```
interface(quiet = true) :
# graph number 3 in Table 1 on page 8 of [Chua-Kummer-St],

with(linalg) : with(simplex) :
die := rand(-100 ..100) :

#choose a cycle basis for the totally cyclic graph, define the matrix
B := array([
[1, 1, 1, 0, 0, 0, 0, 0],
[1, 0, 1, 1, 1, 0, 0, 0],
[ 0, 0, 1, 0, 1, 1, 1, 0],
[0, 0, 0, 0, 0, 0, 1, 1]]) :

#print Riemann matrix and cycle basis matrix
print(multiply(B, transpose(B)), Riemann);
print(B);

#define vector for defining linear functionals later
X := array([[x, y, z, w]]) :

#this finds the vertices in the Voronoi polytope (stored in points)
nonunique := { } :
points := { } :
for i1 in {-1, 1} do
for i2 in {-1, 1} do
for i3 in {-1, 1} do
for i4 in {-1, 1} do
for i5 in {-1, 1} do
for i6 in {-1, 1} do
for i7 in {-1, 1} do
for i8 in {-1, 1} do

M := multiply(X, multiply(B, array([[i1], [i2], [i3], [i4], [i5], [i6], [i7], [i8]])))[1, 1] :
if (member(M, points)) then nonunique := nonunique union {M} :
   else points := points union {M} : fi:
od:od:od:od:od:od:od:od:

points := points minus nonunique :
numelems(points);


    #polyts will store the different resulting Delaunay polytopes (as lists of vertices in Polymake-readable
    format)
#nums[i] will store the number of polytopes with i vertices
polyts := { } :
nums := Vector[row](16) :

#this finds the Delaunay polytopes corresponding to each vertex of the Voronoi polytope.
for i1 in {-1, 1} do
```

```
for i2 in {-1, 1} do
for i3 in {-1, 1} do
for i4 in {-1, 1} do
for i5 in {-1, 1} do
for i6 in {-1, 1} do
for i7 in {-1, 1} do
for i8 in {-1, 1} do
```

$M := multiply(X, multiply(B, array([[i1], [i2], [i3], [i4], [i5], [i6], [i7], [i8]])))[1, 1]$:

if $(member(M, points))$ **then**

$lprint(i1, i2, i3, i4, i5, i6, i7, i8)$; #which vertex the Delaunay polytope corresponds to

$sys := \{ \}$: #list of inequalities satisfied by our polytope

$j := 1 : ii := i1 : sys := sys$ **union** $\{ii * (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \geq 0, ii$
    $* (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \leq 1\}$:

$j := 2 : ii := i2 : sys := sys$ **union** $\{ii * (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \geq 0, ii$
    $* (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \leq 1\}$:

$j := 3 : ii := i3 : sys := sys$ **union** $\{ii * (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \geq 0, ii$
    $* (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \leq 1\}$:

$j := 4 : ii := i4 : sys := sys$ **union** $\{ii * (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \geq 0, ii$
    $* (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \leq 1\}$:

$j := 5 : ii := i5 : sys := sys$ **union** $\{ii * (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \geq 0, ii$
    $* (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \leq 1\}$:

$j := 6 : ii := i6 : sys := sys$ **union** $\{ii * (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \geq 0, ii$
    $* (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \leq 1\}$:

$j := 7 : ii := i7 : sys := sys$ **union** $\{ii * (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \geq 0, ii$
    $* (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \leq 1\}$:

$j := 8 : ii := i8 : sys := sys$ **union** $\{ii * (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \geq 0, ii$
    $* (B[1,j]*x + B[2,j]*y + B[3,j]*z + B[4,j]*w) \leq 1\}$:

$vertices := \{ \}$:

$lprint(sort(sys))$;

for run **from** 1 **to** 200 **do**

$vertices := vertices$ **union** $\{subs(minimize(die( )*x + die( )*y + die( )*z + die( )*w, sys), [1, x,$
    $y, z, w])\}$:

od:

$verts := nops(vertices)$:

$nums[verts] := nums[verts] + 1$:

$polyt := [nops(vertices), sort(vertices)]$:
    #a polytope is stored as the number of vertices, followed by a list of vertices in polymake readable
    format

$polyts := polyts$ **union** $\{polyt\}$:

$print(polyt)$;

$print(` `)$;

fi:

od:od:od:od:od:od:od:od:

#print all polytopes -- these can then be plugged into polymake to find out which ones they correspond to

for $polyt$ **in** $polyts$ **do**

$print(polyt)$;

$print(` `)$;

od:

#print nums, which tells us how many polytopes of each type we have. In these cases, the Delaunay polytopes with the same number of vertices which arise from the same voronoi polytope are the same.
print(nums);

=

$$\begin{bmatrix} 3 & 2 & 1 & 0 \\ 2 & 4 & 2 & 0 \\ 1 & 2 & 4 & 1 \\ 0 & 0 & 1 & 2 \end{bmatrix}, Riemann$$

$$\begin{bmatrix} 1 & 1 & 1 & 0 & 0 & 0 & 0 & 0 \\ 1 & 0 & 1 & 1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$

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```
-1, -1, -1, -1, -1, -1, -1, -1
{0 <= -w, 0 <= -x, 0 <= -y, 0 <= -z, 0 <= -w-z, 0 <= -x-y, 0 <= -y-
z, 0 <= -x-y
-z, -w <= 1, -x <= 1, -y <= 1, -z <= 1, -w-z <= 1, -x-y <= 1, -y-z
<= 1, -x-y-z
<= 1}
```

$[7, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, 0, -1, 0, -1], [1, 0, -1, 0, 0], [1, 0, 0, -1, 0],$
$[1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$

` `

```
-1, -1, -1, -1, -1, -1, -1, 1
{0 <= w, 0 <= -x, 0 <= -y, 0 <= -z, 0 <= -w-z, 0 <= -x-y, 0 <= -y-
z, 0 <= -x-y-
z, w <= 1, -x <= 1, -y <= 1, -z <= 1, -w-z <= 1, -x-y <= 1, -y-z <=
1, -x-y-z
<= 1}
```

$[5, \{[1, -1, 0, 0, 0], [1, 0, -1, 0, 0], [1, 0, 0, -1, 0], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0]\}]$

` `

```
-1, -1, -1, -1, -1, -1, 1, 1
{0 <= w, 0 <= -x, 0 <= -y, 0 <= -z, 0 <= w+z, 0 <= -x-y, 0 <= -y-z,
0 <= -x-y-z
, w <= 1, -x <= 1, -y <= 1, -z <= 1, w+z <= 1, -x-y <= 1, -y-z <=
1, -x-y-z <=
1}
```

$[7, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, 0, -1, 0, 0], [1, 0, -1, 0, 1], [1, 0, 0, -1, 1], [1,$
$0, 0, 0, 0], [1, 0, 0, 0, 1]\}]$

`` ``

-1, -1, -1, -1, -1, 1, -1, -1
{0 <= z, 0 <= -w, 0 <= -x, 0 <= -y, 0 <= -w-z, 0 <= -x-y, 0 <= -y-
z, 0 <= -x-y-
z, z <= 1, -w <= 1, -x <= 1, -y <= 1, -w-z <= 1, -x-y <= 1, -y-z <=
1, -x-y-z
<= 1}

$[7, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, 0, -1, 0, -1], [1, 0, -1, 0, 0], [1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$

`` ``

-1, -1, -1, -1, -1, 1, 1, -1
{0 <= z, 0 <= -w, 0 <= -x, 0 <= -y, 0 <= w+z, 0 <= -x-y, 0 <= -y-z,
0 <= -x-y-z
, z <= 1, -w <= 1, -x <= 1, -y <= 1, w+z <= 1, -x-y <= 1, -y-z <=
1, -x-y-z <=
1}

$[5, \{[1, -1, 0, 0, 0], [1, 0, -1, 0, 0], [1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0]\}]$

`` ``

-1, -1, -1, -1, -1, 1, 1, 1
{0 <= w, 0 <= z, 0 <= -x, 0 <= -y, 0 <= w+z, 0 <= -x-y, 0 <= -y-z,
0 <= -x-y-z,
w <= 1, z <= 1, -x <= 1, -y <= 1, w+z <= 1, -x-y <= 1, -y-z <= 1, -
x-y-z <= 1}

$[7, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, 0, -1, 0, 0], [1, 0, -1, 0, 1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1]\}]$

`` ``

-1, -1, -1, -1, 1, 1, -1, -1
{0 <= z, 0 <= -w, 0 <= -x, 0 <= -y, 0 <= -w-z, 0 <= -x-y, 0 <= y+z,
0 <= -x-y-z
, z <= 1, -w <= 1, -x <= 1, -y <= 1, -w-z <= 1, -x-y <= 1, y+z <=
1, -x-y-z <=
1}

$[6, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, -1, 0, 1, -1], [1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$

`` ``

-1, -1, -1, -1, 1, 1, 1, -1
{0 <= z, 0 <= -w, 0 <= -x, 0 <= -y, 0 <= w+z, 0 <= -x-y, 0 <= y+z,
0 <= -x-y-z,
z <= 1, -w <= 1, -x <= 1, -y <= 1, w+z <= 1, -x-y <= 1, y+z <= 1, -
x-y-z <= 1}

$[6, \{[1, -1, 0, 0, 0], [1, -1, 0, 1, -1], [1, -1, 0, 1, 0], [1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0]\}]$

`` ``

-1, -1, -1, -1, 1, 1, 1, 1

{0 <= w, 0 <= z, 0 <= -x, 0 <= -y, 0 <= w+z, 0 <= -x-y, 0 <= y+z, 0
<= -x-y-z,
w <= 1, z <= 1, -x <= 1, -y <= 1, w+z <= 1, -x-y <= 1, y+z <= 1, -
x-y-z <= 1}

$[6, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, -1, 0, 1, 0], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0,$
$\quad 0, 0, 1]\}]$

`` `

-1, -1, -1, 1, -1, -1, -1, -1
{0 <= y, 0 <= -w, 0 <= -x, 0 <= -z, 0 <= -w-z, 0 <= -x-y, 0 <= -y-
z, 0 <= -x-y-
z, y <= 1, -w <= 1, -x <= 1, -z <= 1, -w-z <= 1, -x-y <= 1, -y-z <=
1, -x-y-z
<= 1}

$[6, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, -1, 1, -1, 0], [1, 0, 0, -1, 0], [1, 0, 0, 0, -1],$
$\quad [1, 0, 0, 0, 0]\}]$

`` `

-1, -1, -1, 1, -1, -1, -1, 1
{0 <= w, 0 <= y, 0 <= -x, 0 <= -z, 0 <= -w-z, 0 <= -x-y, 0 <= -y-z,
0 <= -x-y-z
, w <= 1, y <= 1, -x <= 1, -z <= 1, -w-z <= 1, -x-y <= 1, -y-z <=
1, -x-y-z <=
1}

$[6, \{[1, -1, 0, 0, 0], [1, -1, 1, -1, 0], [1, -1, 1, -1, 1], [1, 0, 0, -1, 0], [1, 0, 0, -1, 1],$
$\quad [1, 0, 0, 0, 0]\}]$

`` `

-1, -1, -1, 1, -1, -1, 1, 1
{0 <= w, 0 <= y, 0 <= -x, 0 <= -z, 0 <= w+z, 0 <= -x-y, 0 <= -y-z,
0 <= -x-y-z,
w <= 1, y <= 1, -x <= 1, -z <= 1, w+z <= 1, -x-y <= 1, -y-z <= 1, -
x-y-z <= 1}

$[6, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, -1, 1, -1, 1], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1,$
$\quad 0, 0, 0, 1]\}]$

`` `

-1, -1, -1, 1, 1, -1, -1, -1
{0 <= y, 0 <= -w, 0 <= -x, 0 <= -z, 0 <= -w-z, 0 <= -x-y, 0 <= y+z,
0 <= -x-y-z
, y <= 1, -w <= 1, -x <= 1, -z <= 1, -w-z <= 1, -x-y <= 1, y+z <=
1, -x-y-z <=
1}

$[7, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, -1, 1, -1, 0], [1, -1, 1, 0, -1], [1, -1, 1, 0,$
$\quad 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$

`` `

-1, -1, -1, 1, 1, -1, -1, 1
{0 <= w, 0 <= y, 0 <= -x, 0 <= -z, 0 <= -w-z, 0 <= -x-y, 0 <= y+z,

```
0 <= -x-y-z,
w <= 1, y <= 1, -x <= 1, -z <= 1, -w-z <= 1, -x-y <= 1, y+z <= 1, -
x-y-z <= 1}
```

$$[5, \{[1, -1, 0, 0, 0], [1, -1, 1, -1, 0], [1, -1, 1, -1, 1], [1, -1, 1, 0, 0], [1, 0, 0, 0, 0]\}]$$

` `

```
-1, -1, -1, 1, 1, -1, 1, 1
{0 <= w, 0 <= y, 0 <= -x, 0 <= -z, 0 <= w+z, 0 <= -x-y, 0 <= y+z, 0
<= -x-y-z,
w <= 1, y <= 1, -x <= 1, -z <= 1, w+z <= 1, -x-y <= 1, y+z <= 1, -
x-y-z <= 1}
```

$$[7, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, -1, 1, -1, 1], [1, -1, 1, 0, 0], [1, -1, 1, 0, 1],$$
$$[1, 0, 0, 0, 0], [1, 0, 0, 0, 1]\}]$$

` `

```
-1, -1, -1, 1, 1, 1, -1, -1
{0 <= y, 0 <= z, 0 <= -w, 0 <= -x, 0 <= -w-z, 0 <= -x-y, 0 <= y+z,
0 <= -x-y-z,
y <= 1, z <= 1, -w <= 1, -x <= 1, -w-z <= 1, -x-y <= 1, y+z <= 1, -
x-y-z <= 1}
```

$$[7, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, -1, 0, 1, -1], [1, -1, 1, 0, -1], [1, -1, 1, 0,$$
$$0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$$

` `

```
-1, -1, -1, 1, 1, 1, 1, -1
{0 <= y, 0 <= z, 0 <= -w, 0 <= -x, 0 <= w+z, 0 <= -x-y, 0 <= y+z, 0
<= -x-y-z,
y <= 1, z <= 1, -w <= 1, -x <= 1, w+z <= 1, -x-y <= 1, y+z <= 1, -
x-y-z <= 1}
```

$$[5, \{[1, -1, 0, 0, 0], [1, -1, 0, 1, -1], [1, -1, 0, 1, 0], [1, -1, 1, 0, 0], [1, 0, 0, 0, 0]\}]$$

` `

```
-1, -1, -1, 1, 1, 1, 1, 1
{0 <= w, 0 <= y, 0 <= z, 0 <= -x, 0 <= w+z, 0 <= -x-y, 0 <= y+z, 0
<= -x-y-z, w
<= 1, y <= 1, z <= 1, -x <= 1, w+z <= 1, -x-y <= 1, y+z <= 1, -x-y-
z <= 1}
```

$$[7, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, -1, 0, 1, 0], [1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1,$$
$$0, 0, 0, 0], [1, 0, 0, 0, 1]\}]$$

` `

```
-1, -1, 1, -1, 1, 1, -1, -1
{0 <= z, 0 <= -w, 0 <= -x, 0 <= -y, 0 <= -w-z, 0 <= -x-y, 0 <= y+z,
0 <= x+y+z,
z <= 1, -w <= 1, -x <= 1, -y <= 1, -w-z <= 1, -x-y <= 1, y+z <= 1,
x+y+z <= 1}
```

$$[5, \{[1, -1, 0, 1, -1], [1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1]\}]$$

` `

```
-1, -1, 1, -1, 1, 1, 1, -1
{0 <= z, 0 <= -w, 0 <= -x, 0 <= -y, 0 <= w+z, 0 <= -x-y, 0 <= y+z,
0 <= x+y+z,
z <= 1, -w <= 1, -x <= 1, -y <= 1, w+z <= 1, -x-y <= 1, y+z <= 1,
x+y+z <= 1}
```

$$[7, \{[1, -1, 0, 1, -1], [1, -1, 0, 1, 0], [1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0],$$
$$[1, 0, 0, 1, -1], [1, 0, 0, 1, 0]\}]$$

` `

```
-1, -1, 1, -1, 1, 1, 1, 1
{0 <= w, 0 <= z, 0 <= -x, 0 <= -y, 0 <= w+z, 0 <= -x-y, 0 <= y+z, 0
<= x+y+z, w
<= 1, z <= 1, -x <= 1, -y <= 1, w+z <= 1, -x-y <= 1, y+z <= 1, x+y+
z <= 1}
```

$$[5, \{[1, -1, 0, 1, 0], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0, 1, 0]\}]$$

` `

```
-1, -1, 1, 1, 1, 1, -1, -1
{0 <= y, 0 <= z, 0 <= -w, 0 <= -x, 0 <= -w-z, 0 <= -x-y, 0 <= y+z,
0 <= x+y+z,
y <= 1, z <= 1, -w <= 1, -x <= 1, -w-z <= 1, -x-y <= 1, y+z <= 1,
x+y+z <= 1}
```

$$[6, \{[1, -1, 0, 1, -1], [1, -1, 1, 0, -1], [1, -1, 1, 0, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0],$$
$$[1, 0, 0, 1, -1]\}]$$

` `

```
-1, -1, 1, 1, 1, 1, 1, -1
{0 <= y, 0 <= z, 0 <= -w, 0 <= -x, 0 <= w+z, 0 <= -x-y, 0 <= y+z, 0
<= x+y+z, y
<= 1, z <= 1, -w <= 1, -x <= 1, w+z <= 1, -x-y <= 1, y+z <= 1, x+y+
z <= 1}
```

$$[6, \{[1, -1, 0, 1, -1], [1, -1, 0, 1, 0], [1, -1, 1, 0, 0], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1,$$
$$0, 0, 1, 0]\}]$$

` `

```
-1, -1, 1, 1, 1, 1, 1, 1
{0 <= w, 0 <= y, 0 <= z, 0 <= -x, 0 <= w+z, 0 <= -x-y, 0 <= y+z, 0
<= x+y+z, w
<= 1, y <= 1, z <= 1, -x <= 1, w+z <= 1, -x-y <= 1, y+z <= 1, x+y+z
<= 1}
```

$$[6, \{[1, -1, 0, 1, 0], [1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0,$$
$$1, 0]\}]$$

` `

```
-1, 1, -1, -1, -1, -1, -1, -1
{0 <= x, 0 <= -w, 0 <= -y, 0 <= -z, 0 <= -w-z, 0 <= -x-y, 0 <= -y-
z, 0 <= -x-y-
z, x <= 1, -w <= 1, -y <= 1, -z <= 1, -w-z <= 1, -x-y <= 1, -y-z <=
1, -x-y-z
<= 1}
```

$[7, \{[1, 0, -1, 0, -1], [1, 0, -1, 0, 0], [1, 0, 0, -1, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1,$
$1, -1, 0, -1], [1, 1, -1, 0, 0]\}]$

` `

```
-1,  1,  -1,  -1,  -1,  -1,  -1,  1
{0 <= w,  0 <= x,  0 <= -y,  0 <= -z,  0 <= -w-z,  0 <= -x-y,  0 <= -y-z,
0 <= -x-y-z
, w <= 1,  x <= 1,  -y <= 1,  -z <= 1,  -w-z <= 1,  -x-y <= 1,  -y-z <=
1,  -x-y-z <=
1}
```

$[5, \{[1, 0, -1, 0, 0], [1, 0, 0, -1, 0], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 1, -1, 0, 0]\}]$

` `

```
-1,  1,  -1,  -1,  -1,  -1,  1,  1
{0 <= w,  0 <= x,  0 <= -y,  0 <= -z,  0 <= w+z,  0 <= -x-y,  0 <= -y-z,
0 <= -x-y-z,
w <= 1,  x <= 1,  -y <= 1,  -z <= 1,  w+z <= 1,  -x-y <= 1,  -y-z <= 1,  -
x-y-z <= 1}
```

$[7, \{[1, 0, -1, 0, 0], [1, 0, -1, 0, 1], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1,$
$-1, 0, 0], [1, 1, -1, 0, 1]\}]$

` `

```
-1,  1,  -1,  -1,  -1,  1,  -1,  -1
{0 <= x,  0 <= z,  0 <= -w,  0 <= -y,  0 <= -w-z,  0 <= -x-y,  0 <= -y-z,
0 <= -x-y-z
, x <= 1,  z <= 1,  -w <= 1,  -y <= 1,  -w-z <= 1,  -x-y <= 1,  -y-z <=
1,  -x-y-z <=
1}
```

$[7, \{[1, 0, -1, 0, -1], [1, 0, -1, 0, 0], [1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0],$
$[1, 1, -1, 0, -1], [1, 1, -1, 0, 0]\}]$

` `

```
-1,  1,  -1,  -1,  -1,  1,  1,  -1
{0 <= x,  0 <= z,  0 <= -w,  0 <= -y,  0 <= w+z,  0 <= -x-y,  0 <= -y-z,
0 <= -x-y-z,
x <= 1,  z <= 1,  -w <= 1,  -y <= 1,  w+z <= 1,  -x-y <= 1,  -y-z <= 1,  -
x-y-z <= 1}
```

$[5, \{[1, 0, -1, 0, 0], [1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 1, -1, 0, 0]\}]$

` `

```
-1,  1,  -1,  -1,  -1,  1,  1,  1
{0 <= w,  0 <= x,  0 <= z,  0 <= -y,  0 <= w+z,  0 <= -x-y,  0 <= -y-z,  0
<= -x-y-z,
w <= 1,  x <= 1,  z <= 1,  -y <= 1,  w+z <= 1,  -x-y <= 1,  -y-z <= 1,  -
x-y-z <= 1}
```

$[7, \{[1, 0, -1, 0, 0], [1, 0, -1, 0, 1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1,$
$-1, 0, 0], [1, 1, -1, 0, 1]\}]$

` `

-1, 1, 1, -1, -1, 1, -1, -1
{0 <= x, 0 <= z, 0 <= -w, 0 <= -y, 0 <= -w-z, 0 <= -x-y, 0 <= -y-z,
0 <= x+y+z,
x <= 1, z <= 1, -w <= 1, -y <= 1, -w-z <= 1, -x-y <= 1, -y-z <= 1,
x+y+z <= 1}

$[6, \{[1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 1, -1, 0, -1], [1, 1, -1, 0, 0],$
$\quad [1, 1, -1, 1, -1]\}]$

`` `

-1, 1, 1, -1, -1, 1, 1, -1
{0 <= x, 0 <= z, 0 <= -w, 0 <= -y, 0 <= w+z, 0 <= -x-y, 0 <= -y-z,
0 <= x+y+z,
x <= 1, z <= 1, -w <= 1, -y <= 1, w+z <= 1, -x-y <= 1, -y-z <= 1,
x+y+z <= 1}

$[6, \{[1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 1, -1, 0, 0], [1, 1, -1, 1, -1],$
$\quad [1, 1, -1, 1, 0]\}]$

`` `

-1, 1, 1, -1, -1, 1, 1, 1
{0 <= w, 0 <= x, 0 <= z, 0 <= -y, 0 <= w+z, 0 <= -x-y, 0 <= -y-z, 0
<= x+y+z, w
<= 1, x <= 1, z <= 1, -y <= 1, w+z <= 1, -x-y <= 1, -y-z <= 1, x+y+
z <= 1}

$[6, \{[1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1, -1, 0, 0], [1, 1, -1, 0, 1], [1, 1,$
$\quad -1, 1, 0]\}]$

`` `

-1, 1, 1, -1, 1, 1, -1, -1
{0 <= x, 0 <= z, 0 <= -w, 0 <= -y, 0 <= -w-z, 0 <= -x-y, 0 <= y+z,
0 <= x+y+z,
x <= 1, z <= 1, -w <= 1, -y <= 1, -w-z <= 1, -x-y <= 1, y+z <= 1,
x+y+z <= 1}

$[5, \{[1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 1, -1, 1, -1]\}]$

`` `

-1, 1, 1, -1, 1, 1, 1, -1
{0 <= x, 0 <= z, 0 <= -w, 0 <= -y, 0 <= w+z, 0 <= -x-y, 0 <= y+z, 0
<= x+y+z, x
<= 1, z <= 1, -w <= 1, -y <= 1, w+z <= 1, -x-y <= 1, y+z <= 1, x+y+
z <= 1}

$[7, \{[1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 0, 1, 0], [1, 1,$
$\quad -1, 1, -1], [1, 1, -1, 1, 0]\}]$

`` `

-1, 1, 1, -1, 1, 1, 1, 1
{0 <= w, 0 <= x, 0 <= z, 0 <= -y, 0 <= w+z, 0 <= -x-y, 0 <= y+z, 0
<= x+y+z, w
<= 1, x <= 1, z <= 1, -y <= 1, w+z <= 1, -x-y <= 1, y+z <= 1, x+y+z
<= 1}

$[5, \{[1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0, 1, 0], [1, 1, -1, 1, 0]\}]$

` `

```
1, -1, -1, 1, -1, -1, -1, -1
{0 <= y, 0 <= -w, 0 <= -x, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= -y-z,
0 <= -x-y-z
, y <= 1, -w <= 1, -x <= 1, -z <= 1, -w-z <= 1, x+y <= 1, -y-z <=
1, -x-y-z <=
1}
```

$[5, \{[1, -1, 1, -1, 0], [1, 0, 0, -1, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0]\}]$

` `

```
1, -1, -1, 1, -1, -1, -1, 1
{0 <= w, 0 <= y, 0 <= -x, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= -y-z,
0 <= -x-y-z,
w <= 1, y <= 1, -x <= 1, -z <= 1, -w-z <= 1, x+y <= 1, -y-z <= 1, -
x-y-z <= 1}
```

$[7, \{[1, -1, 1, -1, 0], [1, -1, 1, -1, 1], [1, 0, 0, -1, 0], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0],$
$[1, 0, 1, -1, 0], [1, 0, 1, -1, 1]\}]$

` `

```
1, -1, -1, 1, -1, -1, 1, 1
{0 <= w, 0 <= y, 0 <= -x, 0 <= -z, 0 <= w+z, 0 <= x+y, 0 <= -y-z, 0
<= -x-y-z,
w <= 1, y <= 1, -x <= 1, -z <= 1, w+z <= 1, x+y <= 1, -y-z <= 1, -
x-y-z <= 1}
```

$[5, \{[1, -1, 1, -1, 1], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, -1, 1]\}]$

` `

```
1, -1, -1, 1, 1, -1, -1, -1
{0 <= y, 0 <= -w, 0 <= -x, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= y+z,
0 <= -x-y-z,
y <= 1, -w <= 1, -x <= 1, -z <= 1, -w-z <= 1, x+y <= 1, y+z <= 1, -
x-y-z <= 1}
```

$[6, \{[1, -1, 1, -1, 0], [1, -1, 1, 0, -1], [1, -1, 1, 0, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0],$
$[1, 0, 1, -1, 0]\}]$

` `

```
1, -1, -1, 1, 1, -1, -1, 1
{0 <= w, 0 <= y, 0 <= -x, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= y+z, 0
<= -x-y-z,
w <= 1, y <= 1, -x <= 1, -z <= 1, -w-z <= 1, x+y <= 1, y+z <= 1, -
x-y-z <= 1}
```

$[6, \{[1, -1, 1, -1, 0], [1, -1, 1, -1, 1], [1, -1, 1, 0, 0], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0],$
$[1, 0, 1, -1, 1]\}]$

` `

```
1, -1, -1, 1, 1, -1, 1, 1
{0 <= w, 0 <= y, 0 <= -x, 0 <= -z, 0 <= w+z, 0 <= x+y, 0 <= y+z, 0
<= -x-y-z, w
```

<= 1, y <= 1, -x <= 1, -z <= 1, w+z <= 1, x+y <= 1, y+z <= 1, -x-y-z <= 1}

$$[6, \{[1, -1, 1, -1, 1], [1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, -1, 1]\}]$$

``

1, -1, 1, 1, 1, -1, -1, -1
{0 <= y, 0 <= -w, 0 <= -x, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= y+z, 0 <= x+y+z,
y <= 1, -w <= 1, -x <= 1, -z <= 1, -w-z <= 1, x+y <= 1, y+z <= 1, x+y+z <= 1}

$$[7, \{[1, -1, 1, 0, -1], [1, -1, 1, 0, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, 0, -1], [1, 0, 1, 0, 0]\}]$$

``

1, -1, 1, 1, 1, -1, -1, 1
{0 <= w, 0 <= y, 0 <= -x, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= y+z, 0 <= x+y+z, w
<= 1, y <= 1, -x <= 1, -z <= 1, -w-z <= 1, x+y <= 1, y+z <= 1, x+y+z <= 1}

$$[5, \{[1, -1, 1, 0, 0], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, -1, 1], [1, 0, 1, 0, 0]\}]$$

``

1, -1, 1, 1, 1, -1, 1, 1
{0 <= w, 0 <= y, 0 <= -x, 0 <= -z, 0 <= w+z, 0 <= x+y, 0 <= y+z, 0 <= x+y+z, w
<= 1, y <= 1, -x <= 1, -z <= 1, w+z <= 1, x+y <= 1, y+z <= 1, x+y+z <= 1}

$$[7, \{[1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, -1, 1], [1, 0, 1, 0, 0], [1, 0, 1, 0, 1]\}]$$

``

1, -1, 1, 1, 1, 1, -1, -1
{0 <= y, 0 <= z, 0 <= -w, 0 <= -x, 0 <= -w-z, 0 <= x+y, 0 <= y+z, 0 <= x+y+z, y
<= 1, z <= 1, -w <= 1, -x <= 1, -w-z <= 1, x+y <= 1, y+z <= 1, x+y+z <= 1}

$$[7, \{[1, -1, 1, 0, -1], [1, -1, 1, 0, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 1, 0, -1], [1, 0, 1, 0, 0]\}]$$

``

1, -1, 1, 1, 1, 1, 1, -1
{0 <= y, 0 <= z, 0 <= -w, 0 <= -x, 0 <= w+z, 0 <= x+y, 0 <= y+z, 0 <= x+y+z, y
<= 1, z <= 1, -w <= 1, -x <= 1, w+z <= 1, x+y <= 1, y+z <= 1, x+y+z <= 1}

$$[5, \{[1, -1, 1, 0, 0], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 0, 1, 0], [1, 0, 1, 0, 0]\}]$$

``

1, -1, 1, 1, 1, 1, 1, 1
{0 <= w, 0 <= y, 0 <= z, 0 <= -x, 0 <= w+z, 0 <= x+y, 0 <= y+z, 0
<= x+y+z, w
<= 1, y <= 1, z <= 1, -x <= 1, w+z <= 1, x+y <= 1, y+z <= 1, x+y+z
<= 1}

$[7, \{[1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0, 1, 0], [1, 0, 1, 0, 0], [1, 0, 1, 0, 1]\}]$

` `

1, 1, -1, -1, -1, -1, -1, -1
{0 <= x, 0 <= -w, 0 <= -y, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= -y-z,
0 <= -x-y-z
, x <= 1, -w <= 1, -y <= 1, -z <= 1, -w-z <= 1, x+y <= 1, -y-z <=
1, -x-y-z <=
1}

$[6, \{[1, 0, 0, -1, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 1, -1, 0, -1], [1, 1, -1, 0, 0], [1, 1, 0, -1, 0]\}]$

` `

1, 1, -1, -1, -1, -1, -1, 1
{0 <= w, 0 <= x, 0 <= -y, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= -y-z,
0 <= -x-y-z,
w <= 1, x <= 1, -y <= 1, -z <= 1, -w-z <= 1, x+y <= 1, -y-z <= 1, -
x-y-z <= 1}

$[6, \{[1, 0, 0, -1, 0], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 1, -1, 0, 0], [1, 1, 0, -1, 0], [1, 1, 0, -1, 1]\}]$

` `

1, 1, -1, -1, -1, -1, 1, 1
{0 <= w, 0 <= x, 0 <= -y, 0 <= -z, 0 <= w+z, 0 <= x+y, 0 <= -y-z, 0
<= -x-y-z,
w <= 1, x <= 1, -y <= 1, -z <= 1, w+z <= 1, x+y <= 1, -y-z <= 1, -
x-y-z <= 1}

$[6, \{[1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1, -1, 0, 0], [1, 1, -1, 0, 1], [1, 1, 0, -1, 1]\}]$

` `

1, 1, -1, 1, -1, -1, -1, -1
{0 <= x, 0 <= y, 0 <= -w, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= -y-z,
0 <= -x-y-z,
x <= 1, y <= 1, -w <= 1, -z <= 1, -w-z <= 1, x+y <= 1, -y-z <= 1, -
x-y-z <= 1}

$[5, \{[1, 0, 0, -1, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 1, 0, -1, 0]\}]$

` `

1, 1, -1, 1, -1, -1, -1, 1
{0 <= w, 0 <= x, 0 <= y, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= -y-z, 0
<= -x-y-z,
w <= 1, x <= 1, y <= 1, -z <= 1, -w-z <= 1, x+y <= 1, -y-z <= 1, -
x-y-z <= 1}

[7, {[1, 0, 0, −1, 0], [1, 0, 0, −1, 1], [1, 0, 0, 0, 0], [1, 0, 1, −1, 0], [1, 0, 1, −1, 1], [1, 1, 0, −1, 0], [1, 1, 0, −1, 1]}]

` `

```
1,  1,  -1,  1,  -1,  -1,  1,  1
{0 <= w,  0 <= x,  0 <= y,  0 <= -z,  0 <= w+z,  0 <= x+y,  0 <= -y-z,  0
<= -x-y-z,  w
<= 1,  x <= 1,  y <= 1,  -z <= 1,  w+z <= 1,  x+y <= 1,  -y-z <= 1,  -x-y-
z <= 1}
```

[5, {[1, 0, 0, −1, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, −1, 1], [1, 1, 0, −1, 1]}]

` `

```
1,  1,  1,  -1,  -1,  -1,  -1,  -1
{0 <= x,  0 <= -w,  0 <= -y,  0 <= -z,  0 <= -w-z,  0 <= x+y,  0 <= -y-z,
0 <= x+y+z,
x <= 1,  -w <= 1,  -y <= 1,  -z <= 1,  -w-z <= 1,  x+y <= 1,  -y-z <= 1,
x+y+z <= 1}
```

[7, {[1, 0, 0, 0, −1], [1, 0, 0, 0, 0], [1, 1, −1, 0, −1], [1, 1, −1, 0, 0], [1, 1, 0, −1, 0], [1, 1, 0, 0, −1], [1, 1, 0, 0, 0]}]

` `

```
1,  1,  1,  -1,  -1,  -1,  -1,  1
{0 <= w,  0 <= x,  0 <= -y,  0 <= -z,  0 <= -w-z,  0 <= x+y,  0 <= -y-z,
0 <= x+y+z,
w <= 1,  x <= 1,  -y <= 1,  -z <= 1,  -w-z <= 1,  x+y <= 1,  -y-z <= 1,
x+y+z <= 1}
```

[5, {[1, 0, 0, 0, 0], [1, 1, −1, 0, 0], [1, 1, 0, −1, 0], [1, 1, 0, −1, 1], [1, 1, 0, 0, 0]}]

` `

```
1,  1,  1,  -1,  -1,  -1,  1,  1
{0 <= w,  0 <= x,  0 <= -y,  0 <= -z,  0 <= w+z,  0 <= x+y,  0 <= -y-z,  0
<= x+y+z,  w
<= 1,  x <= 1,  -y <= 1,  -z <= 1,  w+z <= 1,  x+y <= 1,  -y-z <= 1,  x+y+
z <= 1}
```

[7, {[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1, −1, 0, 0], [1, 1, −1, 0, 1], [1, 1, 0, −1, 1], [1, 1, 0, 0, 0], [1, 1, 0, 0, 1]}]

` `

```
1,  1,  1,  -1,  -1,  1,  -1,  -1
{0 <= x,  0 <= z,  0 <= -w,  0 <= -y,  0 <= -w-z,  0 <= x+y,  0 <= -y-z,
0 <= x+y+z,
x <= 1,  z <= 1,  -w <= 1,  -y <= 1,  -w-z <= 1,  x+y <= 1,  -y-z <= 1,
x+y+z <= 1}
```

[7, {[1, 0, 0, 0, −1], [1, 0, 0, 0, 0], [1, 1, −1, 0, −1], [1, 1, −1, 0, 0], [1, 1, −1, 1, −1], [1, 1, 0, 0, −1], [1, 1, 0, 0, 0]}]

` `

```
1,  1,  1,  -1,  -1,  1,  1,  -1
{0 <= x,  0 <= z,  0 <= -w,  0 <= -y,  0 <= w+z,  0 <= x+y,  0 <= -y-z,  0
```

```
<= x+y+z, x
<= 1, z <= 1, -w <= 1, -y <= 1, w+z <= 1, x+y <= 1, -y-z <= 1, x+y+
z <= 1}
```

$$[5, \{[1, 0, 0, 0, 0], [1, 1, -1, 0, 0], [1, 1, -1, 1, -1], [1, 1, -1, 1, 0], [1, 1, 0, 0, 0]\}]$$

`` ` ``

```
1, 1, 1, -1, -1, 1, 1, 1
{0 <= w, 0 <= x, 0 <= z, 0 <= -y, 0 <= w+z, 0 <= x+y, 0 <= -y-z, 0
<= x+y+z, w
<= 1, x <= 1, z <= 1, -y <= 1, w+z <= 1, x+y <= 1, -y-z <= 1, x+y+z
<= 1}
```

$$[7, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1, -1, 0, 0], [1, 1, -1, 0, 1], [1, 1, -1, 1, 0], [1, 1, 0,$$
$$0, 0], [1, 1, 0, 0, 1]\}]$$

`` ` ``

```
1, 1, 1, -1, 1, 1, -1, -1
{0 <= x, 0 <= z, 0 <= -w, 0 <= -y, 0 <= -w-z, 0 <= x+y, 0 <= y+z, 0
<= x+y+z, x
<= 1, z <= 1, -w <= 1, -y <= 1, -w-z <= 1, x+y <= 1, y+z <= 1, x+y+
z <= 1}
```

$$[6, \{[1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 1, -1, 1, -1], [1, 1, 0, 0, -1], [1,$$
$$1, 0, 0, 0]\}]$$

`` ` ``

```
1, 1, 1, -1, 1, 1, 1, -1
{0 <= x, 0 <= z, 0 <= -w, 0 <= -y, 0 <= w+z, 0 <= x+y, 0 <= y+z, 0
<= x+y+z, x
<= 1, z <= 1, -w <= 1, -y <= 1, w+z <= 1, x+y <= 1, y+z <= 1, x+y+z
<= 1}
```

$$[6, \{[1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 0, 1, 0], [1, 1, -1, 1, -1], [1, 1, -1, 1, 0], [1, 1,$$
$$0, 0, 0]\}]$$

`` ` ``

```
1, 1, 1, -1, 1, 1, 1, 1
{0 <= w, 0 <= x, 0 <= z, 0 <= -y, 0 <= w+z, 0 <= x+y, 0 <= y+z, 0
<= x+y+z, w
<= 1, x <= 1, z <= 1, -y <= 1, w+z <= 1, x+y <= 1, y+z <= 1, x+y+z
<= 1}
```

$$[6, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0, 1, 0], [1, 1, -1, 1, 0], [1, 1, 0, 0, 0], [1, 1, 0, 0, 1]\}]$$

`` ` ``

```
1, 1, 1, 1, -1, -1, -1, -1
{0 <= x, 0 <= y, 0 <= -w, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= -y-z,
0 <= x+y+z,
x <= 1, y <= 1, -w <= 1, -z <= 1, -w-z <= 1, x+y <= 1, -y-z <= 1,
x+y+z <= 1}
```

$$[6, \{[1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 1, 0, -1, 0], [1, 1, 0, 0, -1], [1, 1,$$
$$0, 0, 0]\}]$$

1, 1, 1, 1, -1, -1, -1, 1
{0 <= w, 0 <= x, 0 <= y, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= -y-z, 0
<= x+y+z, w
<= 1, x <= 1, y <= 1, -z <= 1, -w-z <= 1, x+y <= 1, -y-z <= 1, x+y+
z <= 1}

$[6, \{[1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, -1, 1], [1, 1, 0, -1, 0], [1, 1, 0, -1, 1], [1, 1,$
$0, 0, 0]\}]$

1, 1, 1, 1, -1, -1, 1, 1
{0 <= w, 0 <= x, 0 <= y, 0 <= -z, 0 <= w+z, 0 <= x+y, 0 <= -y-z, 0
<= x+y+z, w
<= 1, x <= 1, y <= 1, -z <= 1, w+z <= 1, x+y <= 1, -y-z <= 1, x+y+z
<= 1}

$[6, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, -1, 1], [1, 1, 0, -1, 1], [1, 1, 0, 0, 0], [1, 1, 0, 0,$
$1]\}]$

1, 1, 1, 1, 1, -1, -1, -1
{0 <= x, 0 <= y, 0 <= -w, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= y+z, 0
<= x+y+z, x
<= 1, y <= 1, -w <= 1, -z <= 1, -w-z <= 1, x+y <= 1, y+z <= 1, x+y+
z <= 1}

$[7, \{[1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, 0, -1], [1, 0, 1, 0, 0], [1, 1, 0,$
$0, -1], [1, 1, 0, 0, 0]\}]$

1, 1, 1, 1, 1, -1, -1, 1
{0 <= w, 0 <= x, 0 <= y, 0 <= -z, 0 <= -w-z, 0 <= x+y, 0 <= y+z, 0
<= x+y+z, w
<= 1, x <= 1, y <= 1, -z <= 1, -w-z <= 1, x+y <= 1, y+z <= 1, x+y+z
<= 1}

$[5, \{[1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, -1, 1], [1, 0, 1, 0, 0], [1, 1, 0, 0, 0]\}]$

1, 1, 1, 1, 1, -1, 1, 1
{0 <= w, 0 <= x, 0 <= y, 0 <= -z, 0 <= w+z, 0 <= x+y, 0 <= y+z, 0
<= x+y+z, w
<= 1, x <= 1, y <= 1, -z <= 1, w+z <= 1, x+y <= 1, y+z <= 1, x+y+z
<= 1}

$[7, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, -1, 1], [1, 0, 1, 0, 0], [1, 0, 1, 0, 1], [1, 1, 0, 0, 0],$
$[1, 1, 0, 0, 1]\}]$

1, 1, 1, 1, 1, 1, -1, -1
{0 <= x, 0 <= y, 0 <= z, 0 <= -w, 0 <= -w-z, 0 <= x+y, 0 <= y+z, 0
<= x+y+z, x
<= 1, y <= 1, z <= 1, -w <= 1, -w-z <= 1, x+y <= 1, y+z <= 1, x+y+z

`<= 1}`

$[7, \{[1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 1, 0, -1], [1, 0, 1, 0, 0], [1, 1, 0, 0, -1], [1, 1, 0, 0, 0]\}]$

` `

```
1,  1,  1,  1,  1,  1,  1,  -1
{0 <= x,  0 <= y,  0 <= z,  0 <= -w,  0 <= w+z,  0 <= x+y,  0 <= y+z,  0
<= x+y+z,  x
<= 1,  y <= 1,  z <= 1,  -w <= 1,  w+z <= 1,  x+y <= 1,  y+z <= 1,  x+y+z
<= 1}
```

$[5, \{[1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 0, 1, 0], [1, 0, 1, 0, 0], [1, 1, 0, 0, 0]\}]$

` `

```
1,  1,  1,  1,  1,  1,  1,  1
{0 <= w,  0 <= x,  0 <= y,  0 <= z,  0 <= w+z,  0 <= x+y,  0 <= y+z,  0 <=
x+y+z,  w <=
1,  x <= 1,  y <= 1,  z <= 1,  w+z <= 1,  x+y <= 1,  y+z <= 1,  x+y+z <=
1}
```

$[7, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0, 1, 0], [1, 0, 1, 0, 0], [1, 0, 1, 0, 1], [1, 1, 0, 0, 0], [1, 1, 0, 0, 1]\}]$

` `

$[5, \{[1, -1, 0, 0, 0], [1, -1, 0, 1, -1], [1, -1, 0, 1, 0], [1, -1, 1, 0, 0], [1, 0, 0, 0, 0]\}]$

$[5, \{[1, -1, 0, 0, 0], [1, -1, 1, -1, 0], [1, -1, 1, -1, 1], [1, -1, 1, 0, 0], [1, 0, 0, 0, 0]\}]$

$[5, \{[1, -1, 0, 0, 0], [1, 0, -1, 0, 0], [1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0]\}]$

$[5, \{[1, -1, 0, 0, 0], [1, 0, -1, 0, 0], [1, 0, 0, -1, 0], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0]\}]$

$[5, \{[1, -1, 0, 1, -1], [1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1]\}]$

$[5, \{[1, -1, 0, 1, 0], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0, 1, 0]\}]$

$[5, \{[1, -1, 1, -1, 0], [1, 0, 0, -1, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0]\}]$

$[5, \{[1, -1, 1, -1, 1], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, -1, 1]\}]$

$[5, \{[1, -1, 1, 0, 0], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 0, 1, 0], [1, 0, 1, 0, 0]\}]$

$[5, \{[1, -1, 1, 0, 0], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, -1, 1], [1, 0, 1, 0, 0]\}]$

$[5, \{[1, 0, -1, 0, 0], [1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 1, -1, 0, 0]\}]$

$[5, \{[1, 0, -1, 0, 0], [1, 0, 0, -1, 0], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 1, -1, 0, 0]\}]$

$[5, \{[1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 1, -1, 1, -1]\}]$

$[5, \{[1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0, 1, 0], [1, 1, -1, 1, 0]\}]$

$[5, \{[1, 0, 0, -1, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 1, 0, -1, 0]\}]$

$[5, \{[1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, -1, 1], [1, 1, 0, -1, 1]\}]$

$[5, \{[1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 0, 1, 0], [1, 0, 1, 0, 0], [1, 1, 0, 0, 0]\}]$

$[5, \{[1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, -1, 1], [1, 0, 1, 0, 0], [1, 1, 0, 0, 0]\}]$

$[5, \{[1, 0, 0, 0, 0], [1, 1, -1, 0, 0], [1, 1, -1, 1, -1], [1, 1, -1, 1, 0], [1, 1, 0, 0, 0]\}]$

$[5, \{[1, 0, 0, 0, 0], [1, 1, -1, 0, 0], [1, 1, 0, -1, 0], [1, 1, 0, -1, 1], [1, 1, 0, 0, 0]\}]$

$[6, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, -1, 0, 1, -1], [1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$

$[6, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, -1, 1, -1, 0], [1, 0, 0, -1, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$

$[6, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, -1, 0, 1, 0], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1]\}]$

$[6, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, -1, 1, -1, 1], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1]\}]$

$[6, \{[1, -1, 0, 0, 0], [1, -1, 0, 1, -1], [1, -1, 0, 1, 0], [1, 0, -1, 1, -1], [1, 0, -1, 1, 0],$
$[1, 0, 0, 0, 0]\}]$

$[6, \{[1, -1, 0, 0, 0], [1, -1, 1, -1, 0], [1, -1, 1, -1, 1], [1, 0, 0, -1, 0], [1, 0, 0, -1, 1],$
$[1, 0, 0, 0, 0]\}]$

$[6, \{[1, -1, 0, 1, -1], [1, -1, 0, 1, 0], [1, -1, 1, 0, 0], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1,$
$0, 0, 1, 0]\}]$

$[6, \{[1, -1, 0, 1, -1], [1, -1, 1, 0, -1], [1, -1, 1, 0, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0],$
$[1, 0, 0, 1, -1]\}]$

$[6, \{[1, -1, 0, 1, 0], [1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0,$
$1, 0]\}]$

$[6, \{[1, -1, 1, -1, 0], [1, -1, 1, -1, 1], [1, -1, 1, 0, 0], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0],$
$[1, 0, 1, -1, 1]\}]$

$[6, \{[1, -1, 1, -1, 0], [1, -1, 1, 0, -1], [1, -1, 1, 0, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0],$
$[1, 0, 1, -1, 0]\}]$

$[6, \{[1, -1, 1, -1, 1], [1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0,$
$1, -1, 1]\}]$

$[6, \{[1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 1, -1, 0, 0], [1, 1, -1, 1, -1],$
$[1, 1, -1, 1, 0]\}]$

$[6, \{[1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 1, -1, 0, -1], [1, 1, -1, 0, 0],$
$[1, 1, -1, 1, -1]\}]$

$[6, \{[1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1, -1, 0, 0], [1, 1, -1, 0, 1], [1, 1,$
$-1, 1, 0]\}]$

$[6, \{[1, 0, 0, -1, 0], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 1, -1, 0, 0], [1, 1, 0, -1, 0], [1, 1,$
$0, -1, 1]\}]$

$[6, \{[1, 0, 0, -1, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 1, -1, 0, -1], [1, 1, -1, 0, 0], [1, 1, 0, -1, 0]\}]$

$[6, \{[1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1, -1, 0, 0], [1, 1, -1, 0, 1], [1, 1, 0, -1, 1]\}]$

$[6, \{[1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 1, -1, 1, -1], [1, 1, 0, 0, -1], [1, 1, 0, 0, 0]\}]$

$[6, \{[1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 1, 0, -1, 0], [1, 1, 0, 0, -1], [1, 1, 0, 0, 0]\}]$

$[6, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0, 1, 0], [1, 1, -1, 1, 0], [1, 1, 0, 0, 0], [1, 1, 0, 0, 1]\}]$

$[6, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, -1, 1], [1, 1, 0, -1, 1], [1, 1, 0, 0, 0], [1, 1, 0, 0, 1]\}]$

$[6, \{[1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 0, 1, 0], [1, 1, -1, 1, -1], [1, 1, -1, 1, 0], [1, 1, 0, 0, 0]\}]$

$[6, \{[1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, -1, 1], [1, 1, 0, -1, 0], [1, 1, 0, -1, 1], [1, 1, 0, 0, 0]\}]$

$[7, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, -1, 0, 1, -1], [1, -1, 1, 0, -1], [1, -1, 1, 0, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$

$[7, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, -1, 1, -1, 0], [1, -1, 1, 0, -1], [1, -1, 1, 0, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$

$[7, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, 0, -1, 0, -1], [1, 0, -1, 0, 0], [1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$

$[7, \{[1, -1, 0, 0, -1], [1, -1, 0, 0, 0], [1, 0, -1, 0, -1], [1, 0, -1, 0, 0], [1, 0, 0, -1, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0]\}]$

$[7, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, -1, 0, 1, 0], [1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1]\}]$

$[7, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, -1, 1, -1, 1], [1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1]\}]$

$[7, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, 0, -1, 0, 0], [1, 0, -1, 0, 1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1]\}]$

$[7, \{[1, -1, 0, 0, 0], [1, -1, 0, 0, 1], [1, 0, -1, 0, 0], [1, 0, -1, 0, 1], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1]\}]$

$[7, \{[1, -1, 0, 1, -1], [1, -1, 0, 1, 0], [1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 0, 1, 0]\}]$

$[7, \{[1, -1, 1, -1, 0], [1, -1, 1, -1, 1], [1, 0, 0, -1, 0], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, -1, 1]\}]$

$[7, \{[1, -1, 1, 0, -1], [1, -1, 1, 0, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 1, 0, -1], [1, 0, 1, 0, 0]\}]$

$[7, \{[1, -1, 1, 0, -1], [1, -1, 1, 0, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, 0, -1], [1, 0, 1, 0, 0]\}]$

$[7, \{[1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0, 1, 0], [1, 0, 1, 0, 0], [1, 0, 1, 0, 1]\}]$

$[7, \{[1, -1, 1, 0, 0], [1, -1, 1, 0, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, -1, 1], [1, 0, 1, 0, 0], [1, 0, 1, 0, 1]\}]$

$[7, \{[1, 0, -1, 0, -1], [1, 0, -1, 0, 0], [1, 0, -1, 1, -1], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 1, -1, 0, -1], [1, 1, -1, 0, 0]\}]$

$[7, \{[1, 0, -1, 0, -1], [1, 0, -1, 0, 0], [1, 0, 0, -1, 0], [1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1,$

$1, -1, 0, -1], [1, 1, -1, 0, 0]\}]$

$[7, \{[1, 0, -1, 0, 0], [1, 0, -1, 0, 1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1, -1, 0, 0], [1, 1, -1, 0, 1]\}]$

$[7, \{[1, 0, -1, 0, 0], [1, 0, -1, 0, 1], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1, -1, 0, 0], [1, 1, -1, 0, 1]\}]$

$[7, \{[1, 0, -1, 1, -1], [1, 0, -1, 1, 0], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 0, 1, 0], [1, 1, -1, 1, -1], [1, 1, -1, 1, 0]\}]$

$[7, \{[1, 0, 0, -1, 0], [1, 0, 0, -1, 1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, -1, 1], [1, 1, 0, -1, 0], [1, 1, 0, -1, 1]\}]$

$[7, \{[1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 0, 1, -1], [1, 0, 1, 0, -1], [1, 0, 1, 0, 0], [1, 1, 0, 0, -1], [1, 1, 0, 0, 0]\}]$

$[7, \{[1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 0, 1, -1, 0], [1, 0, 1, 0, -1], [1, 0, 1, 0, 0], [1, 1, 0, 0, -1], [1, 1, 0, 0, 0]\}]$

$[7, \{[1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 1, -1, 0, -1], [1, 1, -1, 0, 0], [1, 1, -1, 1, -1], [1, 1, 0, 0, -1], [1, 1, 0, 0, 0]\}]$

$[7, \{[1, 0, 0, 0, -1], [1, 0, 0, 0, 0], [1, 1, -1, 0, -1], [1, 1, -1, 0, 0], [1, 1, 0, -1, 0], [1, 1, 0, 0, -1], [1, 1, 0, 0, 0]\}]$

$[7, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 0, 1, 0], [1, 0, 1, 0, 0], [1, 0, 1, 0, 1], [1, 1, 0, 0, 0], [1, 1, 0, 0, 1]\}]$

$[7, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 0, 1, -1, 1], [1, 0, 1, 0, 0], [1, 0, 1, 0, 1], [1, 1, 0, 0, 0], [1, 1, 0, 0, 1]\}]$

$[7, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1, -1, 0, 0], [1, 1, -1, 0, 1], [1, 1, -1, 1, 0], [1, 1, 0, 0, 0], [1, 1, 0, 0, 1]\}]$

$[7, \{[1, 0, 0, 0, 0], [1, 0, 0, 0, 1], [1, 1, -1, 0, 0], [1, 1, -1, 0, 1], [1, 1, 0, -1, 1], [1, 1, 0, 0, 0], [1, 1, 0, 0, 1]\}]$

$$\begin{bmatrix} 0 & 0 & 0 & 0 & 20 & 24 & 28 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

(1)