

Rank-73798 over GF(32)

January 15, 2021

The equation

The equation of the surface is :

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

(1, 1, 0, 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 -2112846778

General information

Number of lines	1
Number of points	1025
Number of singular points	1
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 1 singular points:

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

The 1 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1083424} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1083424} = \mathbf{Pl}(0, 1, 0, 0, 0, 0)_1$$

Rank of lines: (1083424)
Rank of points on Klein quadric: (1)

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 : $P_2 = (0, 0, 1, 0)$ lies on line ℓ_0 | 17 : $P_{17441} = (0, 0, 16, 1)$ lies on line ℓ_0 |
| 1 : $P_3 = (0, 0, 0, 1)$ lies on line ℓ_0 | 18 : $P_{18465} = (0, 0, 17, 1)$ lies on line ℓ_0 |
| 2 : $P_{2082} = (0, 0, 1, 1)$ lies on line ℓ_0 | 19 : $P_{19489} = (0, 0, 18, 1)$ lies on line ℓ_0 |
| 3 : $P_{3105} = (0, 0, 2, 1)$ lies on line ℓ_0 | 20 : $P_{20513} = (0, 0, 19, 1)$ lies on line ℓ_0 |
| 4 : $P_{4129} = (0, 0, 3, 1)$ lies on line ℓ_0 | 21 : $P_{21537} = (0, 0, 20, 1)$ lies on line ℓ_0 |
| 5 : $P_{5153} = (0, 0, 4, 1)$ lies on line ℓ_0 | 22 : $P_{22561} = (0, 0, 21, 1)$ lies on line ℓ_0 |
| 6 : $P_{6177} = (0, 0, 5, 1)$ lies on line ℓ_0 | 23 : $P_{23585} = (0, 0, 22, 1)$ lies on line ℓ_0 |
| 7 : $P_{7201} = (0, 0, 6, 1)$ lies on line ℓ_0 | 24 : $P_{24609} = (0, 0, 23, 1)$ lies on line ℓ_0 |
| 8 : $P_{8225} = (0, 0, 7, 1)$ lies on line ℓ_0 | 25 : $P_{25633} = (0, 0, 24, 1)$ lies on line ℓ_0 |
| 9 : $P_{9249} = (0, 0, 8, 1)$ lies on line ℓ_0 | 26 : $P_{26657} = (0, 0, 25, 1)$ lies on line ℓ_0 |
| 10 : $P_{10273} = (0, 0, 9, 1)$ lies on line ℓ_0 | 27 : $P_{27681} = (0, 0, 26, 1)$ lies on line ℓ_0 |
| 11 : $P_{11297} = (0, 0, 10, 1)$ lies on line ℓ_0 | 28 : $P_{28705} = (0, 0, 27, 1)$ lies on line ℓ_0 |
| 12 : $P_{12321} = (0, 0, 11, 1)$ lies on line ℓ_0 | 29 : $P_{29729} = (0, 0, 28, 1)$ lies on line ℓ_0 |
| 13 : $P_{13345} = (0, 0, 12, 1)$ lies on line ℓ_0 | 30 : $P_{30753} = (0, 0, 29, 1)$ lies on line ℓ_0 |
| 14 : $P_{14369} = (0, 0, 13, 1)$ lies on line ℓ_0 | 31 : $P_{31777} = (0, 0, 30, 1)$ lies on line ℓ_0 |
| 15 : $P_{15393} = (0, 0, 14, 1)$ lies on line ℓ_0 | 32 : $P_{32801} = (0, 0, 31, 1)$ lies on line ℓ_0 |
| 16 : $P_{16417} = (0, 0, 15, 1)$ 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 : $P_5 = (1, 1, 0, 0)$ | 6 : $P_{305} = (14, 8, 1, 0)$ |
| 1 : $P_{129} = (30, 2, 1, 0)$ | 7 : $P_{307} = (16, 8, 1, 0)$ |
| 2 : $P_{155} = (24, 3, 1, 0)$ | 8 : $P_{321} = (30, 8, 1, 0)$ |
| 3 : $P_{182} = (19, 4, 1, 0)$ | 9 : $P_{368} = (13, 10, 1, 0)$ |
| 4 : $P_{202} = (7, 5, 1, 0)$ | 10 : $P_{374} = (19, 10, 1, 0)$ |
| 5 : $P_{264} = (5, 7, 1, 0)$ | 11 : $P_{385} = (30, 10, 1, 0)$ |

12 : $P_{447} = (28, 12, 1, 0)$	66 : $P_{2216} = (7, 4, 1, 1)$
13 : $P_{461} = (10, 13, 1, 0)$	67 : $P_{2219} = (10, 4, 1, 1)$
14 : $P_{491} = (8, 14, 1, 0)$	68 : $P_{2221} = (12, 4, 1, 1)$
15 : $P_{502} = (19, 14, 1, 0)$	69 : $P_{2261} = (20, 5, 1, 1)$
16 : $P_{510} = (27, 14, 1, 0)$	70 : $P_{2487} = (22, 12, 1, 1)$
17 : $P_{555} = (8, 16, 1, 0)$	71 : $P_{2500} = (3, 13, 1, 1)$
18 : $P_{600} = (21, 17, 1, 0)$	72 : $P_{2525} = (28, 13, 1, 1)$
19 : $P_{647} = (4, 19, 1, 0)$	73 : $P_{2527} = (30, 13, 1, 1)$
20 : $P_{653} = (10, 19, 1, 0)$	74 : $P_{2607} = (14, 16, 1, 1)$
21 : $P_{657} = (14, 19, 1, 0)$	75 : $P_{2614} = (21, 16, 1, 1)$
22 : $P_{724} = (17, 21, 1, 0)$	76 : $P_{2619} = (26, 16, 1, 1)$
23 : $P_{797} = (26, 23, 1, 0)$	77 : $P_{2654} = (29, 17, 1, 1)$
24 : $P_{806} = (3, 24, 1, 0)$	78 : $P_{2938} = (25, 26, 1, 1)$
25 : $P_{890} = (23, 26, 1, 0)$	79 : $P_{2950} = (5, 27, 1, 1)$
26 : $P_{913} = (14, 27, 1, 0)$	80 : $P_{2964} = (19, 27, 1, 1)$
27 : $P_{943} = (12, 28, 1, 0)$	81 : $P_{2968} = (23, 27, 1, 1)$
28 : $P_{997} = (2, 30, 1, 0)$	82 : $P_{3142} = (5, 1, 2, 1)$
29 : $P_{1003} = (8, 30, 1, 0)$	83 : $P_{3183} = (14, 2, 2, 1)$
30 : $P_{1005} = (10, 30, 1, 0)$	84 : $P_{3191} = (22, 2, 2, 1)$
31 : $P_{1091} = (1, 1, 0, 1)$	85 : $P_{3194} = (25, 2, 2, 1)$
32 : $P_{1135} = (13, 2, 0, 1)$	86 : $P_{3247} = (14, 4, 2, 1)$
33 : $P_{1171} = (17, 3, 0, 1)$	87 : $P_{3292} = (27, 5, 2, 1)$
34 : $P_{1213} = (27, 4, 0, 1)$	88 : $P_{3304} = (7, 6, 2, 1)$
35 : $P_{1230} = (12, 5, 0, 1)$	89 : $P_{3305} = (8, 6, 2, 1)$
36 : $P_{1269} = (19, 6, 0, 1)$	90 : $P_{3311} = (14, 6, 2, 1)$
37 : $P_{1297} = (15, 7, 0, 1)$	91 : $P_{3335} = (6, 7, 2, 1)$
38 : $P_{1336} = (22, 8, 0, 1)$	92 : $P_{3339} = (10, 7, 2, 1)$
39 : $P_{1367} = (21, 9, 0, 1)$	93 : $P_{3342} = (13, 7, 2, 1)$
40 : $P_{1403} = (25, 10, 0, 1)$	94 : $P_{3405} = (12, 9, 2, 1)$
41 : $P_{1438} = (28, 11, 0, 1)$	95 : $P_{3427} = (2, 10, 2, 1)$
42 : $P_{1445} = (3, 12, 0, 1)$	96 : $P_{3475} = (18, 11, 2, 1)$
43 : $P_{1478} = (4, 13, 0, 1)$	97 : $P_{3572} = (19, 14, 2, 1)$
44 : $P_{1512} = (6, 14, 0, 1)$	98 : $P_{3669} = (20, 17, 2, 1)$
45 : $P_{1561} = (23, 15, 0, 1)$	99 : $P_{3716} = (3, 19, 2, 1)$
46 : $P_{1572} = (2, 16, 0, 1)$	100 : $P_{3779} = (2, 21, 2, 1)$
47 : $P_{1628} = (26, 17, 0, 1)$	101 : $P_{3802} = (25, 21, 2, 1)$
48 : $P_{1641} = (7, 18, 0, 1)$	102 : $P_{3803} = (26, 21, 2, 1)$
49 : $P_{1695} = (29, 19, 0, 1)$	103 : $P_{3830} = (21, 22, 2, 1)$
50 : $P_{1706} = (8, 20, 0, 1)$	104 : $P_{3866} = (25, 23, 2, 1)$
51 : $P_{1761} = (31, 21, 0, 1)$	105 : $P_{3912} = (7, 25, 2, 1)$
52 : $P_{1776} = (14, 22, 0, 1)$	106 : $P_{3950} = (13, 26, 2, 1)$
53 : $P_{1803} = (9, 23, 0, 1)$	107 : $P_{4006} = (5, 28, 2, 1)$
54 : $P_{1837} = (11, 24, 0, 1)$	108 : $P_{4025} = (24, 28, 2, 1)$
55 : $P_{1888} = (30, 25, 0, 1)$	109 : $P_{4029} = (28, 28, 2, 1)$
56 : $P_{1895} = (5, 26, 0, 1)$	110 : $P_{4038} = (5, 29, 2, 1)$
57 : $P_{1938} = (16, 27, 0, 1)$	111 : $P_{4042} = (9, 29, 2, 1)$
58 : $P_{1972} = (18, 28, 0, 1)$	112 : $P_{4046} = (13, 29, 2, 1)$
59 : $P_{1996} = (10, 29, 0, 1)$	113 : $P_{4099} = (2, 31, 2, 1)$
60 : $P_{2038} = (20, 30, 0, 1)$	114 : $P_{4101} = (4, 31, 2, 1)$
61 : $P_{2074} = (24, 31, 0, 1)$	115 : $P_{4104} = (7, 31, 2, 1)$
62 : $P_{2153} = (8, 2, 1, 1)$	116 : $P_{4202} = (9, 2, 3, 1)$
63 : $P_{2162} = (17, 2, 1, 1)$	117 : $P_{4214} = (21, 2, 3, 1)$
64 : $P_{2169} = (24, 2, 1, 1)$	118 : $P_{4222} = (29, 2, 3, 1)$
65 : $P_{2183} = (6, 3, 1, 1)$	119 : $P_{4251} = (26, 3, 3, 1)$

120 : $P_{4272} = (15, 4, 3, 1)$	174 : $P_{5884} = (27, 22, 4, 1)$
121 : $P_{4324} = (3, 6, 3, 1)$	175 : $P_{5896} = (7, 23, 4, 1)$
122 : $P_{4367} = (14, 7, 3, 1)$	176 : $P_{5906} = (17, 23, 4, 1)$
123 : $P_{4409} = (24, 8, 3, 1)$	177 : $P_{5912} = (23, 23, 4, 1)$
124 : $P_{4461} = (12, 10, 3, 1)$	178 : $P_{5927} = (6, 24, 4, 1)$
125 : $P_{4521} = (8, 12, 3, 1)$	179 : $P_{5981} = (28, 25, 4, 1)$
126 : $P_{4532} = (19, 12, 3, 1)$	180 : $P_{6052} = (3, 28, 4, 1)$
127 : $P_{4539} = (26, 12, 3, 1)$	181 : $P_{6053} = (4, 28, 4, 1)$
128 : $P_{4614} = (5, 15, 3, 1)$	182 : $P_{6055} = (6, 28, 4, 1)$
129 : $P_{4635} = (26, 15, 3, 1)$	183 : $P_{6121} = (8, 30, 4, 1)$
130 : $P_{4639} = (30, 15, 3, 1)$	184 : $P_{6253} = (12, 2, 5, 1)$
131 : $P_{4723} = (18, 18, 3, 1)$	185 : $P_{6259} = (18, 2, 5, 1)$
132 : $P_{4745} = (8, 19, 3, 1)$	186 : $P_{6272} = (31, 2, 5, 1)$
133 : $P_{4770} = (1, 20, 3, 1)$	187 : $P_{6281} = (8, 3, 5, 1)$
134 : $P_{4792} = (23, 20, 3, 1)$	188 : $P_{6316} = (11, 4, 5, 1)$
135 : $P_{4823} = (22, 21, 3, 1)$	189 : $P_{6327} = (22, 4, 5, 1)$
136 : $P_{4835} = (2, 22, 3, 1)$	190 : $P_{6333} = (28, 4, 5, 1)$
137 : $P_{4849} = (16, 22, 3, 1)$	191 : $P_{6340} = (3, 5, 5, 1)$
138 : $P_{4852} = (19, 22, 3, 1)$	192 : $P_{6371} = (2, 6, 5, 1)$
139 : $P_{4877} = (12, 23, 3, 1)$	193 : $P_{6443} = (10, 8, 5, 1)$
140 : $P_{4956} = (27, 25, 3, 1)$	194 : $P_{6474} = (9, 9, 5, 1)$
141 : $P_{4980} = (19, 26, 3, 1)$	195 : $P_{6504} = (7, 10, 5, 1)$
142 : $P_{5008} = (15, 27, 3, 1)$	196 : $P_{6651} = (26, 14, 5, 1)$
143 : $P_{5010} = (17, 27, 3, 1)$	197 : $P_{6720} = (31, 16, 5, 1)$
144 : $P_{5024} = (31, 27, 3, 1)$	198 : $P_{6763} = (10, 18, 5, 1)$
145 : $P_{5035} = (10, 28, 3, 1)$	199 : $P_{6773} = (20, 18, 5, 1)$
146 : $P_{5069} = (12, 29, 3, 1)$	200 : $P_{6784} = (31, 18, 5, 1)$
147 : $P_{5127} = (6, 31, 3, 1)$	201 : $P_{6822} = (5, 20, 5, 1)$
148 : $P_{5129} = (8, 31, 3, 1)$	202 : $P_{6879} = (30, 21, 5, 1)$
149 : $P_{5136} = (15, 31, 3, 1)$	203 : $P_{6907} = (26, 22, 5, 1)$
150 : $P_{5202} = (17, 1, 4, 1)$	204 : $P_{6927} = (14, 23, 5, 1)$
151 : $P_{5276} = (27, 3, 4, 1)$	205 : $P_{6971} = (26, 24, 5, 1)$
152 : $P_{5287} = (6, 4, 4, 1)$	206 : $P_{6981} = (4, 25, 5, 1)$
153 : $P_{5306} = (25, 4, 4, 1)$	207 : $P_{6985} = (8, 25, 5, 1)$
154 : $P_{5311} = (30, 4, 4, 1)$	208 : $P_{6990} = (13, 25, 5, 1)$
155 : $P_{5366} = (21, 6, 4, 1)$	209 : $P_{7012} = (3, 26, 5, 1)$
156 : $P_{5414} = (5, 8, 4, 1)$	210 : $P_{7017} = (8, 26, 5, 1)$
157 : $P_{5531} = (26, 11, 4, 1)$	211 : $P_{7019} = (10, 26, 5, 1)$
158 : $P_{5566} = (29, 12, 4, 1)$	212 : $P_{7098} = (25, 28, 5, 1)$
159 : $P_{5605} = (4, 14, 4, 1)$	213 : $P_{7106} = (1, 29, 5, 1)$
160 : $P_{5642} = (9, 15, 4, 1)$	214 : $P_{7129} = (24, 29, 5, 1)$
161 : $P_{5695} = (30, 16, 4, 1)$	215 : $P_{7172} = (3, 31, 5, 1)$
162 : $P_{5699} = (2, 17, 4, 1)$	216 : $P_{7186} = (17, 31, 5, 1)$
163 : $P_{5733} = (4, 18, 4, 1)$	217 : $P_{7188} = (19, 31, 5, 1)$
164 : $P_{5745} = (16, 18, 4, 1)$	218 : $P_{7255} = (22, 1, 6, 1)$
165 : $P_{5750} = (21, 18, 4, 1)$	219 : $P_{7271} = (6, 2, 6, 1)$
166 : $P_{5803} = (10, 20, 4, 1)$	220 : $P_{7318} = (21, 3, 6, 1)$
167 : $P_{5814} = (21, 20, 4, 1)$	221 : $P_{7345} = (16, 4, 6, 1)$
168 : $P_{5823} = (30, 20, 4, 1)$	222 : $P_{7362} = (1, 5, 6, 1)$
169 : $P_{5839} = (14, 21, 4, 1)$	223 : $P_{7376} = (15, 5, 6, 1)$
170 : $P_{5845} = (20, 21, 4, 1)$	224 : $P_{7406} = (13, 6, 6, 1)$
171 : $P_{5852} = (27, 21, 4, 1)$	225 : $P_{7443} = (18, 7, 6, 1)$
172 : $P_{5868} = (11, 22, 4, 1)$	226 : $P_{7470} = (13, 8, 6, 1)$
173 : $P_{5874} = (17, 22, 4, 1)$	227 : $P_{7476} = (19, 8, 6, 1)$

228 : $P_{7488} = (31, 8, 6, 1)$
 229 : $P_{7492} = (3, 9, 6, 1)$
 230 : $P_{7597} = (12, 12, 6, 1)$
 231 : $P_{7662} = (13, 14, 6, 1)$
 232 : $P_{7669} = (20, 14, 6, 1)$
 233 : $P_{7673} = (24, 14, 6, 1)$
 234 : $P_{7691} = (10, 15, 6, 1)$
 235 : $P_{7714} = (1, 16, 6, 1)$
 236 : $P_{7723} = (10, 16, 6, 1)$
 237 : $P_{7748} = (3, 17, 6, 1)$
 238 : $P_{7847} = (6, 20, 6, 1)$
 239 : $P_{7874} = (1, 21, 6, 1)$
 240 : $P_{7877} = (4, 21, 6, 1)$
 241 : $P_{7911} = (6, 22, 6, 1)$
 242 : $P_{7972} = (3, 24, 6, 1)$
 243 : $P_{8010} = (9, 25, 6, 1)$
 244 : $P_{8062} = (29, 26, 6, 1)$
 245 : $P_{8150} = (21, 29, 6, 1)$
 246 : $P_{8182} = (21, 30, 6, 1)$
 247 : $P_{8203} = (10, 31, 6, 1)$
 248 : $P_{8216} = (23, 31, 6, 1)$
 249 : $P_{8221} = (28, 31, 6, 1)$
 250 : $P_{8266} = (9, 1, 7, 1)$
 251 : $P_{8276} = (19, 1, 7, 1)$
 252 : $P_{8284} = (27, 1, 7, 1)$
 253 : $P_{8305} = (16, 2, 7, 1)$
 254 : $P_{8401} = (16, 5, 7, 1)$
 255 : $P_{8465} = (16, 7, 7, 1)$
 256 : $P_{8510} = (29, 8, 7, 1)$
 257 : $P_{8517} = (4, 9, 7, 1)$
 258 : $P_{8620} = (11, 12, 7, 1)$
 259 : $P_{8651} = (10, 13, 7, 1)$
 260 : $P_{8687} = (14, 14, 7, 1)$
 261 : $P_{8810} = (9, 18, 7, 1)$
 262 : $P_{8837} = (4, 19, 7, 1)$
 263 : $P_{8842} = (9, 19, 7, 1)$
 264 : $P_{8845} = (12, 19, 7, 1)$
 265 : $P_{9056} = (31, 25, 7, 1)$
 266 : $P_{9061} = (4, 26, 7, 1)$
 267 : $P_{9075} = (18, 26, 7, 1)$
 268 : $P_{9080} = (23, 26, 7, 1)$
 269 : $P_{9156} = (3, 29, 7, 1)$
 270 : $P_{9186} = (1, 30, 7, 1)$
 271 : $P_{9190} = (5, 30, 7, 1)$
 272 : $P_{9368} = (23, 3, 8, 1)$
 273 : $P_{9381} = (4, 4, 8, 1)$
 274 : $P_{9401} = (24, 4, 8, 1)$
 275 : $P_{9406} = (29, 4, 8, 1)$
 276 : $P_{9417} = (8, 5, 8, 1)$
 277 : $P_{9431} = (22, 5, 8, 1)$
 278 : $P_{9440} = (31, 5, 8, 1)$
 279 : $P_{9450} = (9, 6, 8, 1)$
 280 : $P_{9507} = (2, 8, 8, 1)$
 281 : $P_{9564} = (27, 9, 8, 1)$

282 : $P_{9598} = (29, 10, 8, 1)$
 283 : $P_{9607} = (6, 11, 8, 1)$
 284 : $P_{9646} = (13, 12, 8, 1)$
 285 : $P_{9677} = (12, 13, 8, 1)$
 286 : $P_{9688} = (23, 13, 8, 1)$
 287 : $P_{9691} = (26, 13, 8, 1)$
 288 : $P_{9708} = (11, 14, 8, 1)$
 289 : $P_{9720} = (23, 14, 8, 1)$
 290 : $P_{9726} = (29, 14, 8, 1)$
 291 : $P_{9747} = (18, 15, 8, 1)$
 292 : $P_{9881} = (24, 19, 8, 1)$
 293 : $P_{9940} = (19, 21, 8, 1)$
 294 : $P_{9996} = (11, 23, 8, 1)$
 295 : $P_{10003} = (18, 23, 8, 1)$
 296 : $P_{10009} = (24, 23, 8, 1)$
 297 : $P_{10022} = (5, 24, 8, 1)$
 298 : $P_{10035} = (18, 24, 8, 1)$
 299 : $P_{10039} = (22, 24, 8, 1)$
 300 : $P_{10060} = (11, 25, 8, 1)$
 301 : $P_{10095} = (14, 26, 8, 1)$
 302 : $P_{10166} = (21, 28, 8, 1)$
 303 : $P_{10199} = (22, 29, 8, 1)$
 304 : $P_{10333} = (28, 1, 9, 1)$
 305 : $P_{10365} = (28, 2, 9, 1)$
 306 : $P_{10397} = (28, 3, 9, 1)$
 307 : $P_{10404} = (3, 4, 9, 1)$
 308 : $P_{10462} = (29, 5, 9, 1)$
 309 : $P_{10520} = (23, 7, 9, 1)$
 310 : $P_{10544} = (15, 8, 9, 1)$
 311 : $P_{10581} = (20, 9, 9, 1)$
 312 : $P_{10604} = (11, 10, 9, 1)$
 313 : $P_{10635} = (10, 11, 9, 1)$
 314 : $P_{10760} = (7, 15, 9, 1)$
 315 : $P_{10789} = (4, 16, 9, 1)$
 316 : $P_{10828} = (11, 17, 9, 1)$
 317 : $P_{10852} = (3, 18, 9, 1)$
 318 : $P_{10874} = (25, 18, 9, 1)$
 319 : $P_{10876} = (27, 18, 9, 1)$
 320 : $P_{10907} = (26, 19, 9, 1)$
 321 : $P_{10955} = (10, 21, 9, 1)$
 322 : $P_{10980} = (3, 22, 9, 1)$
 323 : $P_{10997} = (20, 22, 9, 1)$
 324 : $P_{10999} = (22, 22, 9, 1)$
 325 : $P_{11043} = (2, 24, 9, 1)$
 326 : $P_{11129} = (24, 26, 9, 1)$
 327 : $P_{11148} = (11, 27, 9, 1)$
 328 : $P_{11209} = (8, 29, 9, 1)$
 329 : $P_{11243} = (10, 30, 9, 1)$
 330 : $P_{11266} = (1, 31, 9, 1)$
 331 : $P_{11285} = (20, 31, 9, 1)$
 332 : $P_{11423} = (30, 3, 10, 1)$
 333 : $P_{11481} = (24, 5, 10, 1)$
 334 : $P_{11504} = (15, 6, 10, 1)$
 335 : $P_{11530} = (9, 7, 10, 1)$

336 : $P_{11538} = (17, 7, 10, 1)$
 337 : $P_{11546} = (25, 7, 10, 1)$
 338 : $P_{11560} = (7, 8, 10, 1)$
 339 : $P_{11621} = (4, 10, 10, 1)$
 340 : $P_{11651} = (2, 11, 10, 1)$
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 742 : $P_{24955} = (26, 10, 23, 1)$
 743 : $P_{25027} = (2, 13, 23, 1)$
 744 : $P_{25062} = (5, 14, 23, 1)$
 745 : $P_{25084} = (27, 14, 23, 1)$
 746 : $P_{25088} = (31, 14, 23, 1)$
 747 : $P_{25120} = (31, 15, 23, 1)$
 748 : $P_{25168} = (15, 17, 23, 1)$
 749 : $P_{25174} = (21, 17, 23, 1)$
 750 : $P_{25180} = (27, 17, 23, 1)$
 751 : $P_{25347} = (2, 23, 23, 1)$
 752 : $P_{25443} = (2, 26, 23, 1)$
 753 : $P_{25548} = (11, 29, 23, 1)$
 754 : $P_{25575} = (6, 30, 23, 1)$
 755 : $P_{25628} = (27, 31, 23, 1)$
 756 : $P_{25678} = (13, 1, 24, 1)$
 757 : $P_{25683} = (18, 1, 24, 1)$
 758 : $P_{25695} = (30, 1, 24, 1)$
 759 : $P_{25733} = (4, 3, 24, 1)$
 760 : $P_{25963} = (10, 10, 24, 1)$
 761 : $P_{26019} = (2, 12, 24, 1)$
 762 : $P_{26045} = (28, 12, 24, 1)$
 763 : $P_{26048} = (31, 12, 24, 1)$
 764 : $P_{26082} = (1, 14, 24, 1)$
 765 : $P_{26084} = (3, 14, 24, 1)$
 766 : $P_{26153} = (8, 16, 24, 1)$
 767 : $P_{26186} = (9, 17, 24, 1)$

768 : $P_{26211} = (2, 18, 24, 1)$
 769 : $P_{26261} = (20, 19, 24, 1)$
 770 : $P_{26299} = (26, 20, 24, 1)$
 771 : $P_{26352} = (15, 22, 24, 1)$
 772 : $P_{26405} = (4, 24, 24, 1)$
 773 : $P_{26501} = (4, 27, 24, 1)$
 774 : $P_{26595} = (2, 30, 24, 1)$
 775 : $P_{26610} = (17, 30, 24, 1)$
 776 : $P_{26611} = (18, 30, 24, 1)$
 777 : $P_{26643} = (18, 31, 24, 1)$
 778 : $P_{26718} = (29, 1, 25, 1)$
 779 : $P_{26725} = (4, 2, 25, 1)$
 780 : $P_{26754} = (1, 3, 25, 1)$
 781 : $P_{26764} = (11, 3, 25, 1)$
 782 : $P_{26786} = (1, 4, 25, 1)$
 783 : $P_{26793} = (8, 4, 25, 1)$
 784 : $P_{26843} = (26, 5, 25, 1)$
 785 : $P_{26874} = (25, 6, 25, 1)$
 786 : $P_{26882} = (1, 7, 25, 1)$
 787 : $P_{26883} = (2, 7, 25, 1)$
 788 : $P_{26983} = (6, 10, 25, 1)$
 789 : $P_{26993} = (16, 10, 25, 1)$
 790 : $P_{27000} = (23, 10, 25, 1)$
 791 : $P_{27017} = (8, 11, 25, 1)$
 792 : $P_{27061} = (20, 12, 25, 1)$
 793 : $P_{27112} = (7, 14, 25, 1)$
 794 : $P_{27145} = (8, 15, 25, 1)$
 795 : $P_{27158} = (21, 15, 25, 1)$
 796 : $P_{27165} = (28, 15, 25, 1)$
 797 : $P_{27218} = (17, 17, 25, 1)$
 798 : $P_{27259} = (26, 18, 25, 1)$
 799 : $P_{27280} = (15, 19, 25, 1)$
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 801 : $P_{27295} = (30, 19, 25, 1)$
 802 : $P_{27304} = (7, 20, 25, 1)$
 803 : $P_{27379} = (18, 22, 25, 1)$
 804 : $P_{27419} = (26, 23, 25, 1)$
 805 : $P_{27456} = (31, 24, 25, 1)$
 806 : $P_{27473} = (16, 25, 25, 1)$
 807 : $P_{27496} = (7, 26, 25, 1)$
 808 : $P_{27546} = (25, 27, 25, 1)$
 809 : $P_{27610} = (25, 29, 25, 1)$
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 811 : $P_{27874} = (1, 6, 26, 1)$
 812 : $P_{27901} = (28, 6, 26, 1)$
 813 : $P_{27934} = (29, 7, 26, 1)$
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 815 : $P_{28036} = (3, 11, 26, 1)$
 816 : $P_{28045} = (12, 11, 26, 1)$
 817 : $P_{28047} = (14, 11, 26, 1)$
 818 : $P_{28095} = (30, 12, 26, 1)$
 819 : $P_{28102} = (5, 13, 26, 1)$
 820 : $P_{28108} = (11, 13, 26, 1)$
 821 : $P_{28112} = (15, 13, 26, 1)$

822 : $P_{28172} = (11, 15, 26, 1)$
 823 : $P_{28180} = (19, 15, 26, 1)$
 824 : $P_{28186} = (25, 15, 26, 1)$
 825 : $P_{28237} = (12, 17, 26, 1)$
 826 : $P_{28244} = (19, 17, 26, 1)$
 827 : $P_{28255} = (30, 17, 26, 1)$
 828 : $P_{28312} = (23, 19, 26, 1)$
 829 : $P_{28338} = (17, 20, 26, 1)$
 830 : $P_{28361} = (8, 21, 26, 1)$
 831 : $P_{28398} = (13, 22, 26, 1)$
 832 : $P_{28459} = (10, 24, 26, 1)$
 833 : $P_{28507} = (26, 25, 26, 1)$
 834 : $P_{28525} = (12, 26, 26, 1)$
 835 : $P_{28552} = (7, 27, 26, 1)$
 836 : $P_{28563} = (18, 27, 26, 1)$
 837 : $P_{28565} = (20, 27, 26, 1)$
 838 : $P_{28594} = (17, 28, 26, 1)$
 839 : $P_{28613} = (4, 29, 26, 1)$
 840 : $P_{28636} = (27, 29, 26, 1)$
 841 : $P_{28639} = (30, 29, 26, 1)$
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 843 : $P_{28704} = (31, 31, 26, 1)$
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 845 : $P_{28779} = (10, 2, 27, 1)$
 846 : $P_{28814} = (13, 3, 27, 1)$
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 848 : $P_{28941} = (12, 7, 27, 1)$
 849 : $P_{28951} = (22, 7, 27, 1)$
 850 : $P_{28956} = (27, 7, 27, 1)$
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 854 : $P_{29105} = (16, 12, 27, 1)$
 855 : $P_{29187} = (2, 15, 27, 1)$
 856 : $P_{29209} = (24, 15, 27, 1)$
 857 : $P_{29212} = (27, 15, 27, 1)$
 858 : $P_{29298} = (17, 18, 27, 1)$
 859 : $P_{29348} = (3, 20, 27, 1)$
 860 : $P_{29361} = (16, 20, 27, 1)$
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 862 : $P_{29380} = (3, 21, 27, 1)$
 863 : $P_{29398} = (21, 21, 27, 1)$
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 867 : $P_{29489} = (16, 24, 27, 1)$
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 870 : $P_{29524} = (19, 25, 27, 1)$
 871 : $P_{29529} = (24, 25, 27, 1)$
 872 : $P_{29579} = (10, 27, 27, 1)$
 873 : $P_{29591} = (22, 27, 27, 1)$
 874 : $P_{29598} = (29, 27, 27, 1)$
 875 : $P_{29623} = (22, 28, 27, 1)$

876 : $P_{29640} = (7, 29, 27, 1)$
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 878 : $P_{29765} = (4, 1, 28, 1)$
 879 : $P_{29771} = (10, 1, 28, 1)$
 880 : $P_{29776} = (15, 1, 28, 1)$
 881 : $P_{29823} = (30, 2, 28, 1)$
 882 : $P_{29856} = (31, 3, 28, 1)$
 883 : $P_{29896} = (7, 5, 28, 1)$
 884 : $P_{29900} = (11, 5, 28, 1)$
 885 : $P_{29902} = (13, 5, 28, 1)$
 886 : $P_{29986} = (1, 8, 28, 1)$
 887 : $P_{29997} = (12, 8, 28, 1)$
 888 : $P_{30052} = (3, 10, 28, 1)$
 889 : $P_{30062} = (13, 10, 28, 1)$
 890 : $P_{30064} = (15, 10, 28, 1)$
 891 : $P_{30096} = (15, 11, 28, 1)$
 892 : $P_{30140} = (27, 12, 28, 1)$
 893 : $P_{30202} = (25, 14, 28, 1)$
 894 : $P_{30222} = (13, 15, 28, 1)$
 895 : $P_{30268} = (27, 16, 28, 1)$
 896 : $P_{30356} = (19, 19, 28, 1)$
 897 : $P_{30378} = (9, 20, 28, 1)$
 898 : $P_{30546} = (17, 25, 28, 1)$
 899 : $P_{30652} = (27, 28, 28, 1)$
 900 : $P_{30791} = (6, 1, 29, 1)$
 901 : $P_{30852} = (3, 3, 29, 1)$
 902 : $P_{30938} = (25, 5, 29, 1)$
 903 : $P_{30974} = (29, 6, 29, 1)$
 904 : $P_{31032} = (23, 8, 29, 1)$
 905 : $P_{31048} = (7, 9, 29, 1)$
 906 : $P_{31065} = (24, 9, 29, 1)$
 907 : $P_{31071} = (30, 9, 29, 1)$
 908 : $P_{31138} = (1, 12, 29, 1)$
 909 : $P_{31155} = (18, 12, 29, 1)$
 910 : $P_{31196} = (27, 13, 29, 1)$
 911 : $P_{31203} = (2, 14, 29, 1)$
 912 : $P_{31210} = (9, 14, 29, 1)$
 913 : $P_{31211} = (10, 14, 29, 1)$
 914 : $P_{31250} = (17, 15, 29, 1)$
 915 : $P_{31294} = (29, 16, 29, 1)$
 916 : $P_{31320} = (23, 17, 29, 1)$
 917 : $P_{31359} = (30, 18, 29, 1)$
 918 : $P_{31363} = (2, 19, 29, 1)$
 919 : $P_{31382} = (21, 19, 29, 1)$
 920 : $P_{31383} = (22, 19, 29, 1)$
 921 : $P_{31408} = (15, 20, 29, 1)$
 922 : $P_{31442} = (17, 21, 29, 1)$
 923 : $P_{31486} = (29, 22, 29, 1)$
 924 : $P_{31490} = (1, 23, 29, 1)$
 925 : $P_{31502} = (13, 23, 29, 1)$
 926 : $P_{31576} = (23, 25, 29, 1)$
 927 : $P_{31602} = (17, 26, 29, 1)$
 928 : $P_{31618} = (1, 27, 29, 1)$
 929 : $P_{31647} = (30, 27, 29, 1)$

930 : $P_{31660} = (11, 28, 29, 1)$
 931 : $P_{31683} = (2, 29, 29, 1)$
 932 : $P_{31910} = (5, 4, 30, 1)$
 933 : $P_{31922} = (17, 4, 30, 1)$
 934 : $P_{31926} = (21, 4, 30, 1)$
 935 : $P_{31941} = (4, 5, 30, 1)$
 936 : $P_{31989} = (20, 6, 30, 1)$
 937 : $P_{32025} = (24, 7, 30, 1)$
 938 : $P_{32039} = (6, 8, 30, 1)$
 939 : $P_{32051} = (18, 8, 30, 1)$
 940 : $P_{32054} = (21, 8, 30, 1)$
 941 : $P_{32080} = (15, 9, 30, 1)$
 942 : $P_{32182} = (21, 12, 30, 1)$
 943 : $P_{32253} = (28, 14, 30, 1)$
 944 : $P_{32329} = (8, 17, 30, 1)$
 945 : $P_{32375} = (22, 18, 30, 1)$
 946 : $P_{32391} = (6, 19, 30, 1)$
 947 : $P_{32464} = (15, 21, 30, 1)$
 948 : $P_{32467} = (18, 21, 30, 1)$
 949 : $P_{32477} = (28, 21, 30, 1)$
 950 : $P_{32512} = (31, 22, 30, 1)$
 951 : $P_{32559} = (14, 24, 30, 1)$
 952 : $P_{32620} = (11, 26, 30, 1)$
 953 : $P_{32629} = (20, 26, 30, 1)$
 954 : $P_{32639} = (30, 26, 30, 1)$
 955 : $P_{32647} = (6, 27, 30, 1)$
 956 : $P_{32668} = (27, 27, 30, 1)$
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 959 : $P_{32693} = (20, 28, 30, 1)$
 960 : $P_{32699} = (26, 28, 30, 1)$
 961 : $P_{32723} = (18, 29, 30, 1)$
 962 : $P_{32750} = (13, 30, 30, 1)$
 963 : $P_{32785} = (16, 31, 30, 1)$
 964 : $P_{32840} = (7, 1, 31, 1)$
 965 : $P_{32892} = (27, 2, 31, 1)$
 966 : $P_{32915} = (18, 3, 31, 1)$
 967 : $P_{33023} = (30, 6, 31, 1)$
 968 : $P_{33112} = (23, 9, 31, 1)$
 969 : $P_{33140} = (19, 10, 31, 1)$
 970 : $P_{33154} = (1, 11, 31, 1)$
 971 : $P_{33178} = (25, 11, 31, 1)$
 972 : $P_{33192} = (7, 12, 31, 1)$
 973 : $P_{33224} = (7, 13, 31, 1)$
 974 : $P_{33266} = (17, 14, 31, 1)$
 975 : $P_{33293} = (12, 15, 31, 1)$
 976 : $P_{33297} = (16, 15, 31, 1)$
 977 : $P_{33310} = (29, 15, 31, 1)$
 978 : $P_{33331} = (18, 16, 31, 1)$
 979 : $P_{33373} = (28, 17, 31, 1)$
 980 : $P_{33396} = (19, 18, 31, 1)$
 981 : $P_{33427} = (18, 19, 31, 1)$
 982 : $P_{33453} = (12, 20, 31, 1)$
 983 : $P_{33461} = (20, 20, 31, 1)$

984 : $P_{33466} = (25, 20, 31, 1)$
985 : $P_{33558} = (21, 23, 31, 1)$
986 : $P_{33588} = (19, 24, 31, 1)$
987 : $P_{33639} = (6, 26, 31, 1)$
988 : $P_{33677} = (12, 27, 31, 1)$

989 : $P_{33710} = (13, 28, 31, 1)$
990 : $P_{33770} = (9, 30, 31, 1)$
991 : $P_{33818} = (25, 31, 31, 1)$

Line Intersection Graph

$$\frac{\quad}{0}\bigg|\frac{0}{0}$$

Neighbor sets in the line intersection graph:
Line 0 intersects

Line
in point

The surface has 1025 points:
Too many to print.