782 : $P_{27017} = (8, 11, 25, 1)$
783 : $P_{27040} = (31, 11, 25, 1)$
784 : $P_{27055} = (14, 12, 25, 1)$
785 : $P_{27068} = (27, 12, 25, 1)$
786 : $P_{27094} = (21, 13, 25, 1)$
787 : $P_{27101} = (28, 13, 25, 1)$
788 : $P_{27133} = (28, 14, 25, 1)$
789 : $P_{27135} = (30, 14, 25, 1)$
790 : $P_{27171} = (2, 16, 25, 1)$
791 : $P_{27176} = (7, 16, 25, 1)$
792 : $P_{27243} = (10, 18, 25, 1)$
793 : $P_{27245} = (12, 18, 25, 1)$
794 : $P_{27329} = (0, 21, 25, 1)$
795 : $P_{27341} = (12, 21, 25, 1)$
796 : $P_{27367} = (6, 22, 25, 1)$
797 : $P_{27386} = (25, 22, 25, 1)$
798 : $P_{27396} = (3, 23, 25, 1)$
799 : $P_{27401} = (8, 23, 25, 1)$
800 : $P_{27439} = (14, 24, 25, 1)$
801 : $P_{27441} = (16, 24, 25, 1)$
802 : $P_{27466} = (9, 25, 25, 1)$
803 : $P_{27556} = (3, 28, 25, 1)$
804 : $P_{27569} = (16, 28, 25, 1)$
805 : $P_{27594} = (9, 29, 25, 1)$
806 : $P_{27595} = (10, 29, 25, 1)$
807 : $P_{27623} = (6, 30, 25, 1)$
808 : $P_{27647} = (30, 30, 25, 1)$
809 : $P_{27662} = (13, 31, 25, 1)$
810 : $P_{27676} = (27, 31, 25, 1)$
811 : $P_{27799} = (22, 3, 26, 1)$
812 : $P_{27801} = (24, 3, 26, 1)$
813 : $P_{27811} = (2, 4, 26, 1)$
814 : $P_{27830} = (21, 4, 26, 1)$
815 : $P_{27846} = (5, 5, 26, 1)$
816 : $P_{27853} = (12, 5, 26, 1)$
817 : $P_{27876} = (3, 6, 26, 1)$
818 : $P_{27904} = (31, 6, 26, 1)$
819 : $P_{27940} = (3, 8, 26, 1)$
820 : $P_{27966} = (29, 8, 26, 1)$
821 : $P_{27969} = (0, 9, 26, 1)$
822 : $P_{27974} = (5, 9, 26, 1)$
823 : $P_{28020} = (19, 10, 26, 1)$
824 : $P_{28032} = (31, 10, 26, 1)$
825 : $P_{28053} = (20, 11, 26, 1)$
826 : $P_{28060} = (27, 11, 26, 1)$
827 : $P_{28081} = (16, 12, 26, 1)$
828 : $P_{28091} = (26, 12, 26, 1)$
829 : $P_{28101} = (4, 13, 26, 1)$
830 : $P_{28117} = (20, 13, 26, 1)$
831 : $P_{28215} = (22, 16, 26, 1)$
832 : $P_{28220} = (27, 16, 26, 1)$
833 : $P_{28227} = (2, 17, 26, 1)$
834 : $P_{28254} = (29, 17, 26, 1)$
835 : $P_{28372} = (19, 21, 26, 1)$

836 : $P_{28397} = (12, 22, 26, 1)$
837 : $P_{28409} = (24, 22, 26, 1)$
838 : $P_{28499} = (18, 25, 26, 1)$
839 : $P_{28502} = (21, 25, 26, 1)$
840 : $P_{28517} = (4, 26, 26, 1)$
841 : $P_{28625} = (16, 29, 26, 1)$
842 : $P_{28627} = (18, 29, 26, 1)$
843 : $P_{28712} = (7, 0, 27, 1)$
844 : $P_{28729} = (24, 0, 27, 1)$
845 : $P_{29008} = (15, 9, 27, 1)$
846 : $P_{29011} = (18, 9, 27, 1)$
847 : $P_{29082} = (25, 11, 27, 1)$
848 : $P_{29088} = (31, 11, 27, 1)$
849 : $P_{29145} = (24, 13, 27, 1)$
850 : $P_{29148} = (27, 13, 27, 1)$
851 : $P_{29233} = (16, 16, 27, 1)$
852 : $P_{29247} = (30, 16, 27, 1)$
853 : $P_{29254} = (5, 17, 27, 1)$
854 : $P_{29265} = (16, 17, 27, 1)$
855 : $P_{29478} = (5, 24, 27, 1)$
856 : $P_{29504} = (31, 24, 27, 1)$
857 : $P_{29527} = (22, 25, 27, 1)$
858 : $P_{29535} = (30, 25, 27, 1)$
859 : $P_{29584} = (15, 27, 27, 1)$
860 : $P_{29623} = (22, 28, 27, 1)$
861 : $P_{29626} = (25, 28, 27, 1)$
862 : $P_{29665} = (0, 30, 27, 1)$
863 : $P_{29672} = (7, 30, 27, 1)$
864 : $P_{29715} = (18, 31, 27, 1)$
865 : $P_{29797} = (4, 2, 28, 1)$
866 : $P_{29801} = (8, 2, 28, 1)$
867 : $P_{29850} = (25, 3, 28, 1)$
868 : $P_{29922} = (1, 6, 28, 1)$
869 : $P_{29948} = (27, 6, 28, 1)$
870 : $P_{29955} = (2, 7, 28, 1)$
871 : $P_{29969} = (16, 7, 28, 1)$
872 : $P_{30149} = (4, 13, 28, 1)$
873 : $P_{30172} = (27, 13, 28, 1)$
874 : $P_{30241} = (0, 16, 28, 1)$
875 : $P_{30258} = (17, 16, 28, 1)$
876 : $P_{30282} = (9, 17, 28, 1)$
877 : $P_{30298} = (25, 17, 28, 1)$
878 : $P_{30323} = (18, 18, 28, 1)$
879 : $P_{30326} = (21, 18, 28, 1)$
880 : $P_{30345} = (8, 19, 28, 1)$
881 : $P_{30354} = (17, 19, 28, 1)$
882 : $P_{30419} = (18, 21, 28, 1)$
883 : $P_{30429} = (28, 21, 28, 1)$
884 : $P_{30532} = (3, 25, 28, 1)$
885 : $P_{30545} = (16, 25, 28, 1)$
886 : $P_{30594} = (1, 27, 28, 1)$
887 : $P_{30607} = (14, 27, 28, 1)$
888 : $P_{30639} = (14, 28, 28, 1)$
889 : $P_{30660} = (3, 29, 28, 1)$
890 : $P_{30666} = (9, 29, 28, 1)$
891 : $P_{30691} = (2, 30, 28, 1)$
892 : $P_{30710} = (21, 30, 28, 1)$
893 : $P_{30757} = (4, 0, 29, 1)$
894 : $P_{30776} = (23, 0, 29, 1)$
895 : $P_{30830} = (13, 2, 29, 1)$
896 : $P_{30840} = (23, 2, 29, 1)$
897 : $P_{30888} = (7, 4, 29, 1)$
898 : $P_{30905} = (24, 4, 29, 1)$
899 : $P_{30921} = (8, 5, 29, 1)$
900 : $P_{30929} = (16, 5, 29, 1)$
901 : $P_{30964} = (19, 6, 29, 1)$
902 : $P_{30976} = (31, 6, 29, 1)$
903 : $P_{30979} = (2, 7, 29, 1)$
904 : $P_{30989} = (12, 7, 29, 1)$
905 : $P_{31016} = (7, 8, 29, 1)$
906 : $P_{31019} = (10, 8, 29, 1)$
907 : $P_{31083} = (10, 10, 29, 1)$
908 : $P_{31095} = (22, 10, 29, 1)$
909 : $P_{31109} = (4, 11, 29, 1)$
910 : $P_{31121} = (16, 11, 29, 1)$
911 : $P_{31148} = (11, 12, 29, 1)$
912 : $P_{31150} = (13, 12, 29, 1)$
913 : $P_{31238} = (5, 15, 29, 1)$
914 : $P_{31252} = (19, 15, 29, 1)$
915 : $P_{31340} = (11, 18, 29, 1)$
916 : $P_{31359} = (30, 18, 29, 1)$
917 : $P_{31385} = (24, 19, 29, 1)$
918 : $P_{31415} = (22, 20, 29, 1)$
919 : $P_{31422} = (29, 20, 29, 1)$
920 : $P_{31437} = (12, 21, 29, 1)$
921 : $P_{31455} = (30, 21, 29, 1)$
922 : $P_{31521} = (0, 24, 29, 1)$
923 : $P_{31526} = (5, 24, 29, 1)$
924 : $P_{31651} = (2, 28, 29, 1)$
925 : $P_{31657} = (8, 28, 29, 1)$
926 : $P_{31712} = (31, 29, 29, 1)$
927 : $P_{31899} = (26, 3, 30, 1)$
928 : $P_{31904} = (31, 3, 30, 1)$
929 : $P_{31931} = (26, 4, 30, 1)$
930 : $P_{31933} = (28, 4, 30, 1)$
931 : $P_{31937} = (0, 5, 30, 1)$
932 : $P_{31940} = (3, 5, 30, 1)$
933 : $P_{32004} = (3, 7, 30, 1)$
934 : $P_{32025} = (24, 7, 30, 1)$
935 : $P_{32047} = (14, 8, 30, 1)$
936 : $P_{32053} = (20, 8, 30, 1)$
937 : $P_{32104} = (7, 10, 30, 1)$
938 : $P_{32119} = (22, 10, 30, 1)$
939 : $P_{32134} = (5, 11, 30, 1)$
940 : $P_{32151} = (22, 11, 30, 1)$
941 : $P_{32171} = (10, 12, 30, 1)$
942 : $P_{32182} = (21, 12, 30, 1)$
943 : $P_{32248} = (23, 14, 30, 1)$

944 : $P_{32255} = (30, 14, 30, 1)$
945 : $P_{32264} = (7, 15, 30, 1)$
946 : $P_{32278} = (21, 15, 30, 1)$
947 : $P_{32299} = (10, 16, 30, 1)$
948 : $P_{32312} = (23, 16, 30, 1)$
949 : $P_{32390} = (5, 19, 30, 1)$
950 : $P_{32399} = (14, 19, 30, 1)$
951 : $P_{32437} = (20, 20, 30, 1)$
952 : $P_{32581} = (4, 25, 30, 1)$
953 : $P_{32605} = (28, 25, 30, 1)$
954 : $P_{32681} = (8, 28, 30, 1)$
955 : $P_{32704} = (31, 28, 30, 1)$
956 : $P_{32713} = (8, 29, 30, 1)$
957 : $P_{32729} = (24, 29, 30, 1)$
958 : $P_{32741} = (4, 30, 30, 1)$
959 : $P_{32816} = (15, 0, 31, 1)$
960 : $P_{32821} = (20, 0, 31, 1)$
961 : $P_{32996} = (3, 6, 31, 1)$
962 : $P_{33012} = (19, 6, 31, 1)$
963 : $P_{33028} = (3, 7, 31, 1)$
964 : $P_{33048} = (23, 7, 31, 1)$
965 : $P_{33077} = (20, 8, 31, 1)$
966 : $P_{33087} = (30, 8, 31, 1)$
967 : $P_{33099} = (10, 9, 31, 1)$
968 : $P_{33114} = (25, 9, 31, 1)$
969 : $P_{33154} = (1, 11, 31, 1)$
970 : $P_{33168} = (15, 11, 31, 1)$
971 : $P_{33198} = (13, 12, 31, 1)$
972 : $P_{33204} = (19, 12, 31, 1)$
973 : $P_{33226} = (9, 13, 31, 1)$
974 : $P_{33238} = (21, 13, 31, 1)$
975 : $P_{33272} = (23, 14, 31, 1)$
976 : $P_{33277} = (28, 14, 31, 1)$
977 : $P_{33309} = (28, 15, 31, 1)$
978 : $P_{33312} = (31, 15, 31, 1)$
979 : $P_{33441} = (0, 20, 31, 1)$
980 : $P_{33448} = (7, 20, 31, 1)$
981 : $P_{33474} = (1, 21, 31, 1)$
982 : $P_{33498} = (25, 21, 31, 1)$
983 : $P_{33512} = (7, 22, 31, 1)$
984 : $P_{33535} = (30, 22, 31, 1)$
985 : $P_{33582} = (13, 24, 31, 1)$
986 : $P_{33593} = (24, 24, 31, 1)$
987 : $P_{33642} = (9, 26, 31, 1)$
988 : $P_{33657} = (24, 26, 31, 1)$
989 : $P_{33686} = (21, 27, 31, 1)$
990 : $P_{33803} = (10, 31, 31, 1)$

Line Intersection Graph

	0	1
0	0	0
1	0	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line
in point

Line 1 intersects

Line
in point

The surface has 1057 points:
Too many to print.