

# Rank-76387 over GF(32)

January 15, 2021

## The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(32) is -2079292379

## General information

Number of lines	4
Number of points	1089
Number of singular points	2
Number of Eckardt points	0
Number of double points	4
Number of single points	124
Number of points off lines	961
Number of Hesse planes	0
Number of axes	0
Type of points on lines	$33^4$
Type of lines on points	$2^4, 1^{124}, 0^{961}$

## Singular Points

The surface has 2 singular points:

$$0 : P_4 = \mathbf{P}(1, 1, 1, 1) = \mathbf{P}(1, 1, 1, 1)$$

$$1 : P_5 = \mathbf{P}(1, 1, 0, 0) = \mathbf{P}(1, 1, 0, 0)$$

## The 4 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}_0 = \mathbf{PI}(1, 0, 0, 0, 0, 0)_0$$

$$\begin{aligned}\ell_1 &= \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{33} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{33} = \mathbf{PI}(1, 0, 1, 0, 1, 0)_{1153} \\ \ell_2 &= \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1083424} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1083424} = \mathbf{PI}(0, 1, 0, 0, 0, 0)_1 \\ \ell_3 &= \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{2082} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{2082} = \mathbf{PI}(0, 0, 1, 1, 1, 1)_{70562}\end{aligned}$$

Rank of lines: ( 0, 33, 1083424, 2082 )

Rank of points on Klein quadric: ( 0, 1153, 1, 70562 )

### Eckardt Points

The surface has 0 Eckardt points:

### Double Points

The surface has 4 Double points:

The double points on the surface are:

$$P_0 = (1, 0, 0, 0) = \ell_0 \cap \ell_1$$

$$P_5 = (1, 1, 0, 0) = \ell_0 \cap \ell_3$$

$$P_4 = (1, 1, 1, 1) = \ell_1 \cap \ell_3$$

$$P_{2082} = (0, 0, 1, 1) = \ell_2 \cap \ell_3$$

### Single Points

The surface has 124 single points:

The single points on the surface are:

0 :  $P_1 = (0, 1, 0, 0)$  lies on line  $\ell_0$   
1 :  $P_2 = (0, 0, 1, 0)$  lies on line  $\ell_2$   
2 :  $P_3 = (0, 0, 0, 1)$  lies on line  $\ell_2$   
3 :  $P_6 = (2, 1, 0, 0)$  lies on line  $\ell_0$   
4 :  $P_7 = (3, 1, 0, 0)$  lies on line  $\ell_0$   
5 :  $P_8 = (4, 1, 0, 0)$  lies on line  $\ell_0$   
6 :  $P_9 = (5, 1, 0, 0)$  lies on line  $\ell_0$   
7 :  $P_{10} = (6, 1, 0, 0)$  lies on line  $\ell_0$   
8 :  $P_{11} = (7, 1, 0, 0)$  lies on line  $\ell_0$   
9 :  $P_{12} = (8, 1, 0, 0)$  lies on line  $\ell_0$   
10 :  $P_{13} = (9, 1, 0, 0)$  lies on line  $\ell_0$   
11 :  $P_{14} = (10, 1, 0, 0)$  lies on line  $\ell_0$   
12 :  $P_{15} = (11, 1, 0, 0)$  lies on line  $\ell_0$   
13 :  $P_{16} = (12, 1, 0, 0)$  lies on line  $\ell_0$   
14 :  $P_{17} = (13, 1, 0, 0)$  lies on line  $\ell_0$   
15 :  $P_{18} = (14, 1, 0, 0)$  lies on line  $\ell_0$   
16 :  $P_{19} = (15, 1, 0, 0)$  lies on line  $\ell_0$   
17 :  $P_{20} = (16, 1, 0, 0)$  lies on line  $\ell_0$   
18 :  $P_{21} = (17, 1, 0, 0)$  lies on line  $\ell_0$   
19 :  $P_{22} = (18, 1, 0, 0)$  lies on line  $\ell_0$   
20 :  $P_{23} = (19, 1, 0, 0)$  lies on line  $\ell_0$   
21 :  $P_{24} = (20, 1, 0, 0)$  lies on line  $\ell_0$

22 :  $P_{25} = (21, 1, 0, 0)$  lies on line  $\ell_0$   
23 :  $P_{26} = (22, 1, 0, 0)$  lies on line  $\ell_0$   
24 :  $P_{27} = (23, 1, 0, 0)$  lies on line  $\ell_0$   
25 :  $P_{28} = (24, 1, 0, 0)$  lies on line  $\ell_0$   
26 :  $P_{29} = (25, 1, 0, 0)$  lies on line  $\ell_0$   
27 :  $P_{30} = (26, 1, 0, 0)$  lies on line  $\ell_0$   
28 :  $P_{31} = (27, 1, 0, 0)$  lies on line  $\ell_0$   
29 :  $P_{32} = (28, 1, 0, 0)$  lies on line  $\ell_0$   
30 :  $P_{33} = (29, 1, 0, 0)$  lies on line  $\ell_0$   
31 :  $P_{34} = (30, 1, 0, 0)$  lies on line  $\ell_0$   
32 :  $P_{35} = (31, 1, 0, 0)$  lies on line  $\ell_0$   
33 :  $P_{2114} = (0, 1, 1, 1)$  lies on line  $\ell_1$   
34 :  $P_{2115} = (2, 1, 1, 1)$  lies on line  $\ell_1$   
35 :  $P_{2116} = (3, 1, 1, 1)$  lies on line  $\ell_1$   
36 :  $P_{2117} = (4, 1, 1, 1)$  lies on line  $\ell_1$   
37 :  $P_{2118} = (5, 1, 1, 1)$  lies on line  $\ell_1$   
38 :  $P_{2119} = (6, 1, 1, 1)$  lies on line  $\ell_1$   
39 :  $P_{2120} = (7, 1, 1, 1)$  lies on line  $\ell_1$   
40 :  $P_{2121} = (8, 1, 1, 1)$  lies on line  $\ell_1$   
41 :  $P_{2122} = (9, 1, 1, 1)$  lies on line  $\ell_1$   
42 :  $P_{2123} = (10, 1, 1, 1)$  lies on line  $\ell_1$   
43 :  $P_{2124} = (11, 1, 1, 1)$  lies on line  $\ell_1$

44 :  $P_{2125} = (12, 1, 1, 1)$  lies on line  $\ell_1$   
 45 :  $P_{2126} = (13, 1, 1, 1)$  lies on line  $\ell_1$   
 46 :  $P_{2127} = (14, 1, 1, 1)$  lies on line  $\ell_1$   
 47 :  $P_{2128} = (15, 1, 1, 1)$  lies on line  $\ell_1$   
 48 :  $P_{2129} = (16, 1, 1, 1)$  lies on line  $\ell_1$   
 49 :  $P_{2130} = (17, 1, 1, 1)$  lies on line  $\ell_1$   
 50 :  $P_{2131} = (18, 1, 1, 1)$  lies on line  $\ell_1$   
 51 :  $P_{2132} = (19, 1, 1, 1)$  lies on line  $\ell_1$   
 52 :  $P_{2133} = (20, 1, 1, 1)$  lies on line  $\ell_1$   
 53 :  $P_{2134} = (21, 1, 1, 1)$  lies on line  $\ell_1$   
 54 :  $P_{2135} = (22, 1, 1, 1)$  lies on line  $\ell_1$   
 55 :  $P_{2136} = (23, 1, 1, 1)$  lies on line  $\ell_1$   
 56 :  $P_{2137} = (24, 1, 1, 1)$  lies on line  $\ell_1$   
 57 :  $P_{2138} = (25, 1, 1, 1)$  lies on line  $\ell_1$   
 58 :  $P_{2139} = (26, 1, 1, 1)$  lies on line  $\ell_1$   
 59 :  $P_{2140} = (27, 1, 1, 1)$  lies on line  $\ell_1$   
 60 :  $P_{2141} = (28, 1, 1, 1)$  lies on line  $\ell_1$   
 61 :  $P_{2142} = (29, 1, 1, 1)$  lies on line  $\ell_1$   
 62 :  $P_{2143} = (30, 1, 1, 1)$  lies on line  $\ell_1$   
 63 :  $P_{2144} = (31, 1, 1, 1)$  lies on line  $\ell_1$   
 64 :  $P_{2147} = (2, 2, 1, 1)$  lies on line  $\ell_3$   
 65 :  $P_{2180} = (3, 3, 1, 1)$  lies on line  $\ell_3$   
 66 :  $P_{2213} = (4, 4, 1, 1)$  lies on line  $\ell_3$   
 67 :  $P_{2246} = (5, 5, 1, 1)$  lies on line  $\ell_3$   
 68 :  $P_{2279} = (6, 6, 1, 1)$  lies on line  $\ell_3$   
 69 :  $P_{2312} = (7, 7, 1, 1)$  lies on line  $\ell_3$   
 70 :  $P_{2345} = (8, 8, 1, 1)$  lies on line  $\ell_3$   
 71 :  $P_{2378} = (9, 9, 1, 1)$  lies on line  $\ell_3$   
 72 :  $P_{2411} = (10, 10, 1, 1)$  lies on line  $\ell_3$   
 73 :  $P_{2444} = (11, 11, 1, 1)$  lies on line  $\ell_3$   
 74 :  $P_{2477} = (12, 12, 1, 1)$  lies on line  $\ell_3$   
 75 :  $P_{2510} = (13, 13, 1, 1)$  lies on line  $\ell_3$   
 76 :  $P_{2543} = (14, 14, 1, 1)$  lies on line  $\ell_3$   
 77 :  $P_{2576} = (15, 15, 1, 1)$  lies on line  $\ell_3$   
 78 :  $P_{2609} = (16, 16, 1, 1)$  lies on line  $\ell_3$   
 79 :  $P_{2642} = (17, 17, 1, 1)$  lies on line  $\ell_3$   
 80 :  $P_{2675} = (18, 18, 1, 1)$  lies on line  $\ell_3$   
 81 :  $P_{2708} = (19, 19, 1, 1)$  lies on line  $\ell_3$   
 82 :  $P_{2741} = (20, 20, 1, 1)$  lies on line  $\ell_3$   
 83 :  $P_{2774} = (21, 21, 1, 1)$  lies on line  $\ell_3$   
 84 :  $P_{2807} = (22, 22, 1, 1)$  lies on line  $\ell_3$

85 :  $P_{2840} = (23, 23, 1, 1)$  lies on line  $\ell_3$   
 86 :  $P_{2873} = (24, 24, 1, 1)$  lies on line  $\ell_3$   
 87 :  $P_{2906} = (25, 25, 1, 1)$  lies on line  $\ell_3$   
 88 :  $P_{2939} = (26, 26, 1, 1)$  lies on line  $\ell_3$   
 89 :  $P_{2972} = (27, 27, 1, 1)$  lies on line  $\ell_3$   
 90 :  $P_{3005} = (28, 28, 1, 1)$  lies on line  $\ell_3$   
 91 :  $P_{3038} = (29, 29, 1, 1)$  lies on line  $\ell_3$   
 92 :  $P_{3071} = (30, 30, 1, 1)$  lies on line  $\ell_3$   
 93 :  $P_{3104} = (31, 31, 1, 1)$  lies on line  $\ell_3$   
 94 :  $P_{3105} = (0, 0, 2, 1)$  lies on line  $\ell_2$   
 95 :  $P_{4129} = (0, 0, 3, 1)$  lies on line  $\ell_2$   
 96 :  $P_{5153} = (0, 0, 4, 1)$  lies on line  $\ell_2$   
 97 :  $P_{6177} = (0, 0, 5, 1)$  lies on line  $\ell_2$   
 98 :  $P_{7201} = (0, 0, 6, 1)$  lies on line  $\ell_2$   
 99 :  $P_{8225} = (0, 0, 7, 1)$  lies on line  $\ell_2$   
 100 :  $P_{9249} = (0, 0, 8, 1)$  lies on line  $\ell_2$   
 101 :  $P_{10273} = (0, 0, 9, 1)$  lies on line  $\ell_2$   
 102 :  $P_{11297} = (0, 0, 10, 1)$  lies on line  $\ell_2$   
 103 :  $P_{12321} = (0, 0, 11, 1)$  lies on line  $\ell_2$   
 104 :  $P_{13345} = (0, 0, 12, 1)$  lies on line  $\ell_2$   
 105 :  $P_{14369} = (0, 0, 13, 1)$  lies on line  $\ell_2$   
 106 :  $P_{15393} = (0, 0, 14, 1)$  lies on line  $\ell_2$   
 107 :  $P_{16417} = (0, 0, 15, 1)$  lies on line  $\ell_2$   
 108 :  $P_{17441} = (0, 0, 16, 1)$  lies on line  $\ell_2$   
 109 :  $P_{18465} = (0, 0, 17, 1)$  lies on line  $\ell_2$   
 110 :  $P_{19489} = (0, 0, 18, 1)$  lies on line  $\ell_2$   
 111 :  $P_{20513} = (0, 0, 19, 1)$  lies on line  $\ell_2$   
 112 :  $P_{21537} = (0, 0, 20, 1)$  lies on line  $\ell_2$   
 113 :  $P_{22561} = (0, 0, 21, 1)$  lies on line  $\ell_2$   
 114 :  $P_{23585} = (0, 0, 22, 1)$  lies on line  $\ell_2$   
 115 :  $P_{24609} = (0, 0, 23, 1)$  lies on line  $\ell_2$   
 116 :  $P_{25633} = (0, 0, 24, 1)$  lies on line  $\ell_2$   
 117 :  $P_{26657} = (0, 0, 25, 1)$  lies on line  $\ell_2$   
 118 :  $P_{27681} = (0, 0, 26, 1)$  lies on line  $\ell_2$   
 119 :  $P_{28705} = (0, 0, 27, 1)$  lies on line  $\ell_2$   
 120 :  $P_{29729} = (0, 0, 28, 1)$  lies on line  $\ell_2$   
 121 :  $P_{30753} = (0, 0, 29, 1)$  lies on line  $\ell_2$   
 122 :  $P_{31777} = (0, 0, 30, 1)$  lies on line  $\ell_2$   
 123 :  $P_{32801} = (0, 0, 31, 1)$  lies on line  $\ell_2$

The single points on the surface are:

### Points on surface but on no line

The surface has 961 points not on any line:

The points on the surface but not on lines are:

0 :  $P_{111} = (12, 2, 1, 0)$   
 1 :  $P_{113} = (14, 2, 1, 0)$   
 2 :  $P_{189} = (26, 4, 1, 0)$

3 :  $P_{193} = (30, 4, 1, 0)$   
 4 :  $P_{298} = (7, 8, 1, 0)$   
 5 :  $P_{306} = (15, 8, 1, 0)$

6 : $P_{339} = (16, 9, 1, 0)$	60 : $P_{2057} = (7, 31, 0, 1)$
7 : $P_{348} = (25, 9, 1, 0)$	61 : $P_{3133} = (28, 0, 2, 1)$
8 : $P_{376} = (21, 10, 1, 0)$	62 : $P_{3189} = (20, 2, 2, 1)$
9 : $P_{386} = (31, 10, 1, 0)$	63 : $P_{3192} = (23, 2, 2, 1)$
10 : $P_{393} = (6, 11, 1, 0)$	64 : $P_{3205} = (4, 3, 2, 1)$
11 : $P_{400} = (13, 11, 1, 0)$	65 : $P_{3227} = (26, 3, 2, 1)$
12 : $P_{456} = (5, 13, 1, 0)$	66 : $P_{3233} = (0, 4, 2, 1)$
13 : $P_{459} = (8, 13, 1, 0)$	67 : $P_{3240} = (7, 4, 2, 1)$
14 : $P_{501} = (18, 14, 1, 0)$	68 : $P_{3337} = (8, 7, 2, 1)$
15 : $P_{511} = (28, 14, 1, 0)$	69 : $P_{3342} = (13, 7, 2, 1)$
16 : $P_{535} = (20, 15, 1, 0)$	70 : $P_{3427} = (2, 10, 2, 1)$
17 : $P_{542} = (27, 15, 1, 0)$	71 : $P_{3443} = (18, 10, 2, 1)$
18 : $P_{550} = (3, 16, 1, 0)$	72 : $P_{3477} = (20, 11, 2, 1)$
19 : $P_{566} = (19, 16, 1, 0)$	73 : $P_{3482} = (25, 11, 2, 1)$
20 : $P_{615} = (4, 18, 1, 0)$	74 : $P_{3544} = (23, 13, 2, 1)$
21 : $P_{633} = (22, 18, 1, 0)$	75 : $P_{3551} = (30, 13, 2, 1)$
22 : $P_{654} = (11, 19, 1, 0)$	76 : $P_{3560} = (7, 14, 2, 1)$
23 : $P_{667} = (24, 19, 1, 0)$	77 : $P_{3565} = (12, 14, 2, 1)$
24 : $P_{909} = (10, 27, 1, 0)$	78 : $P_{3589} = (4, 15, 2, 1)$
25 : $P_{916} = (17, 27, 1, 0)$	79 : $P_{3603} = (18, 15, 2, 1)$
26 : $P_{1004} = (9, 30, 1, 0)$	80 : $P_{3618} = (1, 16, 2, 1)$
27 : $P_{1018} = (23, 30, 1, 0)$	81 : $P_{3647} = (30, 16, 2, 1)$
28 : $P_{1029} = (2, 31, 1, 0)$	82 : $P_{3693} = (12, 18, 2, 1)$
29 : $P_{1056} = (29, 31, 1, 0)$	83 : $P_{3721} = (8, 19, 2, 1)$
30 : $P_{1059} = (1, 0, 0, 1)$	84 : $P_{3734} = (21, 19, 2, 1)$
31 : $P_{1132} = (10, 2, 0, 1)$	85 : $P_{3810} = (1, 22, 2, 1)$
32 : $P_{1133} = (11, 2, 0, 1)$	86 : $P_{3835} = (26, 22, 2, 1)$
33 : $P_{1200} = (14, 4, 0, 1)$	87 : $P_{3894} = (21, 24, 2, 1)$
34 : $P_{1201} = (15, 4, 0, 1)$	88 : $P_{3898} = (25, 24, 2, 1)$
35 : $P_{1254} = (4, 6, 0, 1)$	89 : $P_{3918} = (13, 25, 2, 1)$
36 : $P_{1255} = (5, 6, 0, 1)$	90 : $P_{3933} = (28, 25, 2, 1)$
37 : $P_{1374} = (28, 9, 0, 1)$	91 : $P_{4147} = (18, 0, 3, 1)$
38 : $P_{1375} = (29, 9, 0, 1)$	92 : $P_{4169} = (8, 1, 3, 1)$
39 : $P_{1432} = (22, 11, 0, 1)$	93 : $P_{4170} = (9, 1, 3, 1)$
40 : $P_{1433} = (23, 11, 0, 1)$	94 : $P_{4289} = (0, 5, 3, 1)$
41 : $P_{1492} = (18, 13, 0, 1)$	95 : $P_{4296} = (7, 5, 3, 1)$
42 : $P_{1493} = (19, 13, 0, 1)$	96 : $P_{4333} = (12, 6, 3, 1)$
43 : $P_{1562} = (24, 15, 0, 1)$	97 : $P_{4348} = (27, 6, 3, 1)$
44 : $P_{1563} = (25, 15, 0, 1)$	98 : $P_{4369} = (16, 7, 3, 1)$
45 : $P_{1600} = (30, 16, 0, 1)$	99 : $P_{4373} = (20, 7, 3, 1)$
46 : $P_{1601} = (31, 16, 0, 1)$	100 : $P_{4424} = (7, 9, 3, 1)$
47 : $P_{1654} = (20, 18, 0, 1)$	101 : $P_{4427} = (10, 9, 3, 1)$
48 : $P_{1655} = (21, 18, 0, 1)$	102 : $P_{4502} = (21, 11, 3, 1)$
49 : $P_{1714} = (16, 20, 0, 1)$	103 : $P_{4508} = (27, 11, 3, 1)$
50 : $P_{1715} = (17, 20, 0, 1)$	104 : $P_{4677} = (4, 17, 3, 1)$
51 : $P_{1788} = (26, 22, 0, 1)$	105 : $P_{4702} = (29, 17, 3, 1)$
52 : $P_{1789} = (27, 22, 0, 1)$	106 : $P_{4708} = (3, 18, 3, 1)$
53 : $P_{1860} = (2, 25, 0, 1)$	107 : $P_{4715} = (10, 18, 3, 1)$
54 : $P_{1861} = (3, 25, 0, 1)$	108 : $P_{4790} = (21, 20, 3, 1)$
55 : $P_{1930} = (8, 27, 0, 1)$	109 : $P_{4794} = (25, 20, 3, 1)$
56 : $P_{1931} = (9, 27, 0, 1)$	110 : $P_{4851} = (18, 22, 3, 1)$
57 : $P_{1998} = (12, 29, 0, 1)$	111 : $P_{4862} = (29, 22, 3, 1)$
58 : $P_{1999} = (13, 29, 0, 1)$	112 : $P_{4877} = (12, 23, 3, 1)$
59 : $P_{2056} = (6, 31, 0, 1)$	113 : $P_{4881} = (16, 23, 3, 1)$

114 : $P_{4899} = (2, 24, 3, 1)$	168 : $P_{6759} = (6, 18, 5, 1)$
115 : $P_{4901} = (4, 24, 3, 1)$	169 : $P_{6764} = (11, 18, 5, 1)$
116 : $P_{4995} = (2, 27, 3, 1)$	170 : $P_{6819} = (2, 20, 5, 1)$
117 : $P_{5013} = (20, 27, 3, 1)$	171 : $P_{6843} = (26, 20, 5, 1)$
118 : $P_{5033} = (8, 28, 3, 1)$	172 : $P_{6862} = (13, 21, 5, 1)$
119 : $P_{5130} = (9, 31, 3, 1)$	173 : $P_{6878} = (29, 21, 5, 1)$
120 : $P_{5146} = (25, 31, 3, 1)$	174 : $P_{6923} = (10, 23, 5, 1)$
121 : $P_{5176} = (23, 0, 4, 1)$	175 : $P_{6958} = (13, 24, 5, 1)$
122 : $P_{5305} = (24, 4, 4, 1)$	176 : $P_{6971} = (26, 24, 5, 1)$
123 : $P_{5310} = (29, 4, 4, 1)$	177 : $P_{6986} = (9, 25, 5, 1)$
124 : $P_{5316} = (3, 5, 4, 1)$	178 : $P_{6999} = (22, 25, 5, 1)$
125 : $P_{5329} = (16, 5, 4, 1)$	179 : $P_{7111} = (6, 29, 5, 1)$
126 : $P_{5368} = (23, 6, 4, 1)$	180 : $P_{7133} = (28, 29, 5, 1)$
127 : $P_{5372} = (27, 6, 4, 1)$	181 : $P_{7213} = (12, 0, 6, 1)$
128 : $P_{5383} = (6, 7, 4, 1)$	182 : $P_{7303} = (6, 3, 6, 1)$
129 : $P_{5405} = (28, 7, 4, 1)$	183 : $P_{7326} = (29, 3, 6, 1)$
130 : $P_{5419} = (10, 8, 4, 1)$	184 : $P_{7334} = (5, 4, 6, 1)$
131 : $P_{5437} = (28, 8, 4, 1)$	185 : $P_{7353} = (24, 4, 6, 1)$
132 : $P_{5467} = (26, 9, 4, 1)$	186 : $P_{7364} = (3, 5, 6, 1)$
133 : $P_{5570} = (1, 13, 4, 1)$	187 : $P_{7380} = (19, 5, 6, 1)$
134 : $P_{5588} = (19, 13, 4, 1)$	188 : $P_{7410} = (17, 6, 6, 1)$
135 : $P_{5605} = (4, 14, 4, 1)$	189 : $P_{7415} = (22, 6, 6, 1)$
136 : $P_{5610} = (9, 14, 4, 1)$	190 : $P_{7505} = (16, 9, 6, 1)$
137 : $P_{5639} = (6, 15, 4, 1)$	191 : $P_{7511} = (22, 9, 6, 1)$
138 : $P_{5662} = (29, 15, 4, 1)$	192 : $P_{7530} = (9, 10, 6, 1)$
139 : $P_{5665} = (0, 16, 4, 1)$	193 : $P_{7545} = (24, 10, 6, 1)$
140 : $P_{5686} = (21, 16, 4, 1)$	194 : $P_{7626} = (9, 13, 6, 1)$
141 : $P_{5835} = (10, 21, 4, 1)$	195 : $P_{7647} = (30, 13, 6, 1)$
142 : $P_{5852} = (27, 21, 4, 1)$	196 : $P_{7654} = (5, 14, 6, 1)$
143 : $P_{5954} = (1, 25, 4, 1)$	197 : $P_{7785} = (8, 18, 6, 1)$
144 : $P_{5956} = (3, 25, 4, 1)$	198 : $P_{7793} = (16, 18, 6, 1)$
145 : $P_{6036} = (19, 27, 4, 1)$	199 : $P_{7817} = (8, 19, 6, 1)$
146 : $P_{6041} = (24, 27, 4, 1)$	200 : $P_{7838} = (29, 19, 6, 1)$
147 : $P_{6134} = (21, 30, 4, 1)$	201 : $P_{7841} = (0, 20, 6, 1)$
148 : $P_{6139} = (26, 30, 4, 1)$	202 : $P_{7860} = (19, 20, 6, 1)$
149 : $P_{6154} = (9, 31, 4, 1)$	203 : $P_{7877} = (4, 21, 6, 1)$
150 : $P_{6161} = (16, 31, 4, 1)$	204 : $P_{7899} = (26, 21, 6, 1)$
151 : $P_{6186} = (9, 0, 5, 1)$	205 : $P_{7963} = (26, 23, 6, 1)$
152 : $P_{6219} = (10, 1, 5, 1)$	206 : $P_{7967} = (30, 23, 6, 1)$
153 : $P_{6220} = (11, 1, 5, 1)$	207 : $P_{8005} = (4, 25, 6, 1)$
154 : $P_{6245} = (4, 2, 5, 1)$	208 : $P_{8013} = (12, 25, 6, 1)$
155 : $P_{6270} = (29, 2, 5, 1)$	209 : $P_{8068} = (3, 27, 6, 1)$
156 : $P_{6405} = (4, 7, 5, 1)$	210 : $P_{8082} = (17, 27, 6, 1)$
157 : $P_{6417} = (16, 7, 5, 1)$	211 : $P_{8239} = (14, 0, 7, 1)$
158 : $P_{6470} = (5, 9, 5, 1)$	212 : $P_{8259} = (2, 1, 7, 1)$
159 : $P_{6479} = (14, 9, 5, 1)$	213 : $P_{8260} = (3, 1, 7, 1)$
160 : $P_{6543} = (14, 11, 5, 1)$	214 : $P_{8336} = (15, 3, 7, 1)$
161 : $P_{6550} = (21, 11, 5, 1)$	215 : $P_{8337} = (16, 3, 7, 1)$
162 : $P_{6577} = (16, 12, 5, 1)$	216 : $P_{8475} = (26, 7, 7, 1)$
163 : $P_{6583} = (22, 12, 5, 1)$	217 : $P_{8477} = (28, 7, 7, 1)$
164 : $P_{6659} = (2, 15, 5, 1)$	218 : $P_{8519} = (6, 9, 7, 1)$
165 : $P_{6685} = (28, 15, 5, 1)$	219 : $P_{8529} = (16, 9, 7, 1)$
166 : $P_{6721} = (0, 17, 5, 1)$	220 : $P_{8637} = (28, 12, 7, 1)$
167 : $P_{6742} = (21, 17, 5, 1)$	221 : $P_{8679} = (6, 14, 7, 1)$

222 : $P_{8697} = (24, 14, 7, 1)$	276 : $P_{10490} = (25, 6, 9, 1)$
223 : $P_{8897} = (0, 21, 7, 1)$	277 : $P_{10503} = (6, 7, 9, 1)$
224 : $P_{8916} = (19, 21, 7, 1)$	278 : $P_{10523} = (26, 7, 9, 1)$
225 : $P_{8946} = (17, 22, 7, 1)$	279 : $P_{10533} = (4, 8, 9, 1)$
226 : $P_{8948} = (19, 22, 7, 1)$	280 : $P_{10556} = (27, 8, 9, 1)$
227 : $P_{8966} = (5, 23, 7, 1)$	281 : $P_{10625} = (0, 11, 9, 1)$
228 : $P_{8969} = (8, 23, 7, 1)$	282 : $P_{10628} = (3, 11, 9, 1)$
229 : $P_{9030} = (5, 25, 7, 1)$	283 : $P_{10659} = (2, 12, 9, 1)$
230 : $P_{9049} = (24, 25, 7, 1)$	284 : $P_{10668} = (11, 12, 9, 1)$
231 : $P_{9059} = (2, 26, 7, 1)$	285 : $P_{10698} = (9, 13, 9, 1)$
232 : $P_{9071} = (14, 26, 7, 1)$	286 : $P_{10712} = (23, 13, 9, 1)$
233 : $P_{9106} = (17, 27, 7, 1)$	287 : $P_{10947} = (2, 21, 9, 1)$
234 : $P_{9107} = (18, 27, 7, 1)$	288 : $P_{10952} = (7, 21, 9, 1)$
235 : $P_{9156} = (3, 29, 7, 1)$	289 : $P_{11064} = (23, 24, 9, 1)$
236 : $P_{9160} = (7, 29, 7, 1)$	290 : $P_{11067} = (26, 24, 9, 1)$
237 : $P_{9200} = (15, 30, 7, 1)$	291 : $P_{11140} = (3, 27, 9, 1)$
238 : $P_{9211} = (26, 30, 7, 1)$	292 : $P_{11155} = (18, 27, 9, 1)$
239 : $P_{9225} = (8, 31, 7, 1)$	293 : $P_{11182} = (13, 28, 9, 1)$
240 : $P_{9235} = (18, 31, 7, 1)$	294 : $P_{11191} = (22, 28, 9, 1)$
241 : $P_{9253} = (4, 0, 8, 1)$	295 : $P_{11202} = (1, 29, 9, 1)$
242 : $P_{9301} = (20, 1, 8, 1)$	296 : $P_{11214} = (13, 29, 9, 1)$
243 : $P_{9302} = (21, 1, 8, 1)$	297 : $P_{11244} = (11, 30, 9, 1)$
244 : $P_{9383} = (6, 4, 8, 1)$	298 : $P_{11260} = (27, 30, 9, 1)$
245 : $P_{9399} = (22, 4, 8, 1)$	299 : $P_{11266} = (1, 31, 9, 1)$
246 : $P_{9451} = (10, 6, 8, 1)$	300 : $P_{11271} = (6, 31, 9, 1)$
247 : $P_{9457} = (16, 6, 8, 1)$	301 : $P_{11313} = (16, 0, 10, 1)$
248 : $P_{9569} = (0, 10, 8, 1)$	302 : $P_{11357} = (28, 1, 10, 1)$
249 : $P_{9572} = (3, 10, 8, 1)$	303 : $P_{11358} = (29, 1, 10, 1)$
250 : $P_{9733} = (4, 15, 8, 1)$	304 : $P_{11364} = (3, 2, 10, 1)$
251 : $P_{9751} = (22, 15, 8, 1)$	305 : $P_{11381} = (20, 2, 10, 1)$
252 : $P_{9762} = (1, 16, 8, 1)$	306 : $P_{11420} = (27, 3, 10, 1)$
253 : $P_{9792} = (31, 16, 8, 1)$	307 : $P_{11422} = (29, 3, 10, 1)$
254 : $P_{9802} = (9, 17, 8, 1)$	308 : $P_{11500} = (11, 6, 10, 1)$
255 : $P_{9811} = (18, 17, 8, 1)$	309 : $P_{11507} = (18, 6, 10, 1)$
256 : $P_{9826} = (1, 18, 8, 1)$	310 : $P_{11526} = (5, 7, 10, 1)$
257 : $P_{9846} = (21, 18, 8, 1)$	311 : $P_{11534} = (13, 7, 10, 1)$
258 : $P_{9963} = (10, 22, 8, 1)$	312 : $P_{11586} = (1, 9, 10, 1)$
259 : $P_{9993} = (8, 23, 8, 1)$	313 : $P_{11613} = (28, 9, 10, 1)$
260 : $P_{9998} = (13, 23, 8, 1)$	314 : $P_{11690} = (9, 12, 10, 1)$
261 : $P_{10020} = (3, 24, 8, 1)$	315 : $P_{11692} = (11, 12, 10, 1)$
262 : $P_{10033} = (16, 24, 8, 1)$	316 : $P_{11714} = (1, 13, 10, 1)$
263 : $P_{10058} = (9, 25, 8, 1)$	317 : $P_{11731} = (18, 13, 10, 1)$
264 : $P_{10080} = (31, 25, 8, 1)$	318 : $P_{11745} = (0, 14, 10, 1)$
265 : $P_{10094} = (13, 26, 8, 1)$	319 : $P_{11750} = (5, 14, 10, 1)$
266 : $P_{10101} = (20, 26, 8, 1)$	320 : $P_{11829} = (20, 16, 10, 1)$
267 : $P_{10119} = (6, 27, 8, 1)$	321 : $P_{11834} = (25, 16, 10, 1)$
268 : $P_{10139} = (26, 27, 8, 1)$	322 : $P_{11876} = (3, 18, 10, 1)$
269 : $P_{10259} = (18, 31, 8, 1)$	323 : $P_{11882} = (9, 18, 10, 1)$
270 : $P_{10267} = (26, 31, 8, 1)$	324 : $P_{11950} = (13, 20, 10, 1)$
271 : $P_{10295} = (22, 0, 9, 1)$	325 : $P_{11951} = (14, 20, 10, 1)$
272 : $P_{10341} = (4, 2, 9, 1)$	326 : $P_{12075} = (10, 24, 10, 1)$
273 : $P_{10362} = (25, 2, 9, 1)$	327 : $P_{12092} = (27, 24, 10, 1)$
274 : $P_{10408} = (7, 4, 9, 1)$	328 : $P_{12111} = (14, 25, 10, 1)$
275 : $P_{10483} = (18, 6, 9, 1)$	329 : $P_{12305} = (16, 31, 10, 1)$

330 :  $P_{12314} = (25, 31, 10, 1)$   
 331 :  $P_{12346} = (25, 0, 11, 1)$   
 332 :  $P_{12390} = (5, 2, 11, 1)$   
 333 :  $P_{12394} = (9, 2, 11, 1)$   
 334 :  $P_{12455} = (6, 4, 11, 1)$   
 335 :  $P_{12465} = (16, 4, 11, 1)$   
 336 :  $P_{12548} = (3, 7, 11, 1)$   
 337 :  $P_{12569} = (24, 7, 11, 1)$   
 338 :  $P_{12643} = (2, 10, 11, 1)$   
 339 :  $P_{12657} = (16, 10, 11, 1)$   
 340 :  $P_{12801} = (0, 15, 11, 1)$   
 341 :  $P_{12806} = (5, 15, 11, 1)$   
 342 :  $P_{12854} = (21, 16, 11, 1)$   
 343 :  $P_{12898} = (1, 18, 11, 1)$   
 344 :  $P_{12917} = (20, 18, 11, 1)$   
 345 :  $P_{12931} = (2, 19, 11, 1)$   
 346 :  $P_{12944} = (15, 19, 11, 1)$   
 347 :  $P_{12967} = (6, 20, 11, 1)$   
 348 :  $P_{12970} = (9, 20, 11, 1)$   
 349 :  $P_{12996} = (3, 21, 11, 1)$   
 350 :  $P_{13013} = (20, 21, 11, 1)$   
 351 :  $P_{13026} = (1, 22, 11, 1)$   
 352 :  $P_{13052} = (27, 22, 11, 1)$   
 353 :  $P_{13082} = (25, 23, 11, 1)$   
 354 :  $P_{13084} = (27, 23, 11, 1)$   
 355 :  $P_{13157} = (4, 26, 11, 1)$   
 356 :  $P_{13168} = (15, 26, 11, 1)$   
 357 :  $P_{13196} = (11, 27, 11, 1)$   
 358 :  $P_{13209} = (24, 27, 11, 1)$   
 359 :  $P_{13221} = (4, 28, 11, 1)$   
 360 :  $P_{13238} = (21, 28, 11, 1)$   
 361 :  $P_{13360} = (15, 0, 12, 1)$   
 362 :  $P_{13407} = (30, 1, 12, 1)$   
 363 :  $P_{13408} = (31, 1, 12, 1)$   
 364 :  $P_{13447} = (6, 3, 12, 1)$   
 365 :  $P_{13468} = (27, 3, 12, 1)$   
 366 :  $P_{13599} = (30, 7, 12, 1)$   
 367 :  $P_{13726} = (29, 11, 12, 1)$   
 368 :  $P_{13728} = (31, 11, 12, 1)$   
 369 :  $P_{13837} = (12, 15, 12, 1)$   
 370 :  $P_{13844} = (19, 15, 12, 1)$   
 371 :  $P_{13870} = (13, 16, 12, 1)$   
 372 :  $P_{13882} = (25, 16, 12, 1)$   
 373 :  $P_{13937} = (16, 18, 12, 1)$   
 374 :  $P_{13945} = (24, 18, 12, 1)$   
 375 :  $P_{13991} = (6, 20, 12, 1)$   
 376 :  $P_{14000} = (15, 20, 12, 1)$   
 377 :  $P_{14019} = (2, 21, 12, 1)$   
 378 :  $P_{14022} = (5, 21, 12, 1)$   
 379 :  $P_{14054} = (5, 22, 12, 1)$   
 380 :  $P_{14065} = (16, 22, 12, 1)$   
 381 :  $P_{14083} = (2, 23, 12, 1)$   
 382 :  $P_{14106} = (25, 23, 12, 1)$   
 383 :  $P_{14169} = (24, 25, 12, 1)$

384 :  $P_{14174} = (29, 25, 12, 1)$   
 385 :  $P_{14177} = (0, 26, 12, 1)$   
 386 :  $P_{14200} = (23, 26, 12, 1)$   
 387 :  $P_{14254} = (13, 28, 12, 1)$   
 388 :  $P_{14268} = (27, 28, 12, 1)$   
 389 :  $P_{14356} = (19, 31, 12, 1)$   
 390 :  $P_{14360} = (23, 31, 12, 1)$   
 391 :  $P_{14376} = (7, 0, 13, 1)$   
 392 :  $P_{14434} = (1, 2, 13, 1)$   
 393 :  $P_{14443} = (10, 2, 13, 1)$   
 394 :  $P_{14507} = (10, 4, 13, 1)$   
 395 :  $P_{14518} = (21, 4, 13, 1)$   
 396 :  $P_{14630} = (5, 8, 13, 1)$   
 397 :  $P_{14648} = (23, 8, 13, 1)$   
 398 :  $P_{14672} = (15, 9, 13, 1)$   
 399 :  $P_{14684} = (27, 9, 13, 1)$   
 400 :  $P_{14770} = (17, 12, 13, 1)$   
 401 :  $P_{14780} = (27, 12, 13, 1)$   
 402 :  $P_{14806} = (21, 13, 13, 1)$   
 403 :  $P_{14810} = (25, 13, 13, 1)$   
 404 :  $P_{14841} = (24, 14, 13, 1)$   
 405 :  $P_{14847} = (30, 14, 13, 1)$   
 406 :  $P_{14854} = (5, 15, 13, 1)$   
 407 :  $P_{14970} = (25, 18, 13, 1)$   
 408 :  $P_{14974} = (29, 18, 13, 1)$   
 409 :  $P_{14990} = (13, 19, 13, 1)$   
 410 :  $P_{14992} = (15, 19, 13, 1)$   
 411 :  $P_{15010} = (1, 20, 13, 1)$   
 412 :  $P_{15026} = (17, 20, 13, 1)$   
 413 :  $P_{15109} = (4, 23, 13, 1)$   
 414 :  $P_{15135} = (30, 23, 13, 1)$   
 415 :  $P_{15233} = (0, 27, 13, 1)$   
 416 :  $P_{15256} = (23, 27, 13, 1)$   
 417 :  $P_{15289} = (24, 28, 13, 1)$   
 418 :  $P_{15294} = (29, 28, 13, 1)$   
 419 :  $P_{15301} = (4, 29, 13, 1)$   
 420 :  $P_{15304} = (7, 29, 13, 1)$   
 421 :  $P_{15406} = (13, 0, 14, 1)$   
 422 :  $P_{15447} = (22, 1, 14, 1)$   
 423 :  $P_{15448} = (23, 1, 14, 1)$   
 424 :  $P_{15526} = (5, 4, 14, 1)$   
 425 :  $P_{15550} = (29, 4, 14, 1)$   
 426 :  $P_{15555} = (2, 5, 14, 1)$   
 427 :  $P_{15575} = (22, 5, 14, 1)$   
 428 :  $P_{15615} = (30, 6, 14, 1)$   
 429 :  $P_{15619} = (2, 7, 14, 1)$   
 430 :  $P_{15631} = (14, 7, 14, 1)$   
 431 :  $P_{15686} = (5, 9, 14, 1)$   
 432 :  $P_{15692} = (11, 9, 14, 1)$   
 433 :  $P_{15746} = (1, 11, 14, 1)$   
 434 :  $P_{15768} = (23, 11, 14, 1)$   
 435 :  $P_{15815} = (6, 13, 14, 1)$   
 436 :  $P_{15838} = (29, 13, 14, 1)$   
 437 :  $P_{15975} = (6, 18, 14, 1)$

438 :  $P_{15982} = (13, 18, 14, 1)$   
 439 :  $P_{16042} = (9, 20, 14, 1)$   
 440 :  $P_{16048} = (15, 20, 14, 1)$   
 441 :  $P_{16082} = (17, 21, 14, 1)$   
 442 :  $P_{16092} = (27, 21, 14, 1)$   
 443 :  $P_{16236} = (11, 26, 14, 1)$   
 444 :  $P_{16240} = (15, 26, 14, 1)$   
 445 :  $P_{16258} = (1, 27, 14, 1)$   
 446 :  $P_{16266} = (9, 27, 14, 1)$   
 447 :  $P_{16348} = (27, 29, 14, 1)$   
 448 :  $P_{16351} = (30, 29, 14, 1)$   
 449 :  $P_{16353} = (0, 30, 14, 1)$   
 450 :  $P_{16370} = (17, 30, 14, 1)$   
 451 :  $P_{16423} = (6, 0, 15, 1)$   
 452 :  $P_{16488} = (7, 2, 15, 1)$   
 453 :  $P_{16496} = (15, 2, 15, 1)$   
 454 :  $P_{16529} = (16, 3, 15, 1)$   
 455 :  $P_{16544} = (31, 3, 15, 1)$   
 456 :  $P_{16556} = (11, 4, 15, 1)$   
 457 :  $P_{16562} = (17, 4, 15, 1)$   
 458 :  $P_{16677} = (4, 8, 15, 1)$   
 459 :  $P_{16704} = (31, 8, 15, 1)$   
 460 :  $P_{16706} = (1, 9, 15, 1)$   
 461 :  $P_{16734} = (29, 9, 15, 1)$   
 462 :  $P_{16861} = (28, 13, 15, 1)$   
 463 :  $P_{16869} = (4, 14, 15, 1)$   
 464 :  $P_{16878} = (13, 14, 15, 1)$   
 465 :  $P_{16942} = (13, 16, 15, 1)$   
 466 :  $P_{16949} = (20, 16, 15, 1)$   
 467 :  $P_{17094} = (5, 21, 15, 1)$   
 468 :  $P_{17096} = (7, 21, 15, 1)$   
 469 :  $P_{17169} = (16, 23, 15, 1)$   
 470 :  $P_{17181} = (28, 23, 15, 1)$   
 471 :  $P_{17187} = (2, 24, 15, 1)$   
 472 :  $P_{17191} = (6, 24, 15, 1)$   
 473 :  $P_{17218} = (1, 25, 15, 1)$   
 474 :  $P_{17219} = (2, 25, 15, 1)$   
 475 :  $P_{17318} = (5, 28, 15, 1)$   
 476 :  $P_{17342} = (29, 28, 15, 1)$   
 477 :  $P_{17356} = (11, 29, 15, 1)$   
 478 :  $P_{17365} = (20, 29, 15, 1)$   
 479 :  $P_{17409} = (0, 31, 15, 1)$   
 480 :  $P_{17426} = (17, 31, 15, 1)$   
 481 :  $P_{17465} = (24, 0, 16, 1)$   
 482 :  $P_{17512} = (7, 2, 16, 1)$   
 483 :  $P_{17513} = (8, 2, 16, 1)$   
 484 :  $P_{17634} = (1, 6, 16, 1)$   
 485 :  $P_{17638} = (5, 6, 16, 1)$   
 486 :  $P_{17775} = (14, 10, 16, 1)$   
 487 :  $P_{17784} = (23, 10, 16, 1)$   
 488 :  $P_{17796} = (3, 11, 16, 1)$   
 489 :  $P_{17857} = (0, 13, 16, 1)$   
 490 :  $P_{17885} = (28, 13, 16, 1)$   
 491 :  $P_{17960} = (7, 16, 16, 1)$

492 :  $P_{17975} = (22, 16, 16, 1)$   
 493 :  $P_{17990} = (5, 17, 16, 1)$   
 494 :  $P_{17998} = (13, 17, 16, 1)$   
 495 :  $P_{18028} = (11, 18, 16, 1)$   
 496 :  $P_{18030} = (13, 18, 16, 1)$   
 497 :  $P_{18052} = (3, 19, 16, 1)$   
 498 :  $P_{18077} = (28, 19, 16, 1)$   
 499 :  $P_{18083} = (2, 20, 16, 1)$   
 500 :  $P_{18105} = (24, 20, 16, 1)$   
 501 :  $P_{18133} = (20, 21, 16, 1)$   
 502 :  $P_{18136} = (23, 21, 16, 1)$   
 503 :  $P_{18306} = (1, 27, 16, 1)$   
 504 :  $P_{18313} = (8, 27, 16, 1)$   
 505 :  $P_{18339} = (2, 28, 16, 1)$   
 506 :  $P_{18351} = (14, 28, 16, 1)$   
 507 :  $P_{18412} = (11, 30, 16, 1)$   
 508 :  $P_{18417} = (16, 30, 16, 1)$   
 509 :  $P_{18453} = (20, 31, 16, 1)$   
 510 :  $P_{18455} = (22, 31, 16, 1)$   
 511 :  $P_{18476} = (11, 0, 17, 1)$   
 512 :  $P_{18511} = (14, 1, 17, 1)$   
 513 :  $P_{18512} = (15, 1, 17, 1)$   
 514 :  $P_{18609} = (16, 4, 17, 1)$   
 515 :  $P_{18615} = (22, 4, 17, 1)$   
 516 :  $P_{18668} = (11, 6, 17, 1)$   
 517 :  $P_{18682} = (25, 6, 17, 1)$   
 518 :  $P_{18692} = (3, 7, 17, 1)$   
 519 :  $P_{18716} = (27, 7, 17, 1)$   
 520 :  $P_{18768} = (15, 9, 17, 1)$   
 521 :  $P_{18773} = (20, 9, 17, 1)$   
 522 :  $P_{18834} = (17, 11, 17, 1)$   
 523 :  $P_{18847} = (30, 11, 17, 1)$   
 524 :  $P_{18849} = (0, 12, 17, 1)$   
 525 :  $P_{18877} = (28, 12, 17, 1)$   
 526 :  $P_{18973} = (28, 15, 17, 1)$   
 527 :  $P_{18975} = (30, 15, 17, 1)$   
 528 :  $P_{19150} = (13, 21, 17, 1)$   
 529 :  $P_{19153} = (16, 21, 17, 1)$   
 530 :  $P_{19189} = (20, 22, 17, 1)$   
 531 :  $P_{19192} = (23, 22, 17, 1)$   
 532 :  $P_{19247} = (14, 24, 17, 1)$   
 533 :  $P_{19310} = (13, 26, 17, 1)$   
 534 :  $P_{19322} = (25, 26, 17, 1)$   
 535 :  $P_{19383} = (22, 28, 17, 1)$   
 536 :  $P_{19388} = (27, 28, 17, 1)$   
 537 :  $P_{19396} = (3, 29, 17, 1)$   
 538 :  $P_{19397} = (4, 29, 17, 1)$   
 539 :  $P_{19461} = (4, 31, 17, 1)$   
 540 :  $P_{19480} = (23, 31, 17, 1)$   
 541 :  $P_{19518} = (29, 0, 18, 1)$   
 542 :  $P_{19577} = (24, 2, 18, 1)$   
 543 :  $P_{19737} = (24, 7, 18, 1)$   
 544 :  $P_{19740} = (27, 7, 18, 1)$   
 545 :  $P_{19777} = (0, 9, 18, 1)$



546 :  $P_{19803} = (26, 9, 18, 1)$   
 547 :  $P_{19931} = (26, 13, 18, 1)$   
 548 :  $P_{19936} = (31, 13, 18, 1)$   
 549 :  $P_{19946} = (9, 14, 18, 1)$   
 550 :  $P_{19950} = (13, 14, 18, 1)$   
 551 :  $P_{19970} = (1, 15, 18, 1)$   
 552 :  $P_{19994} = (25, 15, 18, 1)$   
 553 :  $P_{20019} = (18, 16, 18, 1)$   
 554 :  $P_{20029} = (28, 16, 18, 1)$   
 555 :  $P_{20042} = (9, 17, 18, 1)$   
 556 :  $P_{20060} = (27, 17, 18, 1)$   
 557 :  $P_{20099} = (2, 19, 18, 1)$   
 558 :  $P_{20110} = (13, 19, 18, 1)$   
 559 :  $P_{20130} = (1, 20, 18, 1)$   
 560 :  $P_{20145} = (16, 20, 18, 1)$   
 561 :  $P_{20177} = (16, 21, 18, 1)$   
 562 :  $P_{20190} = (29, 21, 18, 1)$   
 563 :  $P_{20237} = (12, 23, 18, 1)$   
 564 :  $P_{20253} = (28, 23, 18, 1)$   
 565 :  $P_{20269} = (12, 24, 18, 1)$   
 566 :  $P_{20282} = (25, 24, 18, 1)$   
 567 :  $P_{20311} = (22, 25, 18, 1)$   
 568 :  $P_{20320} = (31, 25, 18, 1)$   
 569 :  $P_{20355} = (2, 27, 18, 1)$   
 570 :  $P_{20375} = (22, 27, 18, 1)$   
 571 :  $P_{20515} = (2, 0, 19, 1)$   
 572 :  $P_{20551} = (6, 1, 19, 1)$   
 573 :  $P_{20552} = (7, 1, 19, 1)$   
 574 :  $P_{20602} = (25, 2, 19, 1)$   
 575 :  $P_{20606} = (29, 2, 19, 1)$   
 576 :  $P_{20642} = (1, 4, 19, 1)$   
 577 :  $P_{20656} = (15, 4, 19, 1)$   
 578 :  $P_{20691} = (18, 5, 19, 1)$   
 579 :  $P_{20704} = (31, 5, 19, 1)$   
 580 :  $P_{20769} = (0, 8, 19, 1)$   
 581 :  $P_{20795} = (26, 8, 19, 1)$   
 582 :  $P_{20867} = (2, 11, 19, 1)$   
 583 :  $P_{20894} = (29, 11, 19, 1)$   
 584 :  $P_{20903} = (6, 12, 19, 1)$   
 585 :  $P_{20913} = (16, 12, 19, 1)$   
 586 :  $P_{20941} = (12, 13, 19, 1)$   
 587 :  $P_{20954} = (25, 13, 19, 1)$   
 588 :  $P_{21005} = (12, 15, 19, 1)$   
 589 :  $P_{21024} = (31, 15, 19, 1)$   
 590 :  $P_{21232} = (15, 22, 19, 1)$   
 591 :  $P_{21235} = (18, 22, 19, 1)$   
 592 :  $P_{21253} = (4, 23, 19, 1)$   
 593 :  $P_{21275} = (26, 23, 19, 1)$   
 594 :  $P_{21317} = (4, 25, 19, 1)$   
 595 :  $P_{21321} = (8, 25, 19, 1)$   
 596 :  $P_{21425} = (16, 28, 19, 1)$   
 597 :  $P_{21428} = (19, 28, 19, 1)$   
 598 :  $P_{21449} = (8, 29, 19, 1)$   
 599 :  $P_{21506} = (1, 31, 19, 1)$

600 :  $P_{21512} = (7, 31, 19, 1)$   
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 603 :  $P_{21613} = (12, 2, 20, 1)$   
 604 :  $P_{21717} = (20, 5, 20, 1)$   
 605 :  $P_{21719} = (22, 5, 20, 1)$   
 606 :  $P_{21745} = (16, 6, 20, 1)$   
 607 :  $P_{21755} = (26, 6, 20, 1)$   
 608 :  $P_{21803} = (10, 8, 20, 1)$   
 609 :  $P_{21815} = (22, 8, 20, 1)$   
 610 :  $P_{21835} = (10, 9, 20, 1)$   
 611 :  $P_{21838} = (13, 9, 20, 1)$   
 612 :  $P_{21902} = (13, 11, 20, 1)$   
 613 :  $P_{21914} = (25, 11, 20, 1)$   
 614 :  $P_{21992} = (7, 14, 20, 1)$   
 615 :  $P_{21996} = (11, 14, 20, 1)$   
 616 :  $P_{22056} = (7, 16, 20, 1)$   
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 621 :  $P_{22202} = (25, 20, 20, 1)$   
 622 :  $P_{22308} = (3, 24, 20, 1)$   
 623 :  $P_{22324} = (19, 24, 20, 1)$   
 624 :  $P_{22412} = (11, 27, 20, 1)$   
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 626 :  $P_{22436} = (3, 28, 20, 1)$   
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 629 :  $P_{22473} = (8, 29, 20, 1)$   
 630 :  $P_{22514} = (17, 30, 20, 1)$   
 631 :  $P_{22591} = (30, 0, 21, 1)$   
 632 :  $P_{22597} = (4, 1, 21, 1)$   
 633 :  $P_{22598} = (5, 1, 21, 1)$   
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 635 :  $P_{22637} = (12, 2, 21, 1)$   
 636 :  $P_{22661} = (4, 3, 21, 1)$   
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 639 :  $P_{22752} = (31, 5, 21, 1)$   
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 641 :  $P_{22770} = (17, 6, 21, 1)$   
 642 :  $P_{22926} = (13, 11, 21, 1)$   
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 644 :  $P_{23146} = (9, 18, 21, 1)$   
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 646 :  $P_{23172} = (3, 19, 21, 1)$   
 647 :  $P_{23200} = (31, 19, 21, 1)$   
 648 :  $P_{23236} = (3, 21, 21, 1)$   
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 651 :  $P_{23286} = (21, 22, 21, 1)$   
 652 :  $P_{23339} = (10, 24, 21, 1)$   
 653 :  $P_{23346} = (17, 24, 21, 1)$

654 :  $P_{23369} = (8, 25, 21, 1)$   
 655 :  $P_{23373} = (12, 25, 21, 1)$   
 656 :  $P_{23416} = (23, 26, 21, 1)$   
 657 :  $P_{23457} = (0, 28, 21, 1)$   
 658 :  $P_{23465} = (8, 28, 21, 1)$   
 659 :  $P_{23528} = (7, 30, 21, 1)$   
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 661 :  $P_{23590} = (5, 0, 22, 1)$   
 662 :  $P_{23723} = (10, 4, 22, 1)$   
 663 :  $P_{23744} = (31, 4, 22, 1)$   
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 665 :  $P_{23975} = (6, 12, 22, 1)$   
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 667 :  $P_{24039} = (6, 14, 22, 1)$   
 668 :  $P_{24063} = (30, 14, 22, 1)$   
 669 :  $P_{24067} = (2, 15, 22, 1)$   
 670 :  $P_{24095} = (30, 15, 22, 1)$   
 671 :  $P_{24100} = (3, 16, 22, 1)$   
 672 :  $P_{24109} = (12, 16, 22, 1)$   
 673 :  $P_{24221} = (28, 19, 22, 1)$   
 674 :  $P_{24224} = (31, 19, 22, 1)$   
 675 :  $P_{24267} = (10, 21, 22, 1)$   
 676 :  $P_{24274} = (17, 21, 22, 1)$   
 677 :  $P_{24292} = (3, 22, 22, 1)$   
 678 :  $P_{24309} = (20, 22, 22, 1)$   
 679 :  $P_{24370} = (17, 24, 22, 1)$   
 680 :  $P_{24380} = (27, 24, 22, 1)$   
 681 :  $P_{24385} = (0, 25, 22, 1)$   
 682 :  $P_{24399} = (14, 25, 22, 1)$   
 683 :  $P_{24429} = (12, 26, 22, 1)$   
 684 :  $P_{24431} = (14, 26, 22, 1)$   
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 686 :  $P_{24477} = (28, 27, 22, 1)$   
 687 :  $P_{24518} = (5, 29, 22, 1)$   
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 689 :  $P_{24579} = (2, 31, 22, 1)$   
 690 :  $P_{24597} = (20, 31, 22, 1)$   
 691 :  $P_{24617} = (8, 0, 23, 1)$   
 692 :  $P_{24653} = (12, 1, 23, 1)$   
 693 :  $P_{24654} = (13, 1, 23, 1)$   
 694 :  $P_{24776} = (7, 5, 23, 1)$   
 695 :  $P_{24813} = (12, 6, 23, 1)$   
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 697 :  $P_{24887} = (22, 8, 23, 1)$   
 698 :  $P_{24893} = (28, 8, 23, 1)$   
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 700 :  $P_{24946} = (17, 10, 23, 1)$   
 701 :  $P_{24976} = (15, 11, 23, 1)$   
 702 :  $P_{24991} = (30, 11, 23, 1)$   
 703 :  $P_{24995} = (2, 12, 23, 1)$   
 704 :  $P_{25002} = (9, 12, 23, 1)$   
 705 :  $P_{25124} = (3, 16, 23, 1)$   
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 707 :  $P_{25161} = (8, 17, 23, 1)$

708 :  $P_{25166} = (13, 17, 23, 1)$   
 709 :  $P_{25252} = (3, 20, 23, 1)$   
 710 :  $P_{25263} = (14, 20, 23, 1)$   
 711 :  $P_{25307} = (26, 21, 23, 1)$   
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 713 :  $P_{25352} = (7, 23, 23, 1)$   
 714 :  $P_{25362} = (17, 23, 23, 1)$   
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 716 :  $P_{25391} = (14, 24, 23, 1)$   
 717 :  $P_{25563} = (26, 29, 23, 1)$   
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 722 :  $P_{25691} = (26, 1, 24, 1)$   
 723 :  $P_{25692} = (27, 1, 24, 1)$   
 724 :  $P_{25857} = (0, 7, 24, 1)$   
 725 :  $P_{25887} = (30, 7, 24, 1)$   
 726 :  $P_{25976} = (23, 10, 24, 1)$   
 727 :  $P_{25978} = (25, 10, 24, 1)$   
 728 :  $P_{26027} = (10, 12, 24, 1)$   
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 730 :  $P_{26054} = (5, 13, 24, 1)$   
 731 :  $P_{26080} = (31, 13, 24, 1)$   
 732 :  $P_{26092} = (11, 14, 24, 1)$   
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 734 :  $P_{26132} = (19, 15, 24, 1)$   
 735 :  $P_{26144} = (31, 15, 24, 1)$   
 736 :  $P_{26198} = (21, 17, 24, 1)$   
 737 :  $P_{26213} = (4, 18, 24, 1)$   
 738 :  $P_{26234} = (25, 18, 24, 1)$   
 739 :  $P_{26297} = (24, 20, 24, 1)$   
 740 :  $P_{26299} = (26, 20, 24, 1)$   
 741 :  $P_{26340} = (3, 22, 24, 1)$   
 742 :  $P_{26360} = (23, 22, 24, 1)$   
 743 :  $P_{26413} = (12, 24, 24, 1)$   
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 745 :  $P_{26469} = (4, 26, 24, 1)$   
 746 :  $P_{26476} = (11, 26, 24, 1)$   
 747 :  $P_{26532} = (3, 28, 24, 1)$   
 748 :  $P_{26548} = (19, 28, 24, 1)$   
 749 :  $P_{26566} = (5, 29, 24, 1)$   
 750 :  $P_{26591} = (30, 29, 24, 1)$   
 751 :  $P_{26674} = (17, 0, 25, 1)$   
 752 :  $P_{26724} = (3, 2, 25, 1)$   
 753 :  $P_{26744} = (23, 2, 25, 1)$   
 754 :  $P_{26779} = (26, 3, 25, 1)$   
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 757 :  $P_{26879} = (30, 6, 25, 1)$   
 758 :  $P_{26883} = (2, 7, 25, 1)$   
 759 :  $P_{26893} = (12, 7, 25, 1)$   
 760 :  $P_{26931} = (18, 8, 25, 1)$   
 761 :  $P_{26936} = (23, 8, 25, 1)$

762 : $P_{26980} = (3, 10, 25, 1)$	816 : $P_{28988} = (27, 8, 27, 1)$
763 : $P_{27078} = (5, 13, 25, 1)$	817 : $P_{28992} = (31, 8, 27, 1)$
764 : $P_{27099} = (26, 13, 25, 1)$	818 : $P_{28999} = (6, 9, 27, 1)$
765 : $P_{27183} = (14, 16, 25, 1)$	819 : $P_{29015} = (22, 9, 27, 1)$
766 : $P_{27187} = (18, 16, 25, 1)$	820 : $P_{29042} = (17, 10, 27, 1)$
767 : $P_{27237} = (4, 18, 25, 1)$	821 : $P_{29049} = (24, 10, 27, 1)$
768 : $P_{27262} = (29, 18, 25, 1)$	822 : $P_{29059} = (2, 11, 27, 1)$
769 : $P_{27363} = (2, 22, 25, 1)$	823 : $P_{29088} = (31, 11, 27, 1)$
770 : $P_{27378} = (17, 22, 25, 1)$	824 : $P_{29231} = (14, 16, 27, 1)$
771 : $P_{27462} = (5, 25, 25, 1)$	825 : $P_{29245} = (28, 16, 27, 1)$
772 : $P_{27486} = (29, 25, 25, 1)$	826 : $P_{29425} = (16, 22, 27, 1)$
773 : $P_{27509} = (20, 26, 25, 1)$	827 : $P_{29430} = (21, 22, 27, 1)$
774 : $P_{27514} = (25, 26, 25, 1)$	828 : $P_{29448} = (7, 23, 27, 1)$
775 : $P_{27565} = (12, 28, 25, 1)$	829 : $P_{29463} = (22, 23, 27, 1)$
776 : $P_{27567} = (14, 28, 25, 1)$	830 : $P_{29489} = (16, 24, 27, 1)$
777 : $P_{27636} = (19, 30, 25, 1)$	831 : $P_{29492} = (19, 24, 27, 1)$
778 : $P_{27637} = (20, 30, 25, 1)$	832 : $P_{29539} = (2, 26, 27, 1)$
779 : $P_{27653} = (4, 31, 25, 1)$	833 : $P_{29549} = (12, 26, 27, 1)$
780 : $P_{27668} = (19, 31, 25, 1)$	834 : $P_{29575} = (6, 27, 27, 1)$
781 : $P_{27712} = (31, 0, 26, 1)$	835 : $P_{29597} = (28, 27, 27, 1)$
782 : $P_{27731} = (18, 1, 26, 1)$	836 : $P_{29634} = (1, 29, 27, 1)$
783 : $P_{27732} = (19, 1, 26, 1)$	837 : $P_{29645} = (12, 29, 27, 1)$
784 : $P_{27777} = (0, 3, 26, 1)$	838 : $P_{29672} = (7, 30, 27, 1)$
785 : $P_{27801} = (24, 3, 26, 1)$	839 : $P_{29684} = (19, 30, 27, 1)$
786 : $P_{27843} = (2, 5, 26, 1)$	840 : $P_{29714} = (17, 31, 27, 1)$
787 : $P_{27861} = (20, 5, 26, 1)$	841 : $P_{29748} = (19, 0, 28, 1)$
788 : $P_{27880} = (7, 6, 26, 1)$	842 : $P_{29777} = (16, 1, 28, 1)$
789 : $P_{27895} = (22, 6, 26, 1)$	843 : $P_{29778} = (17, 1, 28, 1)$
790 : $P_{27976} = (7, 9, 26, 1)$	844 : $P_{29849} = (24, 3, 28, 1)$
791 : $P_{27982} = (13, 9, 26, 1)$	845 : $P_{29868} = (11, 4, 28, 1)$
792 : $P_{28103} = (6, 13, 26, 1)$	846 : $P_{29883} = (26, 4, 28, 1)$
793 : $P_{28124} = (27, 13, 26, 1)$	847 : $P_{29905} = (16, 5, 28, 1)$
794 : $P_{28179} = (18, 15, 26, 1)$	848 : $P_{29908} = (19, 5, 28, 1)$
795 : $P_{28183} = (22, 15, 26, 1)$	849 : $P_{29931} = (10, 6, 28, 1)$
796 : $P_{28265} = (8, 18, 26, 1)$	850 : $P_{29947} = (26, 6, 28, 1)$
797 : $P_{28281} = (24, 18, 26, 1)$	851 : $P_{29965} = (12, 7, 28, 1)$
798 : $P_{28372} = (19, 21, 26, 1)$	852 : $P_{29967} = (14, 7, 28, 1)$
799 : $P_{28419} = (2, 23, 26, 1)$	853 : $P_{29990} = (5, 8, 28, 1)$
800 : $P_{28444} = (27, 23, 26, 1)$	854 : $P_{30003} = (18, 8, 28, 1)$
801 : $P_{28453} = (4, 24, 26, 1)$	855 : $P_{30028} = (11, 9, 28, 1)$
802 : $P_{28455} = (6, 24, 26, 1)$	856 : $P_{30031} = (14, 9, 28, 1)$
803 : $P_{28494} = (13, 25, 26, 1)$	857 : $P_{30236} = (27, 15, 28, 1)$
804 : $P_{28498} = (17, 25, 26, 1)$	858 : $P_{30238} = (29, 15, 28, 1)$
805 : $P_{28581} = (4, 28, 26, 1)$	859 : $P_{30291} = (18, 17, 28, 1)$
806 : $P_{28594} = (17, 28, 26, 1)$	860 : $P_{30300} = (27, 17, 28, 1)$
807 : $P_{28629} = (20, 29, 26, 1)$	861 : $P_{30358} = (21, 19, 28, 1)$
808 : $P_{28640} = (31, 29, 26, 1)$	862 : $P_{30366} = (29, 19, 28, 1)$
809 : $P_{28681} = (8, 31, 26, 1)$	863 : $P_{30381} = (12, 20, 28, 1)$
810 : $P_{28699} = (26, 31, 26, 1)$	864 : $P_{30390} = (21, 20, 28, 1)$
811 : $P_{28726} = (21, 0, 27, 1)$	865 : $P_{30465} = (0, 23, 28, 1)$
812 : $P_{28769} = (0, 2, 27, 1)$	866 : $P_{30475} = (10, 23, 28, 1)$
813 : $P_{28793} = (24, 2, 27, 1)$	867 : $P_{30546} = (17, 25, 28, 1)$
814 : $P_{28834} = (1, 4, 27, 1)$	868 : $P_{30557} = (28, 25, 28, 1)$
815 : $P_{28847} = (14, 4, 27, 1)$	869 : $P_{30630} = (5, 28, 28, 1)$

870 :  $P_{30649} = (24, 28, 28, 1)$   
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 902 :  $P_{31833} = (24, 1, 30, 1)$   
 903 :  $P_{31834} = (25, 1, 30, 1)$   
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 911 :  $P_{32146} = (17, 11, 30, 1)$   
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 914 :  $P_{32306} = (17, 16, 30, 1)$   
 915 :  $P_{32311} = (22, 16, 30, 1)$

916 :  $P_{32325} = (4, 17, 30, 1)$   
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 921 :  $P_{32453} = (4, 21, 30, 1)$   
 922 :  $P_{32479} = (30, 21, 30, 1)$   
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 924 :  $P_{32500} = (19, 22, 30, 1)$   
 925 :  $P_{32661} = (20, 27, 30, 1)$   
 926 :  $P_{32663} = (22, 27, 30, 1)$   
 927 :  $P_{32675} = (2, 28, 30, 1)$   
 928 :  $P_{32685} = (12, 28, 30, 1)$   
 929 :  $P_{32716} = (11, 29, 30, 1)$   
 930 :  $P_{32736} = (31, 29, 30, 1)$   
 931 :  $P_{32821} = (20, 0, 31, 1)$   
 932 :  $P_{32950} = (21, 4, 31, 1)$   
 933 :  $P_{32960} = (31, 4, 31, 1)$   
 934 :  $P_{32974} = (13, 5, 31, 1)$   
 935 :  $P_{32979} = (18, 5, 31, 1)$   
 936 :  $P_{32994} = (1, 6, 31, 1)$   
 937 :  $P_{32997} = (4, 6, 31, 1)$   
 938 :  $P_{33029} = (4, 7, 31, 1)$   
 939 :  $P_{33045} = (20, 7, 31, 1)$   
 940 :  $P_{33137} = (16, 10, 31, 1)$   
 941 :  $P_{33139} = (18, 10, 31, 1)$   
 942 :  $P_{33154} = (1, 11, 31, 1)$   
 943 :  $P_{33175} = (22, 11, 31, 1)$   
 944 :  $P_{33244} = (27, 13, 31, 1)$   
 945 :  $P_{33246} = (29, 13, 31, 1)$   
 946 :  $P_{33325} = (12, 16, 31, 1)$   
 947 :  $P_{33328} = (15, 16, 31, 1)$   
 948 :  $P_{33377} = (0, 18, 31, 1)$   
 949 :  $P_{33389} = (12, 18, 31, 1)$   
 950 :  $P_{33520} = (15, 22, 31, 1)$   
 951 :  $P_{33534} = (29, 22, 31, 1)$   
 952 :  $P_{33554} = (17, 23, 31, 1)$   
 953 :  $P_{33559} = (22, 23, 31, 1)$   
 954 :  $P_{33582} = (13, 24, 31, 1)$   
 955 :  $P_{33592} = (23, 24, 31, 1)$   
 956 :  $P_{33688} = (23, 27, 31, 1)$   
 957 :  $P_{33714} = (17, 28, 31, 1)$   
 958 :  $P_{33718} = (21, 28, 31, 1)$   
 959 :  $P_{33777} = (16, 30, 31, 1)$   
 960 :  $P_{33788} = (27, 30, 31, 1)$

## Line Intersection Graph

	0	1	2	3
0	0	1	0	1
1	1	1	0	0
2	0	0	0	1
3	1	1	1	0

Neighbor sets in the line intersection graph:

Line 0 intersects

Line	$\ell_1$	$\ell_3$
in point	$P_0$	$P_5$

Line 1 intersects

Line	$\ell_0$	$\ell_3$
in point	$P_0$	$P_4$

Line 2 intersects

Line	$\ell_3$
in point	$P_{2082}$

Line 3 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$
in point	$P_5$	$P_4$	$P_{2082}$

The surface has 1089 points:

Too many to print.