# Rank-76307 over GF(32)

January 15, 2021

## The equation

The equation of the surface is :

$$X_0^2X_1 + X_1^2X_3 + X_1X_2^2 + X_0X_3^2 + X_0X_1X_2 = 0$$

( 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0 )
The point rank of the equation over GF(32) is 1109427237

## General information

| | |
|---|---|
| Number of lines | 2 |
| Number of points | 1057 |
| Number of singular points | 0 |
| Number of Eckardt points | 0 |
| Number of double points | 1 |
| Number of single points | 64 |
| Number of points off lines | 992 |
| Number of Hesse planes | 0 |
| Number of axes | 0 |
| Type of points on lines | $33^2$ |
| Type of lines on points | 2, $1^{64}$, $0^{992}$ |

### Singular Points

The surface has 0 singular points:

## The 2 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{1024} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{1024} = \mathbf{Pl}(0,0,1,0,0,0)_2$$

$$\ell_1 = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1083424} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1083424} = \mathbf{Pl}(0,1,0,0,0,0)_1$$

Rank of lines: ( 1024, 1083424 )
Rank of points on Klein quadric: ( 2, 1 )

### Eckardt Points

The surface has 0 Eckardt points:

### Double Points

The surface has 1 Double points:
The double points on the surface are:

$P_2 = (0,0,1,0) = \ell_0 \cap \ell_1$

### Single Points

The surface has 64 single points:
The single points on the surface are:

$0: P_0 = (1,0,0,0)$ lies on line $\ell_0$
$1: P_3 = (0,0,0,1)$ lies on line $\ell_1$
$2: P_{36} = (1,0,1,0)$ lies on line $\ell_0$
$3: P_{37} = (2,0,1,0)$ lies on line $\ell_0$
$4: P_{38} = (3,0,1,0)$ lies on line $\ell_0$
$5: P_{39} = (4,0,1,0)$ lies on line $\ell_0$
$6: P_{40} = (5,0,1,0)$ lies on line $\ell_0$
$7: P_{41} = (6,0,1,0)$ lies on line $\ell_0$
$8: P_{42} = (7,0,1,0)$ lies on line $\ell_0$
$9: P_{43} = (8,0,1,0)$ lies on line $\ell_0$
$10: P_{44} = (9,0,1,0)$ lies on line $\ell_0$
$11: P_{45} = (10,0,1,0)$ lies on line $\ell_0$
$12: P_{46} = (11,0,1,0)$ lies on line $\ell_0$
$13: P_{47} = (12,0,1,0)$ lies on line $\ell_0$
$14: P_{48} = (13,0,1,0)$ lies on line $\ell_0$
$15: P_{49} = (14,0,1,0)$ lies on line $\ell_0$
$16: P_{50} = (15,0,1,0)$ lies on line $\ell_0$
$17: P_{51} = (16,0,1,0)$ lies on line $\ell_0$
$18: P_{52} = (17,0,1,0)$ lies on line $\ell_0$
$19: P_{53} = (18,0,1,0)$ lies on line $\ell_0$
$20: P_{54} = (19,0,1,0)$ lies on line $\ell_0$
$21: P_{55} = (20,0,1,0)$ lies on line $\ell_0$
$22: P_{56} = (21,0,1,0)$ lies on line $\ell_0$
$23: P_{57} = (22,0,1,0)$ lies on line $\ell_0$
$24: P_{58} = (23,0,1,0)$ lies on line $\ell_0$
$25: P_{59} = (24,0,1,0)$ lies on line $\ell_0$
$26: P_{60} = (25,0,1,0)$ lies on line $\ell_0$
$27: P_{61} = (26,0,1,0)$ lies on line $\ell_0$
$28: P_{62} = (27,0,1,0)$ lies on line $\ell_0$
$29: P_{63} = (28,0,1,0)$ lies on line $\ell_0$
$30: P_{64} = (29,0,1,0)$ lies on line $\ell_0$
$31: P_{65} = (30,0,1,0)$ lies on line $\ell_0$
$32: P_{66} = (31,0,1,0)$ lies on line $\ell_0$
$33: P_{2082} = (0,0,1,1)$ lies on line $\ell_1$
$34: P_{3105} = (0,0,2,1)$ lies on line $\ell_1$
$35: P_{4129} = (0,0,3,1)$ lies on line $\ell_1$
$36: P_{5153} = (0,0,4,1)$ lies on line $\ell_1$
$37: P_{6177} = (0,0,5,1)$ lies on line $\ell_1$
$38: P_{7201} = (0,0,6,1)$ lies on line $\ell_1$
$39: P_{8225} = (0,0,7,1)$ lies on line $\ell_1$
$40: P_{9249} = (0,0,8,1)$ lies on line $\ell_1$
$41: P_{10273} = (0,0,9,1)$ lies on line $\ell_1$
$42: P_{11297} = (0,0,10,1)$ lies on line $\ell_1$
$43: P_{12321} = (0,0,11,1)$ lies on line $\ell_1$
$44: P_{13345} = (0,0,12,1)$ lies on line $\ell_1$
$45: P_{14369} = (0,0,13,1)$ lies on line $\ell_1$
$46: P_{15393} = (0,0,14,1)$ lies on line $\ell_1$
$47: P_{16417} = (0,0,15,1)$ lies on line $\ell_1$
$48: P_{17441} = (0,0,16,1)$ lies on line $\ell_1$
$49: P_{18465} = (0,0,17,1)$ lies on line $\ell_1$
$50: P_{19489} = (0,0,18,1)$ lies on line $\ell_1$
$51: P_{20513} = (0,0,19,1)$ lies on line $\ell_1$
$52: P_{21537} = (0,0,20,1)$ lies on line $\ell_1$
$53: P_{22561} = (0,0,21,1)$ lies on line $\ell_1$
$54: P_{23585} = (0,0,22,1)$ lies on line $\ell_1$
$55: P_{24609} = (0,0,23,1)$ lies on line $\ell_1$
$56: P_{25633} = (0,0,24,1)$ lies on line $\ell_1$
$57: P_{26657} = (0,0,25,1)$ lies on line $\ell_1$
$58: P_{27681} = (0,0,26,1)$ lies on line $\ell_1$
$59: P_{28705} = (0,0,27,1)$ lies on line $\ell_1$
$60: P_{29729} = (0,0,28,1)$ lies on line $\ell_1$
$61: P_{30753} = (0,0,29,1)$ lies on line $\ell_1$
$62: P_{31777} = (0,0,30,1)$ lies on line $\ell_1$
$63: P_{32801} = (0,0,31,1)$ lies on line $\ell_1$

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:

$0: P_{1} = (0,1,0,0)$
$1: P_{1167} = (13,3,0,1)$
$2: P_{1171} = (17,3,0,1)$
$3: P_{1230} = (12,5,0,1)$
$4: P_{1245} = (27,5,0,1)$
$5: P_{1305} = (23,7,0,1)$
$6: P_{1309} = (27,7,0,1)$
$7: P_{1349} = (3,9,0,1)$
$8: P_{1353} = (7,9,0,1)$
$9: P_{1415} = (5,11,0,1)$
$10: P_{1431} = (21,11,0,1)$
$11: P_{1445} = (3,12,0,1)$
$12: P_{1446} = (4,12,0,1)$
$13: P_{1555} = (17,15,0,1)$
$14: P_{1566} = (28,15,0,1)$
$15: P_{1604} = (2,17,0,1)$
$16: P_{1628} = (26,17,0,1)$
$17: P_{1658} = (24,18,0,1)$
$18: P_{1660} = (26,18,0,1)$
$19: P_{1732} = (2,21,0,1)$
$20: P_{1754} = (24,21,0,1)$
$21: P_{1810} = (16,23,0,1)$
$22: P_{1815} = (21,23,0,1)$
$23: P_{1839} = (13,24,0,1)$
$24: P_{1854} = (28,24,0,1)$
$25: P_{1895} = (5,26,0,1)$
$26: P_{1906} = (16,26,0,1)$
$27: P_{1958} = (4,28,0,1)$
$28: P_{1961} = (7,28,0,1)$
$29: P_{2062} = (12,31,0,1)$
$30: P_{2073} = (23,31,0,1)$
$31: P_{2114} = (0,1,1,1)$
$32: P_{2152} = (7,2,1,1)$
$33: P_{2165} = (20,2,1,1)$
$34: P_{2187} = (10,3,1,1)$
$35: P_{2200} = (23,3,1,1)$
$36: P_{2230} = (21,4,1,1)$
$37: P_{2238} = (29,4,1,1)$
$38: P_{2255} = (14,5,1,1)$
$39: P_{2265} = (24,5,1,1)$
$40: P_{2278} = (5,6,1,1)$
$41: P_{2283} = (10,6,1,1)$
$42: P_{2343} = (6,8,1,1)$
$43: P_{2354} = (17,8,1,1)$
$44: P_{2413} = (12,10,1,1)$
$45: P_{2421} = (20,10,1,1)$
$46: P_{2484} = (19,12,1,1)$
$47: P_{2486} = (21,12,1,1)$
$48: P_{2520} = (23,13,1,1)$
$49: P_{2522} = (25,13,1,1)$
$50: P_{2555} = (26,14,1,1)$
$51: P_{2558} = (29,14,1,1)$
$52: P_{2615} = (22,16,1,1)$
$53: P_{2621} = (28,16,1,1)$
$54: P_{2632} = (7,17,1,1)$
$55: P_{2655} = (30,17,1,1)$
$56: P_{2694} = (5,19,1,1)$
$57: P_{2714} = (25,19,1,1)$
$58: P_{2735} = (14,20,1,1)$
$59: P_{2738} = (17,20,1,1)$
$60: P_{2804} = (19,22,1,1)$
$61: P_{2811} = (26,22,1,1)$
$62: P_{2884} = (3,25,1,1)$
$63: P_{2889} = (8,25,1,1)$
$64: P_{2921} = (8,26,1,1)$
$65: P_{2941} = (28,26,1,1)$
$66: P_{2951} = (6,27,1,1)$
$67: P_{2969} = (24,27,1,1)$
$68: P_{3021} = (12,29,1,1)$
$69: P_{3039} = (30,29,1,1)$
$70: P_{3044} = (3,30,1,1)$
$71: P_{3063} = (22,30,1,1)$
$72: P_{3205} = (4,3,2,1)$
$73: P_{3227} = (26,3,2,1)$
$74: P_{3233} = (0,4,2,1)$
$75: P_{3244} = (11,4,2,1)$
$76: P_{3316} = (19,6,2,1)$
$77: P_{3328} = (31,6,2,1)$
$78: P_{3351} = (22,7,2,1)$
$79: P_{3353} = (24,7,2,1)$
$80: P_{3412} = (19,9,2,1)$
$81: P_{3414} = (21,9,2,1)$
$82: P_{3470} = (13,11,2,1)$
$83: P_{3488} = (31,11,2,1)$
$84: P_{3562} = (9,14,2,1)$
$85: P_{3566} = (13,14,2,1)$
$86: P_{3651} = (2,17,2,1)$
$87: P_{3673} = (24,17,2,1)$
$88: P_{3710} = (29,18,2,1)$
$89: P_{3722} = (9,19,2,1)$

$90: P_{3735} = (22, 19, 2, 1)$
$91: P_{3779} = (2, 21, 2, 1)$
$92: P_{3803} = (26, 21, 2, 1)$
$93: P_{3908} = (3, 25, 2, 1)$
$94: P_{3916} = (11, 25, 2, 1)$
$95: P_{4068} = (3, 30, 2, 1)$
$96: P_{4086} = (21, 30, 2, 1)$
$97: P_{4101} = (4, 31, 2, 1)$
$98: P_{4126} = (29, 31, 2, 1)$
$99: P_{4277} = (20, 4, 3, 1)$
$100: P_{4287} = (30, 4, 3, 1)$
$101: P_{4289} = (0, 5, 3, 1)$
$102: P_{4309} = (20, 5, 3, 1)$
$103: P_{4337} = (16, 6, 3, 1)$
$104: P_{4350} = (29, 6, 3, 1)$
$105: P_{4420} = (3, 9, 3, 1)$
$106: P_{4421} = (4, 9, 3, 1)$
$107: P_{4516} = (3, 12, 3, 1)$
$108: P_{4520} = (7, 12, 3, 1)$
$109: P_{4550} = (5, 13, 3, 1)$
$110: P_{4554} = (9, 13, 3, 1)$
$111: P_{4645} = (4, 16, 3, 1)$
$112: P_{4653} = (12, 16, 3, 1)$
$113: P_{4808} = (7, 21, 3, 1)$
$114: P_{4831} = (30, 21, 3, 1)$
$115: P_{4838} = (5, 22, 3, 1)$
$116: P_{4847} = (14, 22, 3, 1)$
$117: P_{4892} = (27, 23, 3, 1)$
$118: P_{4894} = (29, 23, 3, 1)$
$119: P_{4906} = (9, 24, 3, 1)$
$120: P_{4924} = (27, 24, 3, 1)$
$121: P_{5005} = (12, 27, 3, 1)$
$122: P_{5009} = (16, 27, 3, 1)$
$123: P_{5047} = (22, 28, 3, 1)$
$124: P_{5135} = (14, 31, 3, 1)$
$125: P_{5143} = (22, 31, 3, 1)$
$126: P_{5316} = (3, 5, 4, 1)$
$127: P_{5329} = (16, 5, 4, 1)$
$128: P_{5350} = (5, 6, 4, 1)$
$129: P_{5360} = (15, 6, 4, 1)$
$130: P_{5420} = (11, 8, 4, 1)$
$131: P_{5434} = (25, 8, 4, 1)$
$132: P_{5463} = (22, 9, 4, 1)$
$133: P_{5513} = (8, 11, 4, 1)$
$134: P_{5533} = (28, 11, 4, 1)$
$135: P_{5541} = (4, 12, 4, 1)$
$136: P_{5544} = (7, 12, 4, 1)$
$137: P_{5651} = (18, 15, 4, 1)$
$138: P_{5660} = (27, 15, 4, 1)$
$139: P_{5665} = (0, 16, 4, 1)$
$140: P_{5680} = (15, 16, 4, 1)$
$141: P_{5745} = (16, 18, 4, 1)$
$142: P_{5751} = (22, 18, 4, 1)$
$143: P_{5766} = (5, 19, 4, 1)$
$144: P_{5789} = (28, 19, 4, 1)$
$145: P_{5801} = (8, 20, 4, 1)$
$146: P_{5811} = (18, 20, 4, 1)$
$147: P_{5832} = (7, 21, 4, 1)$
$148: P_{5850} = (25, 21, 4, 1)$
$149: P_{6052} = (3, 28, 4, 1)$
$150: P_{6053} = (4, 28, 4, 1)$
$151: P_{6124} = (11, 30, 4, 1)$
$152: P_{6140} = (27, 30, 4, 1)$
$153: P_{6254} = (13, 2, 5, 1)$
$154: P_{6267} = (26, 2, 5, 1)$
$155: P_{6403} = (2, 7, 5, 1)$
$156: P_{6412} = (11, 7, 5, 1)$
$157: P_{6534} = (5, 11, 5, 1)$
$158: P_{6545} = (16, 11, 5, 1)$
$159: P_{6609} = (16, 13, 5, 1)$
$160: P_{6619} = (26, 13, 5, 1)$
$161: P_{6708} = (19, 16, 5, 1)$
$162: P_{6718} = (29, 16, 5, 1)$
$163: P_{6721} = (0, 17, 5, 1)$
$164: P_{6750} = (29, 17, 5, 1)$
$165: P_{6778} = (25, 18, 5, 1)$
$166: P_{6783} = (30, 18, 5, 1)$
$167: P_{6830} = (13, 20, 5, 1)$
$168: P_{6839} = (22, 20, 5, 1)$
$169: P_{6938} = (25, 23, 5, 1)$
$170: P_{6947} = (2, 24, 5, 1)$
$171: P_{6967} = (22, 24, 5, 1)$
$172: P_{6994} = (17, 25, 5, 1)$
$173: P_{7007} = (30, 25, 5, 1)$
$174: P_{7014} = (5, 26, 5, 1)$
$175: P_{7030} = (21, 26, 5, 1)$
$176: P_{7052} = (11, 27, 5, 1)$
$177: P_{7058} = (17, 27, 5, 1)$
$178: P_{7092} = (19, 28, 5, 1)$
$179: P_{7094} = (21, 28, 5, 1)$
$180: P_{7272} = (7, 2, 6, 1)$
$181: P_{7284} = (19, 2, 6, 1)$
$182: P_{7301} = (4, 3, 6, 1)$
$183: P_{7327} = (30, 3, 6, 1)$
$184: P_{7522} = (1, 10, 6, 1)$
$185: P_{7551} = (30, 10, 6, 1)$
$186: P_{7622} = (5, 13, 6, 1)$
$187: P_{7629} = (12, 13, 6, 1)$
$188: P_{7661} = (12, 14, 6, 1)$
$189: P_{7752} = (7, 17, 6, 1)$
$190: P_{7770} = (25, 17, 6, 1)$
$191: P_{7788} = (11, 18, 6, 1)$
$192: P_{7792} = (15, 18, 6, 1)$
$193: P_{7841} = (0, 20, 6, 1)$
$194: P_{7865} = (24, 20, 6, 1)$
$195: P_{7910} = (5, 22, 6, 1)$
$196: P_{7916} = (11, 22, 6, 1)$
$197: P_{7979} = (10, 24, 6, 1)$

198 : $P_{7998} = (29, 24, 6, 1)$
199 : $P_{8002} = (1, 25, 6, 1)$
200 : $P_{8014} = (13, 25, 6, 1)$
201 : $P_{8075} = (10, 27, 6, 1)$
202 : $P_{8084} = (19, 27, 6, 1)$
203 : $P_{8142} = (13, 29, 6, 1)$
204 : $P_{8153} = (24, 29, 6, 1)$
205 : $P_{8176} = (15, 30, 6, 1)$
206 : $P_{8190} = (29, 30, 6, 1)$
207 : $P_{8197} = (4, 31, 6, 1)$
208 : $P_{8218} = (25, 31, 6, 1)$
209 : $P_{8330} = (9, 3, 7, 1)$
210 : $P_{8339} = (18, 3, 7, 1)$
211 : $P_{8388} = (3, 5, 7, 1)$
212 : $P_{8404} = (19, 5, 7, 1)$
213 : $P_{8451} = (2, 7, 7, 1)$
214 : $P_{8458} = (9, 7, 7, 1)$
215 : $P_{8487} = (6, 8, 7, 1)$
216 : $P_{8504} = (23, 8, 7, 1)$
217 : $P_{8517} = (4, 9, 7, 1)$
218 : $P_{8520} = (7, 9, 7, 1)$
219 : $P_{8546} = (1, 10, 7, 1)$
220 : $P_{8576} = (31, 10, 7, 1)$
221 : $P_{8631} = (22, 12, 7, 1)$
222 : $P_{8663} = (22, 13, 7, 1)$
223 : $P_{8671} = (30, 13, 7, 1)$
224 : $P_{8691} = (18, 14, 7, 1)$
225 : $P_{8692} = (19, 14, 7, 1)$
226 : $P_{8728} = (23, 15, 7, 1)$
227 : $P_{8734} = (29, 15, 7, 1)$
228 : $P_{8741} = (4, 16, 7, 1)$
229 : $P_{8745} = (8, 16, 7, 1)$
230 : $P_{8809} = (8, 18, 7, 1)$
231 : $P_{8814} = (13, 18, 7, 1)$
232 : $P_{8847} = (14, 19, 7, 1)$
233 : $P_{8853} = (20, 19, 7, 1)$
234 : $P_{8897} = (0, 21, 7, 1)$
235 : $P_{8926} = (29, 21, 7, 1)$
236 : $P_{8973} = (12, 23, 7, 1)$
237 : $P_{8975} = (14, 23, 7, 1)$
238 : $P_{8995} = (2, 24, 7, 1)$
239 : $P_{9013} = (20, 24, 7, 1)$
240 : $P_{9026} = (1, 25, 7, 1)$
241 : $P_{9037} = (12, 25, 7, 1)$
242 : $P_{9070} = (13, 26, 7, 1)$
243 : $P_{9088} = (31, 26, 7, 1)$
244 : $P_{9095} = (6, 27, 7, 1)$
245 : $P_{9119} = (30, 27, 7, 1)$
246 : $P_{9124} = (3, 28, 7, 1)$
247 : $P_{9128} = (7, 28, 7, 1)$
248 : $P_{9326} = (13, 2, 8, 1)$
249 : $P_{9336} = (23, 2, 8, 1)$
250 : $P_{9347} = (2, 3, 8, 1)$
251 : $P_{9367} = (22, 3, 8, 1)$
252 : $P_{9498} = (25, 7, 8, 1)$
253 : $P_{9502} = (29, 7, 8, 1)$
254 : $P_{9508} = (3, 8, 8, 1)$
255 : $P_{9534} = (29, 8, 8, 1)$
256 : $P_{9569} = (0, 10, 8, 1)$
257 : $P_{9586} = (17, 10, 8, 1)$
258 : $P_{9649} = (16, 12, 8, 1)$
259 : $P_{9664} = (31, 12, 8, 1)$
260 : $P_{9778} = (17, 16, 8, 1)$
261 : $P_{9779} = (18, 16, 8, 1)$
262 : $P_{9799} = (6, 17, 8, 1)$
263 : $P_{9815} = (22, 17, 8, 1)$
264 : $P_{9902} = (13, 20, 8, 1)$
265 : $P_{9916} = (27, 20, 8, 1)$
266 : $P_{9974} = (21, 22, 8, 1)$
267 : $P_{10003} = (18, 23, 8, 1)$
268 : $P_{10016} = (31, 23, 8, 1)$
269 : $P_{10070} = (21, 25, 8, 1)$
270 : $P_{10072} = (23, 25, 8, 1)$
271 : $P_{10087} = (6, 26, 8, 1)$
272 : $P_{10108} = (27, 26, 8, 1)$
273 : $P_{10179} = (2, 29, 8, 1)$
274 : $P_{10202} = (25, 29, 8, 1)$
275 : $P_{10244} = (3, 31, 8, 1)$
276 : $P_{10257} = (16, 31, 8, 1)$
277 : $P_{10342} = (5, 2, 9, 1)$
278 : $P_{10367} = (30, 2, 9, 1)$
279 : $P_{10412} = (11, 4, 9, 1)$
280 : $P_{10533} = (4, 8, 9, 1)$
281 : $P_{10556} = (27, 8, 9, 1)$
282 : $P_{10581} = (20, 9, 9, 1)$
283 : $P_{10586} = (25, 9, 9, 1)$
284 : $P_{10595} = (2, 10, 9, 1)$
285 : $P_{10611} = (18, 10, 9, 1)$
286 : $P_{10625} = (0, 11, 9, 1)$
287 : $P_{10650} = (25, 11, 9, 1)$
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694 : $P_{24251} = (26, 20, 22, 1)$
695 : $P_{24385} = (0, 25, 22, 1)$
696 : $P_{24413} = (28, 25, 22, 1)$
697 : $P_{24487} = (6, 28, 22, 1)$
698 : $P_{24500} = (19, 28, 22, 1)$
699 : $P_{24514} = (1, 29, 22, 1)$
700 : $P_{24517} = (4, 29, 22, 1)$
701 : $P_{24700} = (27, 2, 23, 1)$
702 : $P_{24703} = (30, 2, 23, 1)$
703 : $P_{24747} = (10, 4, 23, 1)$
704 : $P_{24757} = (20, 4, 23, 1)$
705 : $P_{24789} = (20, 5, 23, 1)$
706 : $P_{24845} = (12, 7, 23, 1)$
707 : $P_{24856} = (23, 7, 23, 1)$
708 : $P_{24879} = (14, 8, 23, 1)$
709 : $P_{24880} = (15, 8, 23, 1)$
710 : $P_{24903} = (6, 9, 23, 1)$
711 : $P_{24918} = (21, 9, 23, 1)$
712 : $P_{25008} = (15, 12, 23, 1)$
713 : $P_{25024} = (31, 12, 23, 1)$
714 : $P_{25065} = (8, 14, 23, 1)$
715 : $P_{25082} = (25, 14, 23, 1)$
716 : $P_{25093} = (4, 15, 23, 1)$
717 : $P_{25119} = (30, 15, 23, 1)$
718 : $P_{25131} = (10, 16, 23, 1)$
719 : $P_{25143} = (22, 16, 23, 1)$
720 : $P_{25157} = (4, 17, 23, 1)$
721 : $P_{25164} = (11, 17, 23, 1)$
722 : $P_{25218} = (1, 19, 23, 1)$
723 : $P_{25228} = (11, 19, 23, 1)$
724 : $P_{25286} = (5, 21, 23, 1)$
725 : $P_{25289} = (8, 21, 23, 1)$
726 : $P_{25358} = (13, 23, 23, 1)$
727 : $P_{25376} = (31, 23, 23, 1)$
728 : $P_{25377} = (0, 24, 23, 1)$
729 : $P_{25383} = (6, 24, 23, 1)$
730 : $P_{25453} = (12, 26, 23, 1)$
731 : $P_{25455} = (14, 26, 23, 1)$
732 : $P_{25518} = (13, 28, 23, 1)$
733 : $P_{25530} = (25, 28, 23, 1)$
734 : $P_{25538} = (1, 29, 23, 1)$
735 : $P_{25542} = (5, 29, 23, 1)$
736 : $P_{25590} = (21, 30, 23, 1)$
737 : $P_{25591} = (22, 30, 23, 1)$

738 : $P_{25624} = (23, 31, 23, 1)$
739 : $P_{25628} = (27, 31, 23, 1)$
740 : $P_{25755} = (26, 3, 24, 1)$
741 : $P_{25759} = (30, 3, 24, 1)$
742 : $P_{25763} = (2, 4, 24, 1)$
743 : $P_{25780} = (19, 4, 24, 1)$
744 : $P_{25857} = (0, 7, 24, 1)$
745 : $P_{25877} = (20, 7, 24, 1)$
746 : $P_{25890} = (1, 8, 24, 1)$
747 : $P_{25904} = (15, 8, 24, 1)$
748 : $P_{25983} = (30, 10, 24, 1)$
749 : $P_{25984} = (31, 10, 24, 1)$
750 : $P_{26005} = (20, 11, 24, 1)$
751 : $P_{26013} = (28, 11, 24, 1)$
752 : $P_{26032} = (15, 12, 24, 1)$
753 : $P_{26033} = (16, 12, 24, 1)$
754 : $P_{26063} = (14, 13, 24, 1)$
755 : $P_{26074} = (25, 13, 24, 1)$
756 : $P_{26159} = (14, 16, 24, 1)$
757 : $P_{26174} = (29, 16, 24, 1)$
758 : $P_{26206} = (29, 17, 24, 1)$
759 : $P_{26211} = (2, 18, 24, 1)$
760 : $P_{26233} = (24, 18, 24, 1)$
761 : $P_{26266} = (25, 19, 24, 1)$
762 : $P_{26269} = (28, 19, 24, 1)$
763 : $P_{26329} = (24, 21, 24, 1)$
764 : $P_{26331} = (26, 21, 24, 1)$
765 : $P_{26338} = (1, 22, 24, 1)$
766 : $P_{26354} = (17, 22, 24, 1)$
767 : $P_{26375} = (6, 23, 24, 1)$
768 : $P_{26396} = (27, 23, 24, 1)$
769 : $P_{26419} = (18, 24, 24, 1)$
770 : $P_{26428} = (27, 24, 24, 1)$
771 : $P_{26483} = (18, 26, 24, 1)$
772 : $P_{26496} = (31, 26, 24, 1)$
773 : $P_{26539} = (10, 28, 24, 1)$
774 : $P_{26546} = (17, 28, 24, 1)$
775 : $P_{26599} = (6, 30, 24, 1)$
776 : $P_{26603} = (10, 30, 24, 1)$
777 : $P_{26641} = (16, 31, 24, 1)$
778 : $P_{26644} = (19, 31, 24, 1)$
779 : $P_{26839} = (22, 5, 25, 1)$
780 : $P_{26841} = (24, 5, 25, 1)$
781 : $P_{26849} = (0, 6, 25, 1)$
782 : $P_{26872} = (23, 6, 25, 1)$
783 : $P_{26914} = (1, 8, 25, 1)$
784 : $P_{26927} = (14, 8, 25, 1)$
785 : $P_{26994} = (17, 10, 25, 1)$
786 : $P_{27081} = (8, 13, 25, 1)$
787 : $P_{27103} = (30, 13, 25, 1)$
788 : $P_{27116} = (11, 14, 25, 1)$
789 : $P_{27125} = (20, 14, 25, 1)$
790 : $P_{27139} = (2, 15, 25, 1)$
791 : $P_{27159} = (22, 15, 25, 1)$
792 : $P_{27172} = (3, 16, 25, 1)$
793 : $P_{27186} = (17, 16, 25, 1)$
794 : $P_{27313} = (16, 20, 25, 1)$
795 : $P_{27320} = (23, 20, 25, 1)$
796 : $P_{27362} = (1, 22, 25, 1)$
797 : $P_{27377} = (16, 22, 25, 1)$
798 : $P_{27401} = (8, 23, 25, 1)$
799 : $P_{27413} = (20, 23, 25, 1)$
800 : $P_{27491} = (2, 26, 25, 1)$
801 : $P_{27503} = (14, 26, 25, 1)$
802 : $P_{27545} = (24, 27, 25, 1)$
803 : $P_{27551} = (30, 27, 25, 1)$
804 : $P_{27588} = (3, 29, 25, 1)$
805 : $P_{27594} = (9, 29, 25, 1)$
806 : $P_{27658} = (9, 31, 25, 1)$
807 : $P_{27660} = (11, 31, 25, 1)$
808 : $P_{27751} = (6, 2, 26, 1)$
809 : $P_{27759} = (14, 2, 26, 1)$
810 : $P_{27777} = (0, 3, 26, 1)$
811 : $P_{27783} = (6, 3, 26, 1)$
812 : $P_{27811} = (2, 4, 26, 1)$
813 : $P_{27826} = (17, 4, 26, 1)$
814 : $P_{27919} = (14, 7, 26, 1)$
815 : $P_{27929} = (24, 7, 26, 1)$
816 : $P_{28101} = (4, 13, 26, 1)$
817 : $P_{28114} = (17, 13, 26, 1)$
818 : $P_{28171} = (10, 15, 26, 1)$
819 : $P_{28190} = (29, 15, 26, 1)$
820 : $P_{28196} = (3, 16, 26, 1)$
821 : $P_{28211} = (18, 16, 26, 1)$
822 : $P_{28249} = (24, 17, 26, 1)$
823 : $P_{28251} = (26, 17, 26, 1)$
824 : $P_{28259} = (2, 18, 26, 1)$
825 : $P_{28283} = (26, 18, 26, 1)$
826 : $P_{28382} = (29, 21, 26, 1)$
827 : $P_{28430} = (13, 23, 26, 1)$
828 : $P_{28435} = (18, 23, 26, 1)$
829 : $P_{28485} = (4, 25, 26, 1)$
830 : $P_{28501} = (20, 25, 26, 1)$
831 : $P_{28590} = (13, 28, 26, 1)$
832 : $P_{28597} = (20, 28, 26, 1)$
833 : $P_{28612} = (3, 29, 26, 1)$
834 : $P_{28619} = (10, 29, 26, 1)$
835 : $P_{28769} = (0, 2, 27, 1)$
836 : $P_{28778} = (9, 2, 27, 1)$
837 : $P_{28888} = (23, 5, 27, 1)$
838 : $P_{28892} = (27, 5, 27, 1)$
839 : $P_{28941} = (12, 7, 27, 1)$
840 : $P_{28956} = (27, 7, 27, 1)$
841 : $P_{29008} = (15, 9, 27, 1)$
842 : $P_{29009} = (16, 9, 27, 1)$
843 : $P_{29041} = (16, 10, 27, 1)$
844 : $P_{29043} = (18, 10, 27, 1)$
845 : $P_{29160} = (7, 14, 27, 1)$

846 : $P_{29179} = (26, 14, 27, 1)$
847 : $P_{29187} = (2, 15, 27, 1)$
848 : $P_{29205} = (20, 15, 27, 1)$
849 : $P_{29288} = (7, 18, 27, 1)$
850 : $P_{29311} = (30, 18, 27, 1)$
851 : $P_{29418} = (9, 22, 27, 1)$
852 : $P_{29435} = (26, 22, 27, 1)$
853 : $P_{29496} = (23, 24, 27, 1)$
854 : $P_{29502} = (29, 24, 27, 1)$
855 : $P_{29520} = (15, 25, 27, 1)$
856 : $P_{29535} = (30, 25, 27, 1)$
857 : $P_{29539} = (2, 26, 27, 1)$
858 : $P_{29549} = (12, 26, 27, 1)$
859 : $P_{29683} = (18, 30, 27, 1)$
860 : $P_{29694} = (29, 30, 27, 1)$
861 : $P_{29717} = (20, 31, 27, 1)$
862 : $P_{29799} = (6, 2, 28, 1)$
863 : $P_{29801} = (8, 2, 28, 1)$
864 : $P_{29831} = (6, 3, 28, 1)$
865 : $P_{29865} = (8, 4, 28, 1)$
866 : $P_{29886} = (29, 4, 28, 1)$
867 : $P_{29891} = (2, 5, 28, 1)$
868 : $P_{29898} = (9, 5, 28, 1)$
869 : $P_{29956} = (3, 7, 28, 1)$
870 : $P_{29972} = (19, 7, 28, 1)$
871 : $P_{30068} = (19, 10, 28, 1)$
872 : $P_{30071} = (22, 10, 28, 1)$
873 : $P_{30083} = (2, 11, 28, 1)$
874 : $P_{30095} = (14, 11, 28, 1)$
875 : $P_{30123} = (10, 12, 28, 1)$
876 : $P_{30130} = (17, 12, 28, 1)$
877 : $P_{30184} = (7, 14, 28, 1)$
878 : $P_{30206} = (29, 14, 28, 1)$
879 : $P_{30222} = (13, 15, 28, 1)$
880 : $P_{30237} = (28, 15, 28, 1)$
881 : $P_{30284} = (11, 17, 28, 1)$
882 : $P_{30288} = (15, 17, 28, 1)$
883 : $P_{30312} = (7, 18, 28, 1)$
884 : $P_{30330} = (25, 18, 28, 1)$
885 : $P_{30347} = (10, 19, 28, 1)$
886 : $P_{30348} = (11, 19, 28, 1)$
887 : $P_{30370} = (1, 20, 28, 1)$
888 : $P_{30372} = (3, 20, 28, 1)$
889 : $P_{30417} = (16, 21, 28, 1)$
890 : $P_{30423} = (22, 21, 28, 1)$
891 : $P_{30465} = (0, 23, 28, 1)$
892 : $P_{30490} = (25, 23, 28, 1)$
893 : $P_{30514} = (17, 24, 28, 1)$
894 : $P_{30525} = (28, 24, 28, 1)$
895 : $P_{30606} = (13, 27, 28, 1)$
896 : $P_{30607} = (14, 27, 28, 1)$
897 : $P_{30640} = (15, 28, 28, 1)$
898 : $P_{30641} = (16, 28, 28, 1)$
899 : $P_{30690} = (1, 30, 28, 1)$
900 : $P_{30698} = (9, 30, 28, 1)$
901 : $P_{30820} = (3, 2, 29, 1)$
902 : $P_{30829} = (12, 2, 29, 1)$
903 : $P_{30891} = (10, 4, 29, 1)$
904 : $P_{30911} = (30, 4, 29, 1)$
905 : $P_{30957} = (12, 6, 29, 1)$
906 : $P_{30976} = (31, 6, 29, 1)$
907 : $P_{31027} = (18, 8, 29, 1)$
908 : $P_{31034} = (25, 8, 29, 1)$
909 : $P_{31054} = (13, 9, 29, 1)$
910 : $P_{31061} = (20, 9, 29, 1)$
911 : $P_{31123} = (18, 11, 29, 1)$
912 : $P_{31136} = (31, 11, 29, 1)$
913 : $P_{31275} = (10, 16, 29, 1)$
914 : $P_{31293} = (28, 16, 29, 1)$
915 : $P_{31305} = (8, 17, 29, 1)$
916 : $P_{31310} = (13, 17, 29, 1)$
917 : $P_{31364} = (3, 19, 29, 1)$
918 : $P_{31394} = (1, 20, 29, 1)$
919 : $P_{31395} = (2, 20, 29, 1)$
920 : $P_{31450} = (25, 21, 29, 1)$
921 : $P_{31455} = (30, 21, 29, 1)$
922 : $P_{31457} = (0, 22, 29, 1)$
923 : $P_{31478} = (21, 22, 29, 1)$
924 : $P_{31555} = (2, 25, 29, 1)$
925 : $P_{31574} = (21, 25, 29, 1)$
926 : $P_{31605} = (20, 26, 29, 1)$
927 : $P_{31613} = (28, 26, 29, 1)$
928 : $P_{31714} = (1, 30, 29, 1)$
929 : $P_{31721} = (8, 30, 29, 1)$
930 : $P_{31844} = (3, 2, 30, 1)$
931 : $P_{31856} = (15, 2, 30, 1)$
932 : $P_{31893} = (20, 3, 30, 1)$
933 : $P_{31895} = (22, 3, 30, 1)$
934 : $P_{31939} = (2, 5, 30, 1)$
935 : $P_{31948} = (11, 5, 30, 1)$
936 : $P_{31982} = (13, 6, 30, 1)$
937 : $P_{31998} = (29, 6, 30, 1)$
938 : $P_{32131} = (2, 11, 30, 1)$
939 : $P_{32141} = (12, 11, 30, 1)$
940 : $P_{32174} = (13, 12, 30, 1)$
941 : $P_{32181} = (20, 12, 30, 1)$
942 : $P_{32197} = (4, 13, 30, 1)$
943 : $P_{32214} = (21, 13, 30, 1)$
944 : $P_{32337} = (16, 17, 30, 1)$
945 : $P_{32343} = (22, 17, 30, 1)$
946 : $P_{32385} = (0, 19, 30, 1)$
947 : $P_{32388} = (3, 19, 30, 1)$
948 : $P_{32441} = (24, 20, 30, 1)$
949 : $P_{32460} = (11, 21, 30, 1)$
950 : $P_{32464} = (15, 21, 30, 1)$
951 : $P_{32519} = (6, 23, 30, 1)$
952 : $P_{32542} = (29, 23, 30, 1)$
953 : $P_{32581} = (4, 25, 30, 1)$

954 : $P_{32593} = (16, 25, 30, 1)$
955 : $P_{32726} = (21, 29, 30, 1)$
956 : $P_{32729} = (24, 29, 30, 1)$
957 : $P_{32743} = (6, 30, 30, 1)$
958 : $P_{32749} = (12, 30, 30, 1)$
959 : $P_{32888} = (23, 2, 31, 1)$
960 : $P_{32891} = (26, 2, 31, 1)$
961 : $P_{33028} = (3, 7, 31, 1)$
962 : $P_{33041} = (16, 7, 31, 1)$
963 : $P_{33099} = (10, 9, 31, 1)$
964 : $P_{33106} = (17, 9, 31, 1)$
965 : $P_{33130} = (9, 10, 31, 1)$
966 : $P_{33136} = (15, 10, 31, 1)$
967 : $P_{33227} = (10, 13, 31, 1)$
968 : $P_{33243} = (26, 13, 31, 1)$
969 : $P_{33257} = (8, 14, 31, 1)$
970 : $P_{33266} = (17, 14, 31, 1)$
971 : $P_{33290} = (9, 15, 31, 1)$
972 : $P_{33308} = (27, 15, 31, 1)$
973 : $P_{33370} = (25, 17, 31, 1)$
974 : $P_{33375} = (30, 17, 31, 1)$
975 : $P_{33377} = (0, 18, 31, 1)$
976 : $P_{33406} = (29, 18, 31, 1)$
977 : $P_{33422} = (13, 19, 31, 1)$
978 : $P_{33424} = (15, 19, 31, 1)$
979 : $P_{33443} = (2, 20, 31, 1)$
980 : $P_{33444} = (3, 20, 31, 1)$
981 : $P_{33481} = (8, 21, 31, 1)$
982 : $P_{33486} = (13, 21, 31, 1)$
983 : $P_{33603} = (2, 25, 31, 1)$
984 : $P_{33624} = (23, 25, 31, 1)$
985 : $P_{33683} = (18, 27, 31, 1)$
986 : $P_{33747} = (18, 29, 31, 1)$
987 : $P_{33759} = (30, 29, 31, 1)$
988 : $P_{33777} = (16, 30, 31, 1)$
989 : $P_{33788} = (27, 30, 31, 1)$
990 : $P_{33818} = (25, 31, 31, 1)$
991 : $P_{33822} = (29, 31, 31, 1)$

## Line Intersection Graph

| | 0 | 1 |
|---|---|---|
| 0 | 0 | 1 |
| 1 | 1 | 0 |

Neighbor sets in the line intersection graph:
Line 0 intersects

| Line | $\ell_1$ |
|---|---|
| in point | $P_2$ |

Line 1 intersects

| Line | $\ell_0$ |
|---|---|
| in point | $P_2$ |

The surface has 1057 points:
Too many to print.