表 1 rank 0

No.	expression
1	1

表 2 rank 1

No.	expression
2	Z
3	Y
4	X

表 3 rank 2

No.	expression
5	$\sqrt{3}XY$
6	$-\frac{X^2}{2} - \frac{Y^2}{2} + Z^2$
7	$\frac{\sqrt{3}(X-Y)(X+Y)}{2}$
8	$\sqrt{3}YZ$
9	$\sqrt{3}XZ$

表 4 rank 3

No.	expression
10	$\sqrt{15}XYZ$
11	$-\frac{Z\left(3X^2+3Y^2-2Z^2\right)}{2}$
12	$\frac{\sqrt{15}Z(X-Y)(X+Y)}{2}$
13	$-\frac{Y(3X^2-2Y^2+3Z^2)}{2}$
14	$-\frac{\sqrt{15}Y(X-Z)(X+Z)}{2}$
15	$\frac{X(2X^2-3Y^2-3Z^2)}{2}$
16	$\frac{\sqrt{15}X(Y-Z)(Y+Z)}{2}$

表 5 rank 4

No.	expression
17	$\frac{\sqrt{35}XY(X-Y)(X+Y)}{2}$
18	$-\frac{\sqrt{5}XY\left(X^2+Y^2-6Z^2\right)}{2}$
19	$\frac{\sqrt{21}\left(X^4 - 3X^2Y^2 - 3X^2Z^2 + Y^4 - 3Y^2Z^2 + Z^4\right)}{6}$
20	$-\frac{\sqrt{15} \left(X^4-12 X^2 Y^2+6 X^2 Z^2+Y^4+6 Y^2 Z^2-2 Z^4\right)}{12}$
21	$\frac{\sqrt{5}(X-Y)(X+Y)(X^2+Y^2-6Z^2)}{4}$
22	$\frac{\sqrt{35}YZ(Y-Z)(Y+Z)}{2}$
23	$\frac{\sqrt{5}YZ(6X^2-Y^2-Z^2)}{2}$
24	$-\frac{\sqrt{35}XZ(X-Z)(X+Z)}{2}$
25	$-\frac{\sqrt{5}XZ(X^2-6Y^2+Z^2)}{2}$

表 6 rank 5

No.	expression
26	$\frac{3\sqrt{35}XYZ(X-Y)(X+Y)}{2}$
27	$\frac{\sqrt{105}XYZ\left(X^2+Y^2-2Z^2\right)}{2}$
28	$\frac{Z(15X^4+30X^2Y^2-40X^2Z^2+15Y^4-40Y^2Z^2+8Z^4)}{8}$
29	$\frac{3\sqrt{35}Z(X^2-2XY-Y^2)(X^2+2XY-Y^2)}{8}$
30	$-\frac{\sqrt{105}Z(X-Y)(X+Y)(X^2+Y^2-2Z^2)}{4}$
31	$\frac{Y(15X^4 - 40X^2Y^2 + 30X^2Z^2 + 8Y^4 - 40Y^2Z^2 + 15Z^4)}{8}$
32	$\frac{3\sqrt{35}Y(X^2-2XZ-Z^2)(X^2+2XZ-Z^2)}{8}$
33	$\sqrt{105}Y(X-Z)(X+Z)(X^2-2Y^2+Z^2)$
34	$X(8X^4-40X^2Y^2-40X^2Z^2+15Y^4+30Y^2Z^2+15Z^4)$
35	$\frac{3\sqrt{35}X(Y^2-2YZ-Z^2)(Y^2+2YZ-Z^2)}{8}$
36	$\frac{8}{\sqrt{105}X(Y-Z)(Y+Z)(2X^2-Y^2-Z^2)}$
	4

## 表7 rank 6

```
No. expression
         -\frac{3\sqrt{7}XY(X-Y)(X+Y)(X^2+Y^2-10Z^2)}{2}
37
         \sqrt{462}XY(X^2-3Y^2)(3X^2-Y^2)
38
         \sqrt{210}XY(X^4+2X^2Y^2-16X^2Z^2+Y^4-16Y^2Z^2+16Z^4)
39
         \frac{16}{\sqrt{2} \cdot \left(2X^6 - 15X^4Y^2 - 15X^4Z^2 - 15X^2Y^4 + 180X^2Y^2Z^2 - 15X^2Z^4 + 2Y^6 - 15Y^4Z^2 - 15Y^2Z^4 + 2Z^6\right)}
 40
         \frac{\sqrt{2310}(X-Y)(X+Y)(X-Z)(X+Z)(Y-Z)(Y+Z)}{8} \sqrt{14}\left(X^6-15X^4Z^2+15X^2Z^4+Y^6-15Y^4Z^2+15Y^2Z^4-2Z^6\right)
 41
 42
          \sqrt{42}(X-Y)(X+Y)\left(X^4-9X^2Y^2-5X^2Z^2+Y^4-5Y^2Z^2+5Z^4\right)
 43
         3\sqrt{7}YZ(Y-Z)(Y+Z)(10X^2-Y^2-Z^2)
 44
         \sqrt{462}YZ(Y^2-3Z^2)(3Y^2-Z^2)
 45
         \frac{16}{\sqrt{210}YZ\left(16X^4 - 16X^2Y^2 - 16X^2Z^2 + Y^4 + 2Y^2Z^2 + Z^4\right)}
 46
         \frac{16}{3\sqrt{7}XZ(X-Z)(X+Z)(X^2-10Y^2+Z^2)}
 47
          \sqrt{462}XZ(X^2-3Z^2)(3X^2-Z^2)
         \sqrt{210}XZ(X^4-16X^2Y^2+2X^2Z^2+16Y^4-16Y^2Z^2+Z^4)
 49
```

表 8 rank 7

No.	expression
50	$\frac{\sqrt{91}XYZ(3X^4-5X^2Y^2-5X^2Z^2+3Y^4-5Y^2Z^2+3Z^4)}{2}$
51	$-\frac{\sqrt{231}XYZ(X-Y)(X+Y)(3X^2+3Y^2-10Z^2)}{4}$
52	$-\frac{\sqrt{77}XYZ\left(3X^4-20X^2Y^2+10X^2Z^2+3Y^4+10Y^2Z^2-6Z^4\right)}{4}$
53	$-\frac{Z \left(35 X^6+105 X^4 Y^2-210 X^4 Z^2+105 X^2 Y^4-420 X^2 Y^2 Z^2+168 X^2 Z^4+35 Y^6-210 Y^4 Z^2+168 Y^2 Z^4-16 Z^6\right)}{16}$
54	$-\frac{\sqrt{231}Z\left(X^2-2XY-Y^2\right)\left(X^2+2XY-Y^2\right)\left(3X^2+3Y^2-10Z^2\right)}{16}$
55	$\frac{\sqrt{6006}Z(X-Y)(X+Y)\left(X^2-4XY+Y^2\right)\left(X^2+4XY+Y^2\right)}{22}$
56	$\frac{\sqrt{42}Z(X-Y)(X+Y)\left(15X^4+30X^2Y^2-80X^2Z^2+15Y^4-80Y^2Z^2+48Z^4\right)}{20}$
57	$-\frac{Y \left(35 X^{6}-210 X^{4} Y^{2}+105 X^{4} Z^{2}+168 X^{2} Y^{4}-420 X^{2} Y^{2} Z^{2}+105 X^{2} Z^{4}-16 Y^{6}+168 Y^{4} Z^{2}-210 Y^{2} Z^{4}+35 Z^{6}\right)}{2} + \frac{1}{2} \left(35 X^{6}-210 X^{4} Y^{2}+105 X^{4} Z^{2}+168 X^{2} Y^{4}-420 X^{2} Y^{2} Z^{2}+105 X^{2} Z^{4}-16 Y^{6}+168 Y^{4} Z^{2}-210 Y^{2} Z^{4}+35 Z^{6}\right)}{2} + \frac{1}{2} \left(35 X^{6}-210 X^{4} Y^{2}+105 X^{4} Z^{2}+168 X^{2} Y^{4}-420 X^{2} Y^{2} Z^{2}+105 X^{2} Z^{4}-16 Y^{6}+168 Y^{4} Z^{2}-210 Y^{2} Z^{4}+35 Z^{6}\right)}{2} + \frac{1}{2} \left(35 X^{6}-210 X^{4} Y^{2}+105 X^{4} Z^{2}+168 X^{2} Y^{4}-420 X^{2} Y^{2} Z^{2}+105 X^{2} Z^{4}+168 Y^{4} Z^{2}+105 Y^{2} Z^{4}+35 Z^{6}\right)}{2} + \frac{1}{2} \left(35 X^{6}-210 X^{4} Y^{2}+105 X^{2} Z^{4}+105 X^{2} Z^{4}+105 X^{2} Z^{4}+105 X^{2} Z^{4}+105 X^{2} Z^{4}+105 Z^{4} Z^{4}+105 Z^{4}+105 Z^{4} Z^{4}+105 Z^{4}+1$
58	$-\frac{\sqrt{231}Y(X^2-2XZ-Z^2)(X^2+2XZ-Z^2)(3X^2-10Y^2+3Z^2)}{16}$
59	$-\frac{\sqrt{6006}Y(X-Z)(X+Z)\left(X^2-4XZ+Z^2\right)\left(X^2+4XZ+Z^2\right)}{22}$
60	$-\frac{\sqrt{42}Y(X-Z)(X+Z)\left(15X^4-80X^2Y^2+30X^2Z^2+48Y^4-80Y^2Z^2+15Z^4\right)}{2}$
61	$\frac{32}{X\left(16X^6-168X^4Y^2-168X^4Z^2+210X^2Y^4+420X^2Y^2Z^2+210X^2Z^4-35Y^6-105Y^4Z^2-105Y^2Z^4-35Z^6\right)}$
62	$\frac{\sqrt{231}X \left(10X^2 - 3Y^2 - 3Z^2\right) \left(Y^2 - 2YZ - Z^2\right) \left(Y^2 + 2YZ - Z^2\right)}{16}$
63	$\frac{16}{\sqrt{6006}X(Y-Z)(Y+Z)(Y^2-4YZ+Z^2)(Y^2+4YZ+Z^2)}$
64	$\frac{32}{\sqrt{42}X(Y-Z)(Y+Z)\left(48X^4-80X^2Y^2-80X^2Z^2+15Y^4+30Y^2Z^2+15Z^4\right)}$
	32

表 9 rank 8

```
No. expression
                        3\sqrt{715}XY(X-Y)(X+Y)(X^2-2XY-Y^2)(X^2+2XY-Y^2)
   65
                        3\sqrt{77}XY(X-Y)(X+Y)\left(X^4+2X^2Y^2-24X^2Z^2+Y^4-24Y^2Z^2+40Z^4\right)
   66
                             \frac{\frac{1}{16} X Z^{2} + Y^{2}}{16} \frac{\sqrt{858}XY (X^{2} - 3Y^{2}) (3X^{2} - Y^{2}) (X^{2} + Y^{2} - 14Z^{2})}{32}}{3\sqrt{70}XY (Y^{6} + 3Y^{4} + 
   67
                             68
                          \sqrt{33} \left(X^8 - 14X^6Y^2 - 14X^6Z^2 + 35X^4Y^4 + 35X^4Z^4 - 14X^2Y^6 - 14X^2Z^6 + Y^8 - 14Y^6Z^2 + 35Y^4Z^4 - 14Y^2Z^6 + Z^8\right)
   69
                         \sqrt{286} \left(X^8 - 14X^6Y^2 - 14X^6Z^2 + 210X^4Y^2Z^2 - 14X^2Y^6 + 210X^2Y^4Z^2 - 420X^2Y^2Z^4 + 28X^2Z^6 + Y^8 - 14Y^6Z^2 + 28Y^2Z^6 - 2Z^8\right)
   70
                              - \sqrt{858}(X-Y)(X+Y) \left(X^2 + Y^2 - 14Z^2\right) \left(X^2 - 4XY + Y^2\right) \left(X^2 + 4XY + Y^2\right)
   71
                        \frac{-\sqrt{300(X^{8}-62X^{6}Y^{2}+34X^{6}Z^{2}+160X^{4}Y^{4}-30X^{4}Y^{2}Z^{2}-80X^{4}Z^{4}-62X^{2}Y^{6}-30X^{2}Y^{4}Z^{2}+60X^{2}Y^{2}Z^{4}+28X^{2}Z^{6}+Y^{8}+34Y^{6}Z^{2}-80Y^{4}Z^{4}+28Y^{2}Z^{6}-2Z^{8})}{64}
   72
                             -\frac{3\sqrt{70}(X-Y)(X+Y)\left(X^{6}+3X^{4}Y^{2}-30X^{4}Z^{2}+3X^{2}Y^{4}-60X^{2}Y^{2}Z^{2}+80X^{2}Z^{4}+Y^{6}-30Y^{4}Z^{2}+80Y^{2}Z^{4}-32Z^{6}\right)}{64}
   73
                        3\sqrt{715}YZ(Y-Z)(Y+Z)\!\left(Y^2-2YZ\!-\!Z^2\right)\!\left(Y^2+2YZ\!-\!Z^2\right)
   74
                        \frac{3\sqrt{77}YZ(Y-Z)(Y+Z)\left(40X^4-24X^2Y^2-24X^2Z^2+Y^4+2Y^2Z^2+Z^4\right)}{16}
   75
                     \frac{377772(3772)}{16} \frac{\sqrt{858}YZ(Y^2 - 3Z^2)(3Y^2 - Z^2)(14X^2 - Y^2 - Z^2)}{32} \frac{3\sqrt{70}YZ(32X^6 - 80X^4Y^2 - 80X^4Z^2 + 30X^2Y^4 + 60X^2Y^2Z^2 + 30X^2Z^4 - Y^6 - 3Y^4Z^2 - 3Y^2Z^4 - Z^6)}{32} \frac{32}{3(3772 + 30X^2Z^2 - Z^2)}
   76
   77
                            -\frac{3\sqrt{715}XZ(X-Z)(X+Z)\left(X^2-2XZ-Z^2\right)\left(X^2+2XZ-Z^2\right)}{16}
   78
                           -\frac{3\sqrt{77}XZ(X-Z)(X+Z)\left(X^4-24X^2Y^2+2X^2Z^2+40Y^4-24Y^2Z^2+Z^4\right)}{16}\\ -\frac{\sqrt{858}XZ\left(X^2-3Z^2\right)\left(3X^2-Z^2\right)\left(X^2-14Y^2+Z^2\right)}{32}\\ -\frac{3\sqrt{70}XZ\left(X^6-30X^4Y^2+3X^4Z^2+80X^2Y^4-60X^2Y^2Z^2+3X^2Z^4-32Y^6+80Y^4Z^2-30Y^2Z^4+Z^6\right)}{32}
   79
 81
```

表 10 rank 9

```
expression
No.
                  \sqrt{510510}XYZ(X-Y)(X+Y)(X-Z)(X+Z)(Y-Z)(Y+Z)
                  \sqrt{330}XYZ \left(6X^{6} - 21X^{4}Y^{2} - 21X^{4}Z^{2} - 21X^{2}Y^{4} + 140X^{2}Y^{2}Z^{2} - 21X^{2}Z^{4} + 6Y^{6} - 21Y^{4}Z^{2} - 21Y^{2}Z^{4} + 6Z^{6}\right)
                  \sqrt{4290}XYZ(X-Y)(X+Y)(3X^4-11X^2Y^2-7X^2Z^2+3Y^4-7Y^2Z^2+7Z^4)
                 3\sqrt{1430}XYZ\big(X^{6}-7X^{4}Z^{2}+7X^{2}Z^{4}+Y^{6}-7Y^{4}Z^{2}+7Y^{2}Z^{4}-2Z^{6}\big)
                  Z\big(315X^8 + 1260X^6Y^2 - 3360X^6Z^2 + 1890X^4Y^4 - 10080X^4Y^2Z^2 + 6048X^4Z^4 + 1260X^2Y^6 - 10080X^2Y^4Z^2 + 12096X^2Y^2Z^4 - 2304X^2Z^6 + 315Y^8 - 3360Y^6Z^2 + 6048Y^4Z^4 - 2304Y^2Z^6 + 128Z^8\big)
                 3\sqrt{12155}Z\big(X^4-4X^3Y-6X^2Y^2+4XY^3+Y^4\big)\big(X^4+4X^3Y-6X^2Y^2-4XY^3+Y^4\big)
 87
                  3\sqrt{5005}Z\big(X^2-2XY-Y^2\big)\big(X^2+2XY-Y^2\big)\big(X^4+2X^2Y^2-8X^2Z^2+Y^4-8Y^2Z^2+8Z^4\big)
                       \sqrt{4290}Z(X-Y)(X+Y)(X^2-4XY+Y^2)(X^2+4XY+Y^2)(3X^2+3Y^2-14Z^2)
                     3\sqrt{110}Z(X-Y)(X+Y)\left(7X^{6}+21X^{4}Y^{2}-70X^{4}Z^{2}+21X^{2}Y^{4}-140X^{2}Y^{2}Z^{2}+112X^{2}Z^{4}+7Y^{6}-70Y^{4}Z^{2}+112Y^{2}Z^{4}-32Z^{6}\right)
 90
                 Y \left(315X^8 - 3360X^6Y^2 + 1260X^6Z^2 + 6048X^4Y^4 - 10080X^4Y^2Z^2 + 1890X^4Z^4 - 2304X^2Y^6 + 12096X^2Y^4Z^2 - 10080X^2Y^2Z^4 + 1260X^2Z^6 + 128Y^8 - 2304Y^6Z^2 + 6048Y^4Z^4 - 3360Y^2Z^6 + 315Z^8\right)
91
                 3\sqrt{12155}Y \Big(X^4 - 4X^3Z - 6X^2Z^2 + 4XZ^3 + Z^4\Big) \Big(X^4 + 4X^3Z - 6X^2Z^2 - 4XZ^3 + Z^4\Big)
 92
                 3\sqrt{5005}Y \left(X^2 - 2XZ - Z^2\right) \left(X^2 + 2XZ - Z^2\right) \left(X^4 - 8X^2Y^2 + 2X^2Z^2 + 8Y^4 - 8Y^2Z^2 + Z^4\right)
 93
                  \sqrt{4290}Y(X-Z)(X+Z)\left(X^2-4XZ+Z^2\right)\left(X^2+4XZ+Z^2\right)\left(3X^2-14Y^2+3Z^2\right)
                 3\sqrt{110}Y(X-Z)(X+Z)\left(7X^{6}-70X^{4}Y^{2}+21X^{4}Z^{2}+112X^{2}Y^{4}-140X^{2}Y^{2}Z^{2}+21X^{2}Z^{4}-32Y^{6}+112Y^{4}Z^{2}-70Y^{2}Z^{4}+7Z^{6}\right)
 95
                  X \left(128X^8 - 2304X^6Y^2 - 2304X^6Z^2 + 6048X^4Y^4 + 12096X^4Y^2Z^2 + 6048X^4Z^4 - 3360X^2Y^6 - 10080X^2Y^4Z^2 - 10080X^2Y^2Z^4 - 3360X^2Z^6 + 315Y^8 + 1260Y^6Z^2 + 1890Y^4Z^4 + 1260Y^2Z^6 + 315Z^8\right) + 24X^6Y^2 - 10080X^2Y^4Z^2 - 10080X^2Y^2 - 10080X^2Y^4Z^2 - 10080X^2Y^2 - 10080X^2Y^4 - 10080X^
 96
                 3\sqrt{12155}X \left(Y^4 - 4Y^3Z - 6Y^2Z^2 + 4YZ^3 + Z^4\right) \left(Y^4 + 4Y^3Z - 6Y^2Z^2 - 4YZ^3 + Z^4\right)
97
                 \frac{3\sqrt{5005}X \left(Y^2-2YZ-Z^2\right) \left(Y^2+2YZ-Z^2\right) \left(8X^4-8X^2Y^2-8X^2Z^2+Y^4+2Y^2Z^2+Z^4\right)}{64}
 98
                  \sqrt{4290}X(Y-Z)(Y+Z)\left(14X^2-3Y^2-3Z^2\right)\left(Y^2-4YZ+Z^2\right)\left(Y^2+4YZ+Z^2\right)
 99
                 3\sqrt{110}X(Y-Z)(Y+Z)\left(32X^{6}-112X^{4}Y^{2}-112X^{4}Z^{2}+70X^{2}Y^{4}+140X^{2}Y^{2}Z^{2}+70X^{2}Z^{4}-7Y^{6}-21Y^{4}Z^{2}-21Y^{2}Z^{4}-7Z^{6}\right)
100
```

```
No. expression
                          \sqrt{12155}XY(X-Y)(X+Y)(X^2+Y^2-18Z^2)(X^2-2XY-Y^2)(X^2+2XY-Y^2)
101
                          \sqrt{2145}XY(X-Y)(X+Y)\left(X^{6}+3X^{4}Y^{2}-42X^{4}Z^{2}+3X^{2}Y^{4}-84X^{2}Y^{2}Z^{2}+168X^{2}Z^{4}+Y^{6}-42Y^{4}Z^{2}+168Y^{2}Z^{4}-112Z^{6}Y^{2}Z^{2}+16X^{2}Z^{4}+Y^{6}Z^{2}+16X^{2}Z^{4}+Y^{6}Z^{2}+16X^{2}Z^{4}+Y^{6}Z^{2}+16X^{2}Z^{4}+Y^{6}Z^{2}+16X^{2}Z^{4}+Y^{6}Z^{2}+16X^{2}Z^{4}+Y^{6}Z^{2}+16X^{2}Z^{4}+Y^{6}Z^{2}+16X^{2}Z^{4}+Y^{6}Z^{2}+16X^{2}Z^{4}+Y^{6}Z^{2}+16X^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{4}+Y^{6}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+16Z^{2}Z^{2}+1
 102
                     \sqrt{92378}XY(X^4-10X^2Y^2+5Y^4)(5X^4-10X^2Y^2+Y^4)
 103
                     \sqrt{4290}XY\left(X^2-3Y^2\right)\left(3X^2-Y^2\right)\left(3X^4+6X^2Y^2-96X^2Z^2+3Y^4-96Y^2Z^2+224Z^4\right)
 104
                     \sqrt{165}XY\left(7X^8 + 28X^6Y^2 - 336X^6Z^2 + 42X^4Y^4 - 1008X^4Y^2Z^2 + 1680X^4Z^4 + 28X^2Y^6 - 1008X^2Y^4Z^2 + 3360X^2Y^2Z^4 - 1792X^2Z^6 + 7Y^8 - 336Y^6Z^2 + 1680Y^4Z^4 - 1792Y^2Z^6 + 384Z^8\right)
 105
                     \sqrt{390} \cdot \left(2X^{10} - 45X^8Y^2 - 45X^8Y^2 - 45X^8Z^2 + 42X^6Y^4 + 1008X^6Y^2Z^2 + 42X^6Z^4 + 42X^4Y^6 - 1260X^4Y^4Z^2 - 1260X^4Y^2Z^4 + 42X^4Z^6 - 45X^2Y^8 + 1008X^2Y^6Z^2 - 1260X^2Y^4Z^4 + 1008X^2Y^2Z^6 - 45X^2Z^8 + 2Y^{10} - 45Y^8Z^2 + 42Y^4Z^6 - 45Y^2Z^8 + 2Y^{10} - 45Y^8Z^2 + 42Y^6Z^4 + 42Y^4Z^6 - 45Y^2Z^8 + 2Y^{10} - 45Y^8Z^4 + 42Y^4Z^6 - 45Y^2Z^8 + 2Y^{10} - 47Y^2Z^6 + 42Y^2Z^6 + 42Y^2Z^6
 106
                     \sqrt{27170}(X-Y)(X+Y)(X-Z)(X+Z)(Y-Z)(Y+Z)\left(3X^4-11X^2Y^2-11X^2Z^2+3Y^4-11Y^2Z^2+3Z^4\right)
 107
                          \sqrt{420189} \cdot \left(22X^{10} + 45X^8Y^2 - 1035X^8Z^2 - 105X^6Y^4 - 630X^6Y^2Z^2 + 4935X^6Z^4 - 105X^4Y^6 + 3150X^4Y^4Z^2 - 1575X^4Y^2Z^4 - 4830X^4Z^6 + 45X^2Y^8 - 630X^2Y^6Z^2 - 1575X^2Y^4Z^4 + 1260X^2Y^2Z^6 + 990X^2Z^8 + 22Y^{10} - 1035Y^8Z^2 + 4935Y^6Z^4 - 4830Y^4Z^6 + 990Y^2Z^8 - 44Z^{10}\right)
 108
                                                                                                                                                                                                                                                                                                                                       35952
                     \sqrt{140063}(X-Y)(X+Y)\left(22X^8-653X^6Y^2-315X^6Z^2+2602X^4Y^4-945X^4Y^2Z^2+1575X^4Z^4-653X^2Y^6-945X^2Y^4Z^2+3150X^2Y^2Z^4-1680X^2Z^6+22Y^8-315Y^6Z^2+1575Y^4Z^4-1680Y^2Z^6+360Z^8\right)
 109
                          \sqrt{3213210} \cdot \left(3X^{10} - 96X^8Y^2 - 39X^8Z^2 + 224X^6Y^4 + 1344X^6Y^2Z^2 - 42X^6Z^4 + 224X^4Y^6 - 6720X^4Y^4Z^2 + 3360X^4Y^2Z^4 - 182X^4Z^6 - 96X^2Y^8 + 1344X^2Y^6Z^2 + 3360X^2Y^4Z^4 - 2688X^2Y^2Z^6 + 135X^2Z^8 + 3Y^{10} - 39Y^8Z^2 - 42Y^6Z^4 - 182Y^4Z^6 + 135Y^2Z^8 - 6Z^{10}\right)
110
                                                                                                                                                                                                                                                                                                                          23968
                     \sqrt{1071070}(X-Y)(X+Y)\left(9X^8-165X^6Y^2-231X^6Z^2-25X^4Y^4+3801X^4Y^2Z^2+406X^4Z^4-165X^2Y^6+3801X^2Y^4Z^2-9674X^2Y^2Z^4+266X^2Z^6+9Y^8-231Y^6Z^2+406Y^4Z^4+266Y^2Z^6-57Z^8\right)
111
                     \sqrt{12155}YZ(Y-Z)(Y+Z)(18X^2-Y^2-Z^2)(Y^2-2YZ-Z^2)(Y^2+2YZ-Z^2)
112
                     \sqrt{2145}YZ(Y-Z)(Y+Z)\left(112X^{6}-168X^{4}Y^{2}-168X^{4}Z^{2}+42X^{2}Y^{4}+84X^{2}Y^{2}Z^{2}+42X^{2}Z^{4}-Y^{6}-3Y^{4}Z^{2}-3Y^{2}Z^{4}-Z^{6}\right)
113
                     \sqrt{92378}YZ(Y^4-10Y^2Z^2+5Z^4)(5Y^4-10Y^2Z^2+Z^4)
 114
                     \sqrt{4290}YZ(Y^2-3Z^2)(3Y^2-Z^2)(224X^4-96X^2Y^2-96X^2Z^2+3Y^4+6Y^2Z^2+3Z^4)
115
                     \sqrt{165}YZ\left(384X^8 - 1792X^6Y^2 - 1792X^6Z^2 + 1680X^4Y^4 + 3360X^4Y^2Z^2 + 1680X^4Z^4 - 336X^2Y^6 - 1008X^2Y^4Z^2 - 1008X^2Y^2Z^4 - 336X^2Z^6 + 7Y^8 + 28Y^6Z^2 + 42Y^4Z^4 + 28Y^2Z^6 + 7Z^8\right)
116
                     \sqrt{12155}XZ(X-Z)(X+Z)(X^2-18Y^2+Z^2)(X^2-2XZ-Z^2)(X^2+2XZ-Z^2)
117
                     \sqrt{2145}XZ(X-Z)(X+Z)\left(X^{6}-42X^{4}Y^{2}+3X^{4}Z^{2}+168X^{2}Y^{4}-84X^{2}Y^{2}Z^{2}+3X^{2}Z^{4}-112Y^{6}+168Y^{4}Z^{2}-42Y^{2}Z^{4}+Z^{6}\right)
118
                     \sqrt{92378}XZ(X^4-10X^2Z^2+5Z^4)(5X^4-10X^2Z^2+Z^4)
 119
                    \frac{\sqrt{4290}XZ\big(X^2-3Z^2\big)\big(3X^2-Z^2\big)\big(3X^4-96X^2Y^2+6X^2Z^2+224Y^4-96Y^2Z^2+3Z^4\big)}{2}
 120
                     \sqrt{165}XZ \left(7X^8 - 336X^6Y^2 + 28X^6Z^2 + 1680X^4Y^4 - 1008X^4Y^2Z^2 + 42X^4Z^4 - 1792X^2Y^6 + 3360X^2Y^4Z^2 - 1008X^2Y^2Z^4 + 28X^2Z^6 + 384Y^8 - 1792Y^6Z^2 + 1680Y^4Z^4 - 336Y^2Z^6 + 7Z^8\right)
121
                                                                                                                                                                                                                                 128
```

```
No.
                    expression
                        \sqrt{2431}XYZ\left(5X^{8} - 30X^{6}Y^{2} - 30X^{6}Z^{2} + 63X^{4}Y^{4} + 63X^{4}Z^{4} - 30X^{2}Y^{6} - 30X^{2}Z^{6} + 5Y^{8} - 30Y^{6}Z^{2} + 63Y^{4}Z^{4} - 30Y^{2}Z^{6} + 5Z^{8}\right)
  122
                             \frac{\sqrt{692835}XYZ(X-Y)(X+Y)\Big(X^2+Y^2-6Z^2\Big)\Big(X^2-2XY-Y^2\Big)\Big(X^2+2XY-Y^2\Big)}{32}
  123
                              \sqrt{230945}XYZ\left(X^{8}-6X^{6}Y^{2}-6X^{6}Z^{2}+42X^{4}Y^{2}Z^{2}-6X^{2}Y^{6}+42X^{2}Y^{4}Z^{2}-84X^{2}Y^{2}Z^{4}+12X^{2}Z^{6}+Y^{8}-6Y^{6}Z^{2}+12Y^{2}Z^{6}-2Z^{8}\right)
  124
                             3\sqrt{1001}XYZ(X-Y)(X+Y)\left(5X^{6}+15X^{4}Y^{2}-70X^{4}Z^{2}+15X^{2}Y^{4}-140X^{2}Y^{2}Z^{2}+168X^{2}Z^{4}+5Y^{6}-70Y^{4}Z^{2}+168Y^{2}Z^{4}-80Z^{6}\right)
  125
                              \sqrt{3003}XYZ\left(5X^8 - 150X^6Y^2 + 90X^6Z^2 + 336X^4Y^4 - 70X^4Y^2Z^2 - 168X^4Z^4 - 150X^2Y^6 - 70X^2Y^4Z^2 + 140X^2Y^2Z^4 + 60X^2Z^6 + 5Y^8 + 90Y^6Z^2 - 168Y^4Z^4 + 60Y^2Z^6 - 10Z^8\right)
  126
                             Z\left(693X^{10} + 3465X^8Y^2 - 11550X^8Z^2 + 6930X^6Y^4 - 46200X^6Y^2Z^2 + 36960X^6Z^4 + 6930X^4Y^6 - 6930X^4Y^6 - 27410880X^4Y^2Z^4 - 31680X^4Z^6 + 3465X^2Y^8 - 46200X^2Y^6Z^2 + 110880X^2Y^4Z^4 - 63360X^2Y^2Z^6 + 7040X^2Z^8 + 693Y^{10} - 11550Y^8Z^2 + 36960Y^6Z^4 - 31680Y^4Z^6 + 7040Y^2Z^8 - 256Z^{10}\right)
  127
                              \sqrt{692835}Z \Big(X^2 + Y^2 - 6Z^2\Big) \Big(X^4 - 4X^3Y - 6X^2Y^2 + 4XY^3 + Y^4\Big) \Big(X^4 + 4X^3Y - 6X^2Y^2 - 4XY^3 + Y^4\Big)
  128
                             3\sqrt{1001}Z\big(X^2-2XY-Y^2\big)\big(X^2+2XY-Y^2\big)\big(5X^6+15X^4Y^2-70X^4Z^2+15X^2Y^4-140X^2Y^2Z^2+168X^2Z^4+5Y^6-70Y^4Z^2+168Y^2Z^4-80Z^6\big)
  129
                        \frac{\sqrt{1939938}Z(X-Y)(X+Y)\left(X^4-4X^3Y-14X^2Y^2-4XY^3+Y^4\right)\left(X^4+4X^3Y-14X^2Y^2+4XY^3+Y^4\right)}{512}
  130
                        \sqrt{14586}Z(X-Y)(X+Y)\left(X^{2}\underline{-4XY+Y^{2}}\right)\left(X^{2}+4XY+Y^{2}\right)\left(15X^{4}+30X^{2}Y^{2}-160X^{2}Z^{2}+15Y^{4}-160Y^{2}Z^{2}+224Z^{4}\right)
  131
                         \sqrt{2145}Z(X-Y)(X+Y)\left(21X^8+84X^6Y^2-336X^6Z^2+126X^4Y^4-1008X^4Y^2Z^2+1008X^4Z^4+84X^2Y^6-1008X^2Y^4Z^2+2016X^2Y^2Z^4-768X^2Z^6+21Y^8-336Y^6Z^2+1008Y^4Z^4-768Y^2Z^6+128Z^8\right)
  132
                            Y \left(693X^{10} - 11550X^8Y^2 + 3465X^8Z^2 + 36960X^6Y^4 - 46200X^6Y^2Z^2 + 6930X^4Y^6Z^4 - 31680X^4Y^4Z^2 - 6930X^4Y^2Z^4 + 6930X^4Y^2 + 6930X^4Y^2 + 6930X^4Y^2 + 6930X^4Y^2 + 6930X^4Y^2 + 
  133
                              \sqrt{692835}Y\left(X^{2}-6Y^{2}+Z^{2}\right)\left(X^{4}-4X\frac{3}{2}Z-6X^{2}Z^{2}+4XZ^{3}+Z^{4}\right)\left(X^{4}+4X^{3}Z-6X^{2}Z^{2}-4XZ^{3}+Z^{4}\right)
  134
                             3\sqrt{1001}Y\left(X^2 - 2XZ - Z^2\right)\left(X^2 + 2XZ - Z^2\right)\left(5X^6 - 70X^4Y^2 + 15X^4Z^2 + 168X^2Y^4 - 140X^2Y^2Z^2 + 15X^2Z^4 - 80Y^6 + 168Y^4Z^2 - 70Y^2Z^4 + 5Z^6\right)
  135
                              \sqrt{1939938}Y(X-Z)(X+Z)(X^4-4X^3Z-14X^2Z^2-4XZ^3+Z^4)(X^4+4X^3Z-14X^2Z^2+4XZ^3+Z^4)
  136
                              \sqrt{14586}Y(X-Z)(X+Z)\left(X^2-4XZ+Z^2\right)\left(X^2+4XZ+Z^2\right)\left(15X^4-160X^2Y^2+30X^2Z^2+224Y^4-160Y^2Z^2+15Z^4\right)
  137
                              \sqrt{2145}Y(X-Z)(X+Z)\left(21X^8-336X^6Y^2+84X^6Z^2+1008X^4Y^4-1008X^4Y^2Z^2+126X^4Z^4-768X^2Y^6+2016X^2Y^4Z^2-1008X^2Y^2Z^4+84X^2Z^6+128Y^8-768Y^6Z^2+1008Y^4Z^4-336Y^2Z^6+21Z^8\right)
  138
                        X \left(256X^{10} - 7040X^8Y^2 - 7040X^8Y^2 - 7040X^8Y^2 - 7040X^8Y^2 + 31680X^6Y^4 + 63360X^6Y^2Z^2 + 31680X^6Y^4 - 6930Y^4Z^4 - 46900X^4Y^6Z^4 - 6930Y^4Z^4 - 46200X^2Y^6Z^2 + 6930X^2Y^4Z^4 + 46200X^2Y^6Z^2 + 6930X^2Y^4Z^4 + 46200X^2Y^6Z^2 + 6930Y^4Z^6 - 6930Y^4Z^6 
  139
                         \sqrt{692835}X(6X^2-Y^2-Z^2)(Y^4-4Y^3Z-6Y^2Z^2+4YZ^3+Z^4)(Y^4+4Y^3Z-6Y^2Z^2-4YZ^3+Z^4)
  140
                                                                                                                                              256
                       \frac{3\sqrt{1001}X\left(Y^2 - 2YZ - Z^2\right)\left(Y^2 + 2YZ - Z^2\right)\left(80X^6 - 168X^4Y^2 - 168X^4Z^2 + 70X^2Y^4 + 140X^2Y^2Z^2 + 70X^2Z^4 - 5Y^6 - 15Y^4Z^2 - 15Y^2Z^4 - 5Z^6\right)}{128}
                        \frac{\sqrt{1939938}X(Y-Z)(Y+Z)\left(Y^4-4Y^3Z-14Y^2Z^2-4YZ^3+Z^4\right)\left(Y^4+4Y^3Z-14Y^2Z^2+4YZ^3+Z^4\right)}{512}
  142
                         \sqrt{14586}X(Y-Z)(Y+Z)\left(Y^2-4YZ+Z^2\right)\left(Y^2+4YZ+Z^2\right)\left(224X^4-160X^2Y^2-160X^2Z^2+15Y^4+30Y^2Z^2+15Z^4\right)
  143
                        \sqrt{2145}X(Y-Z)(Y+Z)\left(128X^8-768X^6Y^2-768X^6Z^2+1008X^4Y^4+2016X^4Y^2Z^2+1008X^4Z^4-336X^2Y^6-1008X^2Y^4Z^2-1008X^2Y^2Z^4-336X^2Z^6+21Y^8+84Y^6Z^2+126Y^4Z^4+84Y^2Z^6+21Z^8+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126Y^4Z^4+126
144
```