

Rank-73801 over GF(32)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(32) is -2112845755

General information

Number of lines	1
Number of points	1025
Number of singular points	0
Number of Eckardt points	0
Number of double points	0
Number of single points	33
Number of points off lines	992
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33
Type of lines on points	$1^{33}, 0^{992}$

Singular Points

The surface has 0 singular points:

The 1 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1082433} = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1082433} = \mathbf{Pl}(0, 1, 0, 1, 0, 0)_{97}$$

Rank of lines: (1082433)

Rank of points on Klein quadric: (97)

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 33 single points:

The single points on the surface are:

- | | |
|---|---|
| 0 : $P_3 = (0, 0, 0, 1)$ lies on line ℓ_0 | 17 : $P_{17953} = (0, 16, 16, 1)$ lies on line ℓ_0 |
| 1 : $P_{67} = (0, 1, 1, 0)$ lies on line ℓ_0 | 18 : $P_{19009} = (0, 17, 17, 1)$ lies on line ℓ_0 |
| 2 : $P_{2114} = (0, 1, 1, 1)$ lies on line ℓ_0 | 19 : $P_{20065} = (0, 18, 18, 1)$ lies on line ℓ_0 |
| 3 : $P_{3169} = (0, 2, 2, 1)$ lies on line ℓ_0 | 20 : $P_{21121} = (0, 19, 19, 1)$ lies on line ℓ_0 |
| 4 : $P_{4225} = (0, 3, 3, 1)$ lies on line ℓ_0 | 21 : $P_{22177} = (0, 20, 20, 1)$ lies on line ℓ_0 |
| 5 : $P_{5281} = (0, 4, 4, 1)$ lies on line ℓ_0 | 22 : $P_{23233} = (0, 21, 21, 1)$ lies on line ℓ_0 |
| 6 : $P_{6337} = (0, 5, 5, 1)$ lies on line ℓ_0 | 23 : $P_{24289} = (0, 22, 22, 1)$ lies on line ℓ_0 |
| 7 : $P_{7393} = (0, 6, 6, 1)$ lies on line ℓ_0 | 24 : $P_{25345} = (0, 23, 23, 1)$ lies on line ℓ_0 |
| 8 : $P_{8449} = (0, 7, 7, 1)$ lies on line ℓ_0 | 25 : $P_{26401} = (0, 24, 24, 1)$ lies on line ℓ_0 |
| 9 : $P_{9505} = (0, 8, 8, 1)$ lies on line ℓ_0 | 26 : $P_{27457} = (0, 25, 25, 1)$ lies on line ℓ_0 |
| 10 : $P_{10561} = (0, 9, 9, 1)$ lies on line ℓ_0 | 27 : $P_{28513} = (0, 26, 26, 1)$ lies on line ℓ_0 |
| 11 : $P_{11617} = (0, 10, 10, 1)$ lies on line ℓ_0 | 28 : $P_{29569} = (0, 27, 27, 1)$ lies on line ℓ_0 |
| 12 : $P_{12673} = (0, 11, 11, 1)$ lies on line ℓ_0 | 29 : $P_{30625} = (0, 28, 28, 1)$ lies on line ℓ_0 |
| 13 : $P_{13729} = (0, 12, 12, 1)$ lies on line ℓ_0 | 30 : $P_{31681} = (0, 29, 29, 1)$ lies on line ℓ_0 |
| 14 : $P_{14785} = (0, 13, 13, 1)$ lies on line ℓ_0 | 31 : $P_{32737} = (0, 30, 30, 1)$ lies on line ℓ_0 |
| 15 : $P_{15841} = (0, 14, 14, 1)$ lies on line ℓ_0 | 32 : $P_{33793} = (0, 31, 31, 1)$ lies on line ℓ_0 |
| 16 : $P_{16897} = (0, 15, 15, 1)$ lies on line ℓ_0 | |

The single points on the surface are:

Points on surface but on no line

The surface has 992 points not on any line:

The points on the surface but not on lines are:

- | | |
|--------------------------------|---------------------------------|
| 0 : $P_0 = (1, 0, 0, 0)$ | 10 : $P_{418} = (31, 11, 1, 0)$ |
| 1 : $P_{121} = (22, 2, 1, 0)$ | 11 : $P_{448} = (29, 12, 1, 0)$ |
| 2 : $P_{156} = (25, 3, 1, 0)$ | 12 : $P_{471} = (20, 13, 1, 0)$ |
| 3 : $P_{188} = (25, 4, 1, 0)$ | 13 : $P_{507} = (24, 14, 1, 0)$ |
| 4 : $P_{201} = (6, 5, 1, 0)$ | 14 : $P_{533} = (18, 15, 1, 0)$ |
| 5 : $P_{253} = (26, 6, 1, 0)$ | 15 : $P_{553} = (6, 16, 1, 0)$ |
| 6 : $P_{284} = (25, 7, 1, 0)$ | 16 : $P_{599} = (20, 17, 1, 0)$ |
| 7 : $P_{319} = (28, 8, 1, 0)$ | 17 : $P_{622} = (11, 18, 1, 0)$ |
| 8 : $P_{338} = (15, 9, 1, 0)$ | 18 : $P_{664} = (21, 19, 1, 0)$ |
| 9 : $P_{378} = (23, 10, 1, 0)$ | 19 : $P_{678} = (3, 20, 1, 0)$ |

20 : $P_{713} = (6, 21, 1, 0)$	74 : $P_{2820} = (3, 23, 1, 1)$
21 : $P_{756} = (17, 22, 1, 0)$	75 : $P_{2838} = (21, 23, 1, 1)$
22 : $P_{800} = (29, 23, 1, 0)$	76 : $P_{2854} = (5, 24, 1, 1)$
23 : $P_{825} = (22, 24, 1, 0)$	77 : $P_{2877} = (28, 24, 1, 1)$
24 : $P_{847} = (12, 25, 1, 0)$	78 : $P_{2984} = (7, 28, 1, 1)$
25 : $P_{889} = (22, 26, 1, 0)$	79 : $P_{3003} = (26, 28, 1, 1)$
26 : $P_{928} = (29, 27, 1, 0)$	80 : $P_{3083} = (10, 31, 1, 1)$
27 : $P_{951} = (20, 28, 1, 0)$	81 : $P_{3093} = (20, 31, 1, 1)$
28 : $P_{968} = (5, 29, 1, 0)$	82 : $P_{3174} = (5, 2, 2, 1)$
29 : $P_{1002} = (7, 30, 1, 0)$	83 : $P_{3303} = (6, 6, 2, 1)$
30 : $P_{1036} = (9, 31, 1, 0)$	84 : $P_{3308} = (11, 6, 2, 1)$
31 : $P_{1059} = (1, 0, 0, 1)$	85 : $P_{3399} = (6, 9, 2, 1)$
32 : $P_{1176} = (22, 3, 0, 1)$	86 : $P_{3414} = (21, 9, 2, 1)$
33 : $P_{1177} = (23, 3, 0, 1)$	87 : $P_{3427} = (2, 10, 2, 1)$
34 : $P_{1242} = (24, 5, 0, 1)$	88 : $P_{3448} = (23, 10, 2, 1)$
35 : $P_{1243} = (25, 5, 0, 1)$	89 : $P_{3530} = (9, 13, 2, 1)$
36 : $P_{1292} = (10, 7, 0, 1)$	90 : $P_{3539} = (18, 13, 2, 1)$
37 : $P_{1293} = (11, 7, 0, 1)$	91 : $P_{3591} = (6, 15, 2, 1)$
38 : $P_{1372} = (26, 9, 0, 1)$	92 : $P_{3610} = (25, 15, 2, 1)$
39 : $P_{1373} = (27, 9, 0, 1)$	93 : $P_{3628} = (11, 16, 2, 1)$
40 : $P_{1412} = (2, 11, 0, 1)$	94 : $P_{3632} = (15, 16, 2, 1)$
41 : $P_{1413} = (3, 11, 0, 1)$	95 : $P_{3674} = (25, 17, 2, 1)$
42 : $P_{1462} = (20, 12, 0, 1)$	96 : $P_{3680} = (31, 17, 2, 1)$
43 : $P_{1463} = (21, 12, 0, 1)$	97 : $P_{3695} = (14, 18, 2, 1)$
44 : $P_{1542} = (4, 15, 0, 1)$	98 : $P_{3779} = (2, 21, 2, 1)$
45 : $P_{1543} = (5, 15, 0, 1)$	99 : $P_{3789} = (12, 21, 2, 1)$
46 : $P_{1608} = (6, 17, 0, 1)$	100 : $P_{3812} = (3, 22, 2, 1)$
47 : $P_{1609} = (7, 17, 0, 1)$	101 : $P_{3820} = (11, 22, 2, 1)$
48 : $P_{1646} = (12, 18, 0, 1)$	102 : $P_{3877} = (4, 24, 2, 1)$
49 : $P_{1647} = (13, 18, 0, 1)$	103 : $P_{3889} = (16, 24, 2, 1)$
50 : $P_{1744} = (14, 21, 0, 1)$	104 : $P_{4066} = (1, 30, 2, 1)$
51 : $P_{1745} = (15, 21, 0, 1)$	105 : $P_{4090} = (25, 30, 2, 1)$
52 : $P_{1812} = (18, 23, 0, 1)$	106 : $P_{4099} = (2, 31, 2, 1)$
53 : $P_{1813} = (19, 23, 0, 1)$	107 : $P_{4121} = (24, 31, 2, 1)$
54 : $P_{1834} = (8, 24, 0, 1)$	108 : $P_{4151} = (22, 0, 3, 1)$
55 : $P_{1835} = (9, 24, 0, 1)$	109 : $P_{4152} = (23, 0, 3, 1)$
56 : $P_{1918} = (28, 26, 0, 1)$	110 : $P_{4229} = (4, 3, 3, 1)$
57 : $P_{1919} = (29, 26, 0, 1)$	111 : $P_{4324} = (3, 6, 3, 1)$
58 : $P_{1984} = (30, 28, 0, 1)$	112 : $P_{4329} = (8, 6, 3, 1)$
59 : $P_{1985} = (31, 28, 0, 1)$	113 : $P_{4556} = (11, 13, 3, 1)$
60 : $P_{2066} = (16, 31, 0, 1)$	114 : $P_{4574} = (29, 13, 3, 1)$
61 : $P_{2067} = (17, 31, 0, 1)$	115 : $P_{4615} = (6, 15, 3, 1)$
62 : $P_{2322} = (17, 7, 1, 1)$	116 : $P_{4631} = (22, 15, 3, 1)$
63 : $P_{2328} = (23, 7, 1, 1)$	117 : $P_{4719} = (14, 18, 3, 1)$
64 : $P_{2391} = (22, 9, 1, 1)$	118 : $P_{4733} = (28, 18, 3, 1)$
65 : $P_{2399} = (30, 9, 1, 1)$	119 : $P_{4739} = (2, 19, 3, 1)$
66 : $P_{2452} = (19, 11, 1, 1)$	120 : $P_{4756} = (19, 19, 3, 1)$
67 : $P_{2458} = (25, 11, 1, 1)$	121 : $P_{4776} = (7, 20, 3, 1)$
68 : $P_{2567} = (6, 15, 1, 1)$	122 : $P_{4800} = (31, 20, 3, 1)$
69 : $P_{2569} = (8, 15, 1, 1)$	123 : $P_{4813} = (12, 21, 3, 1)$
70 : $P_{2671} = (14, 18, 1, 1)$	124 : $P_{4824} = (23, 21, 3, 1)$
71 : $P_{2686} = (29, 18, 1, 1)$	125 : $P_{4839} = (6, 22, 3, 1)$
72 : $P_{2765} = (12, 21, 1, 1)$	126 : $P_{4857} = (24, 22, 3, 1)$
73 : $P_{2777} = (24, 21, 1, 1)$	127 : $P_{4898} = (1, 24, 3, 1)$

128 : $P_{4910} = (13, 24, 3, 1)$	182 : $P_{7123} = (18, 29, 5, 1)$
129 : $P_{4935} = (6, 25, 3, 1)$	183 : $P_{7126} = (21, 29, 5, 1)$
130 : $P_{4938} = (9, 25, 3, 1)$	184 : $P_{7189} = (20, 31, 5, 1)$
131 : $P_{5052} = (27, 28, 3, 1)$	185 : $P_{7194} = (25, 31, 5, 1)$
132 : $P_{5082} = (25, 29, 3, 1)$	186 : $P_{7271} = (6, 2, 6, 1)$
133 : $P_{5083} = (26, 29, 3, 1)$	187 : $P_{7276} = (11, 2, 6, 1)$
134 : $P_{5298} = (17, 4, 4, 1)$	188 : $P_{7300} = (3, 3, 6, 1)$
135 : $P_{5390} = (13, 7, 4, 1)$	189 : $P_{7305} = (8, 3, 6, 1)$
136 : $P_{5393} = (16, 7, 4, 1)$	190 : $P_{7372} = (11, 5, 6, 1)$
137 : $P_{5471} = (30, 9, 4, 1)$	191 : $P_{7381} = (20, 5, 6, 1)$
138 : $P_{5525} = (20, 11, 4, 1)$	192 : $P_{7414} = (21, 6, 6, 1)$
139 : $P_{5533} = (28, 11, 4, 1)$	193 : $P_{7436} = (11, 7, 6, 1)$
140 : $P_{5543} = (6, 12, 4, 1)$	194 : $P_{7449} = (24, 7, 6, 1)$
141 : $P_{5555} = (18, 12, 4, 1)$	195 : $P_{7472} = (15, 8, 6, 1)$
142 : $P_{5584} = (15, 13, 4, 1)$	196 : $P_{7484} = (27, 8, 6, 1)$
143 : $P_{5600} = (31, 13, 4, 1)$	197 : $P_{7497} = (8, 9, 6, 1)$
144 : $P_{5605} = (4, 14, 4, 1)$	198 : $P_{7515} = (26, 9, 6, 1)$
145 : $P_{5625} = (24, 14, 4, 1)$	199 : $P_{7529} = (8, 10, 6, 1)$
146 : $P_{5733} = (4, 18, 4, 1)$	200 : $P_{7537} = (16, 10, 6, 1)$
147 : $P_{5736} = (7, 18, 4, 1)$	201 : $P_{7602} = (17, 12, 6, 1)$
148 : $P_{5762} = (1, 19, 4, 1)$	202 : $P_{7614} = (29, 12, 6, 1)$
149 : $P_{5767} = (6, 19, 4, 1)$	203 : $P_{7680} = (31, 14, 6, 1)$
150 : $P_{5808} = (15, 20, 4, 1)$	204 : $P_{7730} = (17, 16, 6, 1)$
151 : $P_{5813} = (20, 20, 4, 1)$	205 : $P_{7744} = (31, 16, 6, 1)$
152 : $P_{5958} = (5, 25, 4, 1)$	206 : $P_{7766} = (21, 17, 6, 1)$
153 : $P_{5968} = (15, 25, 4, 1)$	207 : $P_{7774} = (29, 17, 6, 1)$
154 : $P_{6026} = (9, 27, 4, 1)$	208 : $P_{7790} = (13, 18, 6, 1)$
155 : $P_{6028} = (11, 27, 4, 1)$	209 : $P_{7792} = (15, 18, 6, 1)$
156 : $P_{6053} = (4, 28, 4, 1)$	210 : $P_{7847} = (6, 20, 6, 1)$
157 : $P_{6075} = (26, 28, 4, 1)$	211 : $P_{7857} = (16, 20, 6, 1)$
158 : $P_{6151} = (6, 31, 4, 1)$	212 : $P_{7911} = (6, 22, 6, 1)$
159 : $P_{6165} = (20, 31, 4, 1)$	213 : $P_{7933} = (28, 22, 6, 1)$
160 : $P_{6201} = (24, 0, 5, 1)$	214 : $P_{7946} = (9, 23, 6, 1)$
161 : $P_{6202} = (25, 0, 5, 1)$	215 : $P_{7958} = (21, 23, 6, 1)$
162 : $P_{6353} = (16, 5, 5, 1)$	216 : $P_{8005} = (4, 25, 6, 1)$
163 : $P_{6380} = (11, 6, 5, 1)$	217 : $P_{8026} = (25, 25, 6, 1)$
164 : $P_{6389} = (20, 6, 5, 1)$	218 : $P_{8048} = (15, 26, 6, 1)$
165 : $P_{6402} = (1, 7, 5, 1)$	219 : $P_{8057} = (24, 26, 6, 1)$
166 : $P_{6428} = (27, 7, 5, 1)$	220 : $P_{8114} = (17, 28, 6, 1)$
167 : $P_{6437} = (4, 8, 5, 1)$	221 : $P_{8115} = (18, 28, 6, 1)$
168 : $P_{6441} = (8, 8, 5, 1)$	222 : $P_{8153} = (24, 29, 6, 1)$
169 : $P_{6488} = (23, 9, 5, 1)$	223 : $P_{8158} = (29, 29, 6, 1)$
170 : $P_{6495} = (30, 9, 5, 1)$	224 : $P_{8177} = (16, 30, 6, 1)$
171 : $P_{6822} = (5, 20, 5, 1)$	225 : $P_{8192} = (31, 30, 6, 1)$
172 : $P_{6827} = (10, 20, 5, 1)$	226 : $P_{8235} = (10, 0, 7, 1)$
173 : $P_{6884} = (3, 22, 5, 1)$	227 : $P_{8236} = (11, 0, 7, 1)$
174 : $P_{6887} = (6, 22, 5, 1)$	228 : $P_{8274} = (17, 1, 7, 1)$
175 : $P_{6915} = (2, 23, 5, 1)$	229 : $P_{8280} = (23, 1, 7, 1)$
176 : $P_{6984} = (7, 25, 5, 1)$	230 : $P_{8366} = (13, 4, 7, 1)$
177 : $P_{6997} = (20, 25, 5, 1)$	231 : $P_{8369} = (16, 4, 7, 1)$
178 : $P_{7056} = (15, 27, 5, 1)$	232 : $P_{8386} = (1, 5, 7, 1)$
179 : $P_{7063} = (22, 27, 5, 1)$	233 : $P_{8412} = (27, 5, 7, 1)$
180 : $P_{7097} = (24, 28, 5, 1)$	234 : $P_{8428} = (11, 6, 7, 1)$
181 : $P_{7099} = (26, 28, 5, 1)$	235 : $P_{8441} = (24, 6, 7, 1)$

236 : $P_{8469} = (20, 7, 7, 1)$	290 : $P_{10327} = (22, 1, 9, 1)$
237 : $P_{8493} = (12, 8, 7, 1)$	291 : $P_{10335} = (30, 1, 9, 1)$
238 : $P_{8497} = (16, 8, 7, 1)$	292 : $P_{10343} = (6, 2, 9, 1)$
239 : $P_{8592} = (15, 11, 7, 1)$	293 : $P_{10358} = (21, 2, 9, 1)$
240 : $P_{8603} = (26, 11, 7, 1)$	294 : $P_{10431} = (30, 4, 9, 1)$
241 : $P_{8625} = (16, 12, 7, 1)$	295 : $P_{10456} = (23, 5, 9, 1)$
242 : $P_{8692} = (19, 14, 7, 1)$	296 : $P_{10463} = (30, 5, 9, 1)$
243 : $P_{8702} = (29, 14, 7, 1)$	297 : $P_{10473} = (8, 6, 9, 1)$
244 : $P_{8726} = (21, 15, 7, 1)$	298 : $P_{10491} = (26, 6, 9, 1)$
245 : $P_{8733} = (28, 15, 7, 1)$	299 : $P_{10571} = (10, 9, 9, 1)$
246 : $P_{8922} = (25, 21, 7, 1)$	300 : $P_{10629} = (4, 11, 9, 1)$
247 : $P_{8925} = (28, 21, 7, 1)$	301 : $P_{10653} = (28, 11, 9, 1)$
248 : $P_{8932} = (3, 22, 7, 1)$	302 : $P_{10677} = (20, 12, 9, 1)$
249 : $P_{8944} = (15, 22, 7, 1)$	303 : $P_{10679} = (22, 12, 9, 1)$
250 : $P_{8982} = (21, 23, 7, 1)$	304 : $P_{10711} = (22, 13, 9, 1)$
251 : $P_{8991} = (30, 23, 7, 1)$	305 : $P_{10718} = (29, 13, 9, 1)$
252 : $P_{9014} = (21, 24, 7, 1)$	306 : $P_{10801} = (16, 16, 9, 1)$
253 : $P_{9015} = (22, 24, 7, 1)$	307 : $P_{10806} = (21, 16, 9, 1)$
254 : $P_{9074} = (17, 26, 7, 1)$	308 : $P_{10851} = (2, 18, 9, 1)$
255 : $P_{9085} = (28, 26, 7, 1)$	309 : $P_{10870} = (21, 18, 9, 1)$
256 : $P_{9106} = (17, 27, 7, 1)$	310 : $P_{10940} = (27, 20, 9, 1)$
257 : $P_{9116} = (27, 27, 7, 1)$	311 : $P_{10944} = (31, 20, 9, 1)$
258 : $P_{9129} = (8, 28, 7, 1)$	312 : $P_{11016} = (7, 23, 9, 1)$
259 : $P_{9144} = (23, 28, 7, 1)$	313 : $P_{11033} = (24, 23, 9, 1)$
260 : $P_{9168} = (15, 29, 7, 1)$	314 : $P_{11052} = (11, 24, 9, 1)$
261 : $P_{9176} = (23, 29, 7, 1)$	315 : $P_{11053} = (12, 24, 9, 1)$
262 : $P_{9195} = (10, 30, 7, 1)$	316 : $P_{11363} = (2, 2, 10, 1)$
263 : $P_{9212} = (27, 30, 7, 1)$	317 : $P_{11384} = (23, 2, 10, 1)$
264 : $P_{9413} = (4, 5, 8, 1)$	318 : $P_{11497} = (8, 6, 10, 1)$
265 : $P_{9417} = (8, 5, 8, 1)$	319 : $P_{11505} = (16, 6, 10, 1)$
266 : $P_{9456} = (15, 6, 8, 1)$	320 : $P_{11632} = (15, 10, 10, 1)$
267 : $P_{9468} = (27, 6, 8, 1)$	321 : $P_{11714} = (1, 13, 10, 1)$
268 : $P_{9485} = (12, 7, 8, 1)$	322 : $P_{11742} = (29, 13, 10, 1)$
269 : $P_{9489} = (16, 7, 8, 1)$	323 : $P_{11851} = (10, 17, 10, 1)$
270 : $P_{9516} = (11, 8, 8, 1)$	324 : $P_{11857} = (16, 17, 10, 1)$
271 : $P_{9698} = (1, 14, 8, 1)$	325 : $P_{11906} = (1, 19, 10, 1)$
272 : $P_{9728} = (31, 14, 8, 1)$	326 : $P_{11920} = (15, 19, 10, 1)$
273 : $P_{9762} = (1, 16, 8, 1)$	327 : $P_{11939} = (2, 20, 10, 1)$
274 : $P_{9781} = (20, 16, 8, 1)$	328 : $P_{11968} = (31, 20, 10, 1)$
275 : $P_{9964} = (11, 22, 8, 1)$	329 : $P_{11982} = (13, 21, 10, 1)$
276 : $P_{9991} = (6, 23, 8, 1)$	330 : $P_{11995} = (26, 21, 10, 1)$
277 : $P_{9999} = (14, 23, 8, 1)$	331 : $P_{12003} = (2, 22, 10, 1)$
278 : $P_{10053} = (4, 25, 8, 1)$	332 : $P_{12012} = (11, 22, 10, 1)$
279 : $P_{10068} = (19, 25, 8, 1)$	333 : $P_{12049} = (16, 23, 10, 1)$
280 : $P_{10140} = (27, 27, 8, 1)$	334 : $P_{12052} = (19, 23, 10, 1)$
281 : $P_{10141} = (28, 27, 8, 1)$	335 : $P_{12085} = (20, 24, 10, 1)$
282 : $P_{10149} = (4, 28, 8, 1)$	336 : $P_{12095} = (30, 24, 10, 1)$
283 : $P_{10175} = (30, 28, 8, 1)$	337 : $P_{12112} = (15, 25, 10, 1)$
284 : $P_{10186} = (9, 29, 8, 1)$	338 : $P_{12258} = (1, 30, 10, 1)$
285 : $P_{10204} = (27, 29, 8, 1)$	339 : $P_{12275} = (18, 30, 10, 1)$
286 : $P_{10210} = (1, 30, 8, 1)$	340 : $P_{12323} = (2, 0, 11, 1)$
287 : $P_{10220} = (11, 30, 8, 1)$	341 : $P_{12324} = (3, 0, 11, 1)$
288 : $P_{10299} = (26, 0, 9, 1)$	342 : $P_{12372} = (19, 1, 11, 1)$
289 : $P_{10300} = (27, 0, 9, 1)$	343 : $P_{12378} = (25, 1, 11, 1)$

344 : $P_{12469} = (20, 4, 11, 1)$
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 745 : $P_{25983} = (30, 10, 24, 1)$
 746 : $P_{25992} = (7, 11, 24, 1)$
 747 : $P_{26006} = (21, 11, 24, 1)$
 748 : $P_{26022} = (5, 12, 24, 1)$
 749 : $P_{26038} = (21, 12, 24, 1)$
 750 : $P_{26054} = (5, 13, 24, 1)$
 751 : $P_{26062} = (13, 13, 24, 1)$
 752 : $P_{26089} = (8, 14, 24, 1)$
 753 : $P_{26094} = (13, 14, 24, 1)$
 754 : $P_{26181} = (4, 17, 24, 1)$
 755 : $P_{26245} = (4, 19, 24, 1)$
 756 : $P_{26258} = (17, 19, 24, 1)$
 757 : $P_{26284} = (11, 20, 24, 1)$
 758 : $P_{26301} = (28, 20, 24, 1)$
 759 : $P_{26324} = (19, 21, 24, 1)$
 760 : $P_{26333} = (28, 21, 24, 1)$
 761 : $P_{26376} = (7, 23, 24, 1)$
 762 : $P_{26398} = (29, 23, 24, 1)$
 763 : $P_{26407} = (6, 24, 24, 1)$
 764 : $P_{26442} = (9, 25, 24, 1)$
 765 : $P_{26456} = (23, 25, 24, 1)$
 766 : $P_{26536} = (7, 28, 24, 1)$
 767 : $P_{26543} = (14, 28, 24, 1)$
 768 : $P_{26572} = (11, 29, 24, 1)$
 769 : $P_{26587} = (26, 29, 24, 1)$
 770 : $P_{26759} = (6, 3, 25, 1)$
 771 : $P_{26762} = (9, 3, 25, 1)$
 772 : $P_{26790} = (5, 4, 25, 1)$
 773 : $P_{26800} = (15, 4, 25, 1)$
 774 : $P_{26824} = (7, 5, 25, 1)$
 775 : $P_{26837} = (20, 5, 25, 1)$

776 : $P_{26853} = (4, 6, 25, 1)$	830 : $P_{28632} = (23, 29, 26, 1)$
777 : $P_{26874} = (25, 6, 25, 1)$	831 : $P_{28634} = (25, 29, 26, 1)$
778 : $P_{26917} = (4, 8, 25, 1)$	832 : $P_{28668} = (27, 30, 26, 1)$
779 : $P_{26932} = (19, 8, 25, 1)$	833 : $P_{28671} = (30, 30, 26, 1)$
780 : $P_{26992} = (15, 10, 25, 1)$	834 : $P_{28683} = (10, 31, 26, 1)$
781 : $P_{27052} = (11, 12, 25, 1)$	835 : $P_{28694} = (21, 31, 26, 1)$
782 : $P_{27064} = (23, 12, 25, 1)$	836 : $P_{28842} = (9, 4, 27, 1)$
783 : $P_{27109} = (4, 14, 25, 1)$	837 : $P_{28844} = (11, 4, 27, 1)$
784 : $P_{27120} = (15, 14, 25, 1)$	838 : $P_{28880} = (15, 5, 27, 1)$
785 : $P_{27206} = (5, 17, 25, 1)$	839 : $P_{28887} = (22, 5, 27, 1)$
786 : $P_{27221} = (20, 17, 25, 1)$	840 : $P_{28946} = (17, 7, 27, 1)$
787 : $P_{27245} = (12, 18, 25, 1)$	841 : $P_{28956} = (27, 7, 27, 1)$
788 : $P_{27252} = (19, 18, 25, 1)$	842 : $P_{28988} = (27, 8, 27, 1)$
789 : $P_{27276} = (11, 19, 25, 1)$	843 : $P_{28989} = (28, 8, 27, 1)$
790 : $P_{27278} = (13, 19, 25, 1)$	844 : $P_{29079} = (22, 11, 27, 1)$
791 : $P_{27317} = (20, 20, 25, 1)$	845 : $P_{29082} = (25, 11, 27, 1)$
792 : $P_{27320} = (23, 20, 25, 1)$	846 : $P_{29154} = (1, 14, 27, 1)$
793 : $P_{27334} = (5, 21, 25, 1)$	847 : $P_{29175} = (22, 14, 27, 1)$
794 : $P_{27360} = (31, 21, 25, 1)$	848 : $P_{29208} = (23, 15, 27, 1)$
795 : $P_{27363} = (2, 22, 25, 1)$	849 : $P_{29212} = (27, 15, 27, 1)$
796 : $P_{27383} = (22, 22, 25, 1)$	850 : $P_{29235} = (18, 16, 27, 1)$
797 : $P_{27434} = (9, 24, 25, 1)$	851 : $P_{29248} = (31, 16, 27, 1)$
798 : $P_{27448} = (23, 24, 25, 1)$	852 : $P_{29288} = (7, 18, 27, 1)$
799 : $P_{27464} = (7, 25, 25, 1)$	853 : $P_{29306} = (25, 18, 27, 1)$
800 : $P_{27508} = (19, 26, 25, 1)$	854 : $P_{29443} = (2, 23, 27, 1)$
801 : $P_{27515} = (26, 26, 25, 1)$	855 : $P_{29445} = (4, 23, 27, 1)$
802 : $P_{27530} = (9, 27, 25, 1)$	856 : $P_{29514} = (9, 25, 27, 1)$
803 : $P_{27546} = (25, 27, 25, 1)$	857 : $P_{29530} = (25, 25, 27, 1)$
804 : $P_{27560} = (7, 28, 25, 1)$	858 : $P_{29572} = (3, 27, 27, 1)$
805 : $P_{27571} = (18, 28, 25, 1)$	859 : $P_{29642} = (9, 29, 27, 1)$
806 : $P_{27606} = (21, 29, 25, 1)$	860 : $P_{29659} = (26, 29, 27, 1)$
807 : $P_{27610} = (25, 29, 25, 1)$	861 : $P_{29707} = (10, 31, 27, 1)$
808 : $P_{27660} = (11, 31, 25, 1)$	862 : $P_{29759} = (30, 0, 28, 1)$
809 : $P_{27665} = (16, 31, 25, 1)$	863 : $P_{29760} = (31, 0, 28, 1)$
810 : $P_{27709} = (28, 0, 26, 1)$	864 : $P_{29768} = (7, 1, 28, 1)$
811 : $P_{27710} = (29, 0, 26, 1)$	865 : $P_{29787} = (26, 1, 28, 1)$
812 : $P_{27888} = (15, 6, 26, 1)$	866 : $P_{29852} = (27, 3, 28, 1)$
813 : $P_{27897} = (24, 6, 26, 1)$	867 : $P_{29861} = (4, 4, 28, 1)$
814 : $P_{27922} = (17, 7, 26, 1)$	868 : $P_{29883} = (26, 4, 28, 1)$
815 : $P_{27933} = (28, 7, 26, 1)$	869 : $P_{29913} = (24, 5, 28, 1)$
816 : $P_{28058} = (25, 11, 26, 1)$	870 : $P_{29915} = (26, 5, 28, 1)$
817 : $P_{28062} = (29, 11, 26, 1)$	871 : $P_{29938} = (17, 6, 28, 1)$
818 : $P_{28202} = (9, 16, 26, 1)$	872 : $P_{29939} = (18, 6, 28, 1)$
819 : $P_{28213} = (20, 16, 26, 1)$	873 : $P_{29961} = (8, 7, 28, 1)$
820 : $P_{28333} = (12, 20, 26, 1)$	874 : $P_{29976} = (23, 7, 28, 1)$
821 : $P_{28343} = (22, 20, 26, 1)$	875 : $P_{29989} = (4, 8, 28, 1)$
822 : $P_{28366} = (13, 21, 26, 1)$	876 : $P_{30015} = (30, 8, 28, 1)$
823 : $P_{28403} = (18, 22, 26, 1)$	877 : $P_{30114} = (1, 12, 28, 1)$
824 : $P_{28410} = (25, 22, 26, 1)$	878 : $P_{30117} = (4, 12, 28, 1)$
825 : $P_{28418} = (1, 23, 26, 1)$	879 : $P_{30147} = (2, 13, 28, 1)$
826 : $P_{28433} = (16, 23, 26, 1)$	880 : $P_{30172} = (27, 13, 28, 1)$
827 : $P_{28500} = (19, 25, 26, 1)$	881 : $P_{30180} = (3, 14, 28, 1)$
828 : $P_{28507} = (26, 25, 26, 1)$	882 : $P_{30204} = (27, 14, 28, 1)$
829 : $P_{28515} = (2, 26, 26, 1)$	883 : $P_{30328} = (23, 18, 28, 1)$

884 : $P_{30329} = (24, 18, 28, 1)$
 885 : $P_{30347} = (10, 19, 28, 1)$
 886 : $P_{30362} = (25, 19, 28, 1)$
 887 : $P_{30407} = (6, 21, 28, 1)$
 888 : $P_{30424} = (23, 21, 28, 1)$
 889 : $P_{30485} = (20, 23, 28, 1)$
 890 : $P_{30489} = (24, 23, 28, 1)$
 891 : $P_{30504} = (7, 24, 28, 1)$
 892 : $P_{30511} = (14, 24, 28, 1)$
 893 : $P_{30536} = (7, 25, 28, 1)$
 894 : $P_{30547} = (18, 25, 28, 1)$
 895 : $P_{30647} = (22, 28, 28, 1)$
 896 : $P_{30678} = (21, 29, 28, 1)$
 897 : $P_{30688} = (31, 29, 28, 1)$
 898 : $P_{30726} = (5, 31, 28, 1)$
 899 : $P_{30739} = (18, 31, 28, 1)$
 900 : $P_{30874} = (25, 3, 29, 1)$
 901 : $P_{30875} = (26, 3, 29, 1)$
 902 : $P_{30931} = (18, 5, 29, 1)$
 903 : $P_{30934} = (21, 5, 29, 1)$
 904 : $P_{30969} = (24, 6, 29, 1)$
 905 : $P_{30974} = (29, 6, 29, 1)$
 906 : $P_{30992} = (15, 7, 29, 1)$
 907 : $P_{31000} = (23, 7, 29, 1)$
 908 : $P_{31018} = (9, 8, 29, 1)$
 909 : $P_{31036} = (27, 8, 29, 1)$
 910 : $P_{31107} = (2, 11, 29, 1)$
 911 : $P_{31123} = (18, 11, 29, 1)$
 912 : $P_{31159} = (22, 12, 29, 1)$
 913 : $P_{31168} = (31, 12, 29, 1)$
 914 : $P_{31205} = (4, 14, 29, 1)$
 915 : $P_{31219} = (18, 14, 29, 1)$
 916 : $P_{31238} = (5, 15, 29, 1)$
 917 : $P_{31247} = (14, 15, 29, 1)$
 918 : $P_{31294} = (29, 16, 29, 1)$
 919 : $P_{31296} = (31, 16, 29, 1)$
 920 : $P_{31311} = (14, 17, 29, 1)$
 921 : $P_{31314} = (17, 17, 29, 1)$
 922 : $P_{31370} = (9, 19, 29, 1)$
 923 : $P_{31406} = (13, 20, 29, 1)$
 924 : $P_{31413} = (20, 20, 29, 1)$
 925 : $P_{31484} = (27, 22, 29, 1)$
 926 : $P_{31486} = (29, 22, 29, 1)$
 927 : $P_{31532} = (11, 24, 29, 1)$
 928 : $P_{31547} = (26, 24, 29, 1)$
 929 : $P_{31574} = (21, 25, 29, 1)$
 930 : $P_{31578} = (25, 25, 29, 1)$
 931 : $P_{31608} = (23, 26, 29, 1)$
 932 : $P_{31610} = (25, 26, 29, 1)$
 933 : $P_{31626} = (9, 27, 29, 1)$
 934 : $P_{31643} = (26, 27, 29, 1)$
 935 : $P_{31670} = (21, 28, 29, 1)$
 936 : $P_{31680} = (31, 28, 29, 1)$
 937 : $P_{31704} = (23, 29, 29, 1)$
 938 : $P_{31727} = (14, 30, 29, 1)$

939 : $P_{31740} = (27, 30, 29, 1)$
 940 : $P_{31842} = (1, 2, 30, 1)$
 941 : $P_{31866} = (25, 2, 30, 1)$
 942 : $P_{31985} = (16, 6, 30, 1)$
 943 : $P_{32000} = (31, 6, 30, 1)$
 944 : $P_{32011} = (10, 7, 30, 1)$
 945 : $P_{32028} = (27, 7, 30, 1)$
 946 : $P_{32034} = (1, 8, 30, 1)$
 947 : $P_{32044} = (11, 8, 30, 1)$
 948 : $P_{32098} = (1, 10, 30, 1)$
 949 : $P_{32115} = (18, 10, 30, 1)$
 950 : $P_{32296} = (7, 16, 30, 1)$
 951 : $P_{32305} = (16, 16, 30, 1)$
 952 : $P_{32435} = (18, 20, 30, 1)$
 953 : $P_{32457} = (8, 21, 30, 1)$
 954 : $P_{32471} = (22, 21, 30, 1)$
 955 : $P_{32490} = (9, 22, 30, 1)$
 956 : $P_{32497} = (16, 22, 30, 1)$
 957 : $P_{32515} = (2, 23, 30, 1)$
 958 : $P_{32518} = (5, 23, 30, 1)$
 959 : $P_{32636} = (27, 26, 30, 1)$
 960 : $P_{32639} = (30, 26, 30, 1)$
 961 : $P_{32719} = (14, 29, 30, 1)$
 962 : $P_{32732} = (27, 29, 30, 1)$
 963 : $P_{32755} = (18, 30, 30, 1)$
 964 : $P_{32817} = (16, 0, 31, 1)$
 965 : $P_{32818} = (17, 0, 31, 1)$
 966 : $P_{32843} = (10, 1, 31, 1)$
 967 : $P_{32853} = (20, 1, 31, 1)$
 968 : $P_{32867} = (2, 2, 31, 1)$
 969 : $P_{32889} = (24, 2, 31, 1)$
 970 : $P_{32935} = (6, 4, 31, 1)$
 971 : $P_{32949} = (20, 4, 31, 1)$
 972 : $P_{32981} = (20, 5, 31, 1)$
 973 : $P_{32986} = (25, 5, 31, 1)$
 974 : $P_{33239} = (22, 13, 31, 1)$
 975 : $P_{33241} = (24, 13, 31, 1)$
 976 : $P_{33294} = (13, 15, 31, 1)$
 977 : $P_{33305} = (24, 15, 31, 1)$
 978 : $P_{33384} = (7, 18, 31, 1)$
 979 : $P_{33404} = (27, 18, 31, 1)$
 980 : $P_{33496} = (23, 21, 31, 1)$
 981 : $P_{33501} = (28, 21, 31, 1)$
 982 : $P_{33522} = (17, 22, 31, 1)$
 983 : $P_{33535} = (30, 22, 31, 1)$
 984 : $P_{33612} = (11, 25, 31, 1)$
 985 : $P_{33617} = (16, 25, 31, 1)$
 986 : $P_{33643} = (10, 26, 31, 1)$
 987 : $P_{33654} = (21, 26, 31, 1)$
 988 : $P_{33675} = (10, 27, 31, 1)$
 989 : $P_{33702} = (5, 28, 31, 1)$
 990 : $P_{33715} = (18, 28, 31, 1)$
 991 : $P_{33812} = (19, 31, 31, 1)$

Line Intersection Graph

$$\begin{array}{c|c} & 0 \\ \hline 0 & \end{array}$$

Neighbor sets in the line intersection graph:
Line 0 intersects

Line
in point

The surface has 1025 points:
Too many to print.