1 Polyhedron 2

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \\ 0 & 1 & 1 & 1 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 & -1 & -1 & -1 & 0 \\ 0 & 0 & 0 & -2 & 0 & 0 & 1 & 0 & 1 & 0 & -1 & -1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{1}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & -1 & -1 & 0 & 0 & 0 & -1 & 0 & 0 & 1 & 1 \\ -2 & 0 & 0 & 0 & 1 & 1 & -1 & 0 & 1 & 0 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & -2 & 1 & 0 \\ 0 & 0 & 1 & 1 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & -2 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & 0 & 1 & -2 & 0 \\ 0 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & -1 & 1 & 0 & 0 \end{bmatrix} \tag{2}$$

This Mori cone is not simplicial. A positive basis for the generators of the Kähler cone is $K_2 = D_4 + D_5$, $K_1 = 1/2\,D_5 + 1/2\,D_8 + D_4 + 1/2\,D_3 - 1/2\,D_1$, $K_3 = 1/2\,D_1 + 1/2\,D_3 - 1/2\,D_5 - 1/2\,D_8 - D_4$, $K_4 = -1/2\,D_3 + 1/2\,D_5 + 1/2\,D_8 + D_4 + 1/2\,D_1$, $K_5 = 1/2\,D_8 + D_4 + 3/2\,D_5 + 1/2\,D_3 - 1/2\,D_1$. The Stanley Reisner ideal is

$$[D_3D_8, D_3D_9, D_5D_8, D_5D_9, D_5D_{10}, D_8D_{10}, D_9D_{10}, D_3D_4D_7, D_4D_7D_9, D_4D_7D_{10}, D_1D_2D_3D_6, D_1D_2D_5D_6, D_1D_2D_6D_8, D_1D_2 \tag{3}$$

The Calabi-Yau space is defined by $4\,K_1K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 44$. The divisors D_8, D_9, D_{10} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & 0 & 0 & 0 & 1 & 1 & -1 & 0 & 1 & 0 & 0 & 0 \\ -2 & -4 & 1 & 1 & 1 & 0 & 2 & 1 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{4}$$

The dual basis of divisors is

$$J_1 = K_1 - 1/2\,K_2 \qquad J_2 = 1/2\,K_2 \tag{5}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 5\,J_2J_1 + 6\,{J_2}^2 \tag{6}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 4 \qquad\qquad K_{2,2,2} = 2 \tag{7}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 24 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 32 \tag{8}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{9}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	832	9048	296256	10896200	496315712
1	32	3968	420544	43292416	4300353568	417443075200
2	4	5952	2556784	731520512	159613720920	29323275213056
3	0	3968	6550208	4550144640	1990567239584	649617659336064
4	0	832	8831008	14796791040	12407439429504	6902604520184960
5	0	0	6550208	28878680064	46220194846240	42948676303436416

(10)

This is triangulation 2. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \\ 0 & 1 & 1 & 1 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 & -1 & -1 & -1 & 0 \\ 0 & 0 & 0 & -2 & 0 & 0 & 1 & 0 & 1 & 0 & -1 & -1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{11}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & -1 & -1 & 0 & 0 & 0 & -1 & 0 & 0 & 1 & 1 \\ 0 & -2 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & 1 & 1 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & -2 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & 0 & 1 & -2 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 & 1 & -1 & 0 & 0 \end{bmatrix} \tag{12}$$

A positive basis for the generators of the Kähler cone is $K_4 = D_8 + D_5 + 2\,D_4$, $K_1 = -D_1 + 2\,D_4 + D_3 + D_8 + D_5$, $K_3 = D_3$, $K_5 = D_4$, $K_2 = D_5 + D_4$. The Stanley Reisner ideal is

$$[D_3D_8, D_3D_9, D_4D_7, D_5D_9, D_5D_{10}, D_8D_{10}, D_9D_{10}, D_1D_2D_3D_6, D_1D_2D_5D_6, D_1D_2D_6D_8] \tag{13}$$

The Calabi-Yau space is defined by $2\,K_1K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 44$. The divisors D_8, D_9, D_{10} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -4 & 1 & 1 & 1 & 0 & 2 & 1 & 0 & 0 & 0 & 0 \\ -2 & 0 & 0 & 0 & 1 & 1 & -1 & 0 & 1 & 0 & 0 & 0 \end{bmatrix} \tag{14}$$

The dual basis of divisors is

$$J_1 = 1/2\,K_2 \qquad J_2 = 1/2\,K_1 - 1/2\,K_2 \tag{15}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 6\,{J_1}^2 + 5\,J_2J_1 \tag{16}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 2 \qquad K_{1,1,2} = 4 \tag{17}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 32 \qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{18}$$

J_2 is a K3 surface with intersection form

$$\left[\begin{array}{c} 4 \end{array}\right] \tag{19}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	32	4	0	0	0
1	832	3968	5952	3968	832	0
2	9048	420544	2556784	6550208	8831008	6550208
3	296256	43292416	731520512	4550144640	14796791040	28878680064
4	10896200	4300353568	159613720920	1990567239584	12407439429504	46220194846240
5	496315712	417443075200	29323275213056	649617659336064	6902604520184960	42948676303436416

(20)

2 Polyhedron 4

2.1 Partition 1 of model 4

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\left[\begin{array}{cccccccccccccc} 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 & 0 & 0 & 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & 1 & 0 & 1 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 0 & 0 & 0 & -3 & 0 & 1 & 0 & 0 & 0 & -1 & -2 & -2 & -1 & -1 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & -1 & 0 & 0 & -1 & 0 & 0 & -1 \\ 0 & 0 & 0 & -2 & 0 & 0 & 0 & 1 & 1 & 0 & -1 & -1 & -1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array}\right] \tag{21}$$

The Mori cone of the ambient space is generated by

$$\left[\begin{array}{cccccccccccccc} -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & -2 & 0 & 1 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 1 & -1 & -1 & 1 & 0 & 0 & 0 & 0 & 1 \\ 0 & -1 & -1 & -1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & -2 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & -2 & 0 & 0 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & 0 & -1 & 1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & -2 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 0 & 1 & 0 & 0 & -2 \end{array}\right] \tag{22}$$

This Mori cone is not simplicial. A positive basis for the generators of the Kähler cone is $K_7 = D_5$, $K_6 = D_4$, $K_3 = -D_1 + D_3 - D_9 + D_5$, $K_1 = D_7 - D_9 - 2\,D_1 + 2\,D_3 + D_5$, $K_5 = -D_9 - 2\,D_1 + 2\,D_3 + D_5$, $K_2 = D_3 + D_8 + 2\,D_7 - D_9 - 2\,D_1 + D_5 + D_4$, $K_4 = D_8 + 2\,D_7 - D_9 - 2\,D_1 + 2\,D_3 + D_5$. The Stanley Reisner ideal is

$$[D_3D_9, D_3D_{12}, D_4D_8, D_4D_{10}, D_7D_{10}, D_7D_{11}, D_8D_9, D_8D_{11}, D_8D_{12}, D_9D_{10}, D_9D_{11}, D_{10}D_{11}, D_{10}D_{12}, D_{11}D_{12}, D_1D_2D_{12}, D_3D_5 \tag{23}$$

The Calabi-Yau space is defined by K_1K_2. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 44$. The divisors D_8, D_9, D_{10}, D_{11}, D_{12} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -6 & 1 & 1 & 1 & 3 & 0 & 0 & 2 & 0 & 0 & 0 & 0 & 0 \\ -2 & 0 & 0 & 0 & 1 & 0 & 1 & 1 & -1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{24}$$

The dual basis of divisors is

$$J_1 = 1/6\,K_2 \qquad J_2 = -1/6\,K_2 + 1/2\,K_1 \tag{25}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 5\,J_2J_1 + 12\,{J_1}^2 \tag{26}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 1 \qquad\qquad K_{1,1,2} = 2 \tag{27}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 22 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{28}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{29}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	
0	0	16	2	0	0	
1	3648	17088	25632	17088	3648	
2	178680	12354912	77133912	199319904	269313408	
3	42027072	8285397376	150296908544	957565747776	3149354922240	618
4	8753885256	5317807400976	221053760557740	2877572824780752	18316074821801472	6904383
5	2599593660480	3310249645037376	270328097125865088	6392393185512636864	70206444552330709632	44527592502

(30)

This is triangulation 2. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 & 0 & 0 & 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & 1 & 0 & 1 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 0 & 0 & 0 & -3 & 0 & 1 & 0 & 0 & 0 & -1 & -2 & -2 & -1 & -1 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & -1 & 0 & 0 & -1 & 0 & 0 & -1 \\ 0 & 0 & 0 & -2 & 0 & 0 & 0 & 1 & 1 & 0 & -1 & -1 & -1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{31}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & 0 & 0 & 0 & 1 & 0 & 1 & 1 & -1 & 0 & 0 & 0 & 0 & 0 \\ -1 & 0 & -1 & -1 & 0 & 0 & 0 & 0 & 0 & -1 & 1 & 1 & 0 & 0 \\ 0 & -1 & -1 & -1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & -2 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & -2 & 0 & 0 \\ 0 & 0 & 1 & 1 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & -2 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 0 & 1 & 0 & 0 & -2 \\ 0 & 0 & 0 & 0 & 0 & 0 & -1 & -1 & 1 & -1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{32}$$

This Mori cone is not simplicial. A positive basis for the generators of the Kähler cone is $K_7 = D_7$, $K_1 = -D_9 - 2\,D_1 + D_7 + 2\,D_3 + D_5$, $K_2 = D_3 - D_9 + D_8 - 2\,D_1 + 2\,D_7 + D_5 + D_4$, $K_4 = -D_9 + D_8 - 2\,D_1 + 2\,D_7 + 2\,D_3 + D_5$, $K_3 = -D_1 + D_7 + D_3 - D_9 + D_5$, $K_6 = D_5 + D_7$, $K_5 = D_4$. The Stanley Reisner ideal is

$$[D_3D_9, D_3D_{12}, D_4D_8, D_4D_{10}, D_7D_9, D_7D_{10}, D_7D_{11}, D_7D_{12}, D_8D_{11}, D_9D_{10}, D_9D_{11}, D_{10}D_{11}, D_{10}D_{12}, D_{11}D_{12}, D_1D_2D_7, D_1D_2D \tag{33}$$

The Calabi-Yau space is defined by K_1K_2. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 44$. The divisors D_8, D_9, D_{10}, D_{11}, D_{12} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & 0 & 0 & 0 & 1 & 0 & 1 & 1 & -1 & 0 & 0 & 0 & 0 & 0 \\ -2 & -6 & 1 & 1 & 1 & 3 & 0 & 0 & 2 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{34}$$

The dual basis of divisors is

$$J_1 = -1/6\,K_2 + 1/2\,K_1 \qquad J_2 = 1/6\,K_2 \tag{35}$$

Its second Chern class is

$$c_2(X) = 5\,J_2J_1 + 12\,{J_2}^2 \tag{36}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 2 \qquad\qquad K_{2,2,2} = 1 \tag{37}$$

The linear forms are

$$c_2 \cdot J_1 = 24 \qquad\qquad c_2 \cdot J_2 = 22 \tag{38}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{39}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	3648	178680	42027072	8753885256	2599593660480
1	16	17088	12354912	8285397376	5317807400976	3310249645037376
2	2	25632	77133912	150296908544	221053760557740	270328097125865088
3	0	17088	199319904	957565747776	2877572824780752	6392393185512636864
4	0	3648	269313408	3149354922240	18316074821801472	70206444552330709632
5	0	0	199319904	6180131665920	69043832283835152	445275925022544774720

(40)

3 Polyhedron 1

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 0 \\ 0 & 1 & 1 & 1 & 1 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & -1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{41}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -3 & -2 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & -2 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{42}$$

A positive basis for the generators of the Kähler cone is $K_1 = D_1$, $K_2 = D_3$. The Stanley Reisner ideal is

$$[D_3 D_7, D_1 D_2 D_4 D_5 D_6] \tag{43}$$

The Calabi-Yau space is defined by $6\,K_2 K_1 + 6\,{K_1}^2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 56$. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -3 & -2 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & -2 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{44}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = K_2 \tag{45}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 4\,{J_1}^2 + {J_2}^2 + 4\,J_2 J_1 \tag{46}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 6 \qquad K_{1,1,2} = 6 \tag{47}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 48 \qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{48}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 6 \end{bmatrix} \tag{49}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	24	0	0	0	0
1	396	1152	396	0	0	0
2	2610	53136	112068	53136	2610	0
3	35640	2377728	15951564	28024704	15951564	2377728
4	605844	103323672	1602730872	6746381496	10576809936	6746381496
5	12212172	4400303616	132192153792	1084701369600	3472953972948	5042951797248

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4 Polyhedron 2

4.1 Partition 1 of model 2

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 & 0 & 0 & 1 & 1 & 0 & 2 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -2 & 0 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{51}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 \\ -1 & -2 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 & 0 & 0 & 1 & 1 & 0 & -2 \end{bmatrix} \tag{52}$$

A positive basis for the generators of the Kähler cone is $K_2 = D_4$, $K_1 = D_3$, $K_3 = D_1$. The Stanley Reisner ideal is

$$[D_3D_7, D_4D_8, D_1D_2D_5D_6] \tag{53}$$

The Calabi-Yau space is defined by $2\,{K_2}^2 + 4\,K_2K_1$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 58$. The divisors D_8 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 \\ -2 & -4 & 1 & 1 & 0 & 2 & 1 & 1 & 0 & 0 \end{bmatrix} \tag{54}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = 1/2\,K_2 \tag{55}$$

Its second Chern class is

$$\mathrm{c}_2(X) = {J_1}^2 + 6\,{J_2}^2 + 4\,J_2J_1 \tag{56}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 4 \qquad\qquad K_{2,2,2} = 4 \tag{57}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 24 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 40 \tag{58}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{59}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	768	9376	293632	10924128	495966976
1	16	2176	234176	24185856	2411703648	234707597824
2	0	768	495360	168619008	40145749504	7766302256640
3	0	0	234176	297281152	172102715744	66068613443584
4	0	0	9376	168619008	270657325696	214069150771200
5	0	0	0	24185856	172102715744	311660717547904

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5 Polyhedron 14

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \\ 0 & 1 & 1 & 1 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & -1 & 0 & 1 \\ 0 & 0 & 0 & -2 & 0 & 0 & 1 & 0 & 0 & 0 & -1 & -1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{61}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & -1 & -1 & 0 & 0 & 0 & -1 & 0 & 0 & 1 & 1 \\ 0 & -1 & 0 & 0 & -1 & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & -2 & 0 & 0 & -1 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & -2 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & 0 & 1 & -2 & 0 \end{bmatrix} \tag{62}$$

A positive basis for the generators of the Kähler cone is $K_5 = D_8$, $K_3 = D_5$, $K_2 = D_4$, $K_4 = D_3 + D_4 + D_5$, $K_1 = D_3 + D_4 + D_5 - D_1 + D_8$. The Stanley Reisner ideal is

$$[D_3D_8, D_3D_9, D_4D_7, D_5D_9, D_5D_{10}, D_8D_{10}, D_9D_{10}, D_1D_2D_3D_6, D_1D_2D_5D_6, D_1D_2D_6D_8] \tag{63}$$

The Calabi-Yau space is defined by $K_2K_1 + 2\,K_3K_1$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 58$. The divisors D_3, D_9, D_{10} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -1 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 1 & 0 & 0 \\ -2 & -4 & 1 & 1 & 0 & 0 & 2 & 1 & 0 & 1 & 0 & 0 \end{bmatrix} \tag{64}$$

The dual basis of divisors is

$$J_1 = K_2 \qquad J_2 = 1/2\,K_1 - K_2 \tag{65}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 6\,{J_2}^2 + 7\,J_2J_1 + {J_1}^2 \tag{66}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 4 \qquad K_{2,2,2} = 1 \tag{67}$$

The linear forms are

$$c_2 \cdot J_1 = 24 \qquad c_2 \cdot J_2 = 34 \tag{68}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{69}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	768	9376	293632	10924128	495966976
1	64	7040	748608	76702592	7591063808	735153731328
2	24	24960	10131280	2746039040	576628466328	103124584231552
3	0	51072	66239296	40452980224	16240157919808	4984227552464768
4	0	63520	267646080	344221451008	247778295207936	124048877725156992
5	0	51072	741806144	1962255923584	2443092985545600	1928383581765485696

(70)

6 Polyhedron 1 in the list

6.1 Partition 1 of model 1

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 0 \\ 0 & 1 & 1 & 1 & 1 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 & 0 & -1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 & 1 & -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{71}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & -2 & 0 & 0 & 1 & 1 & 0 & 0 & 1 \\ -2 & 0 & 1 & 1 & -1 & 0 & 1 & 1 & -1 \end{bmatrix} \tag{72}$$

A positive basis for the generators of the Kähler cone is $K_2 = D_1$, $K_1 = D_1 + D_3$. The Stanley Reisner ideal is

$$[D_3 D_4 D_7, D_1 D_2 D_5 D_6] \tag{73}$$

The Calabi-Yau space is defined by $2\,{K_1}^2 + 4\,K_1 K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 60$. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -1 & -2 & 0 & 0 & 1 & 1 & 0 & 0 & 1 \\ -3 & -2 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \end{bmatrix} \tag{74}$$

The dual basis of divisors is

$$J_1 = K_1 - K_2 \qquad J_2 = K_2 \tag{75}$$

Its second Chern class is

$$c_2(X) = {J_1}^2 + 6\, J_2 J_1 + 4\, {J_2}^2 \tag{76}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 6 \qquad\qquad K_{2,2,2} = 2 \tag{77}$$

The linear forms are

$$c_2 \cdot J_1 = 24 \qquad\qquad c_2 \cdot J_2 = 44 \tag{78}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 6 \end{bmatrix} \tag{79}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	384	2634	35584	606012	12211584
1	72	2736	130392	5764032	249232392	10571395104
2	18	6912	1243224	144080640	12971756646	999171770112
3	0	9440	5603256	1480459440	254979255792	33534668602080
4	0	6912	15055758	8623900800	2694436483392	580400203457664
5	0	2736	26470224	32830966656	18124556932656	6221352556523088

(80)

7 Polyhedron 4

7.1 Partition 1 of model 4

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 1 & 0 & 1 & 1 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & -1 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & -1 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{81}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & 1 & 1 & 0 & 0 & 0 & -1 & 0 \\ -2 & -3 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \end{bmatrix} \tag{82}$$

A positive basis for the generators of the Kähler cone is $K_1 = D_1$, $K_2 = D_3$. The Stanley Reisner ideal is

$$[D_1 D_2, D_3 D_4 D_5 D_6 D_7] \tag{83}$$

The Calabi-Yau space is defined by $3\,K_1K_2 + 6\,{K_2}^2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 62$. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -1 & 0 & 1 & 1 & 0 & 0 & 0 & -1 & 0 \\ -2 & -3 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \end{bmatrix} \tag{84}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = K_2 \tag{85}$$

Its second Chern class is

$$\mathrm{c}_2(X) = -{J_1}^2 + 4\,{J_2}^2 + 3\,J_2J_1 \tag{86}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 6 \qquad K_{2,2,2} = 9 \tag{87}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 24 \qquad \mathrm{c}_2 \cdot J_2 = 54 \tag{88}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 6 \end{bmatrix} \tag{89}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	378	2646	35556	606096	12211290
1	12	648	30132	1353696	59046084	2521375776
2	0	27	19764	3622821	405431784	35520639453
3	0	0	324	1398216	529944336	106249923936
4	0	0	−54	15762	143215128	87235305480
5	0	0	0	−1968	1316952	18108696960

(90)

8 Polyhedron 1

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 \\ 0 & 1 & 1 & 1 & 1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & -1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{91}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & -3 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\ -1 & -1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{92}$$

A positive basis for the generators of the Kähler cone is $K_2 = D_3$, $K_1 = D_1$. The Stanley Reisner ideal is

$$[D_3 D_7, D_1 D_2 D_4 D_5 D_6] \tag{93}$$

The Calabi-Yau space is defined by $6\,{K_1}^2 + 5\,K_1 K_2 + {K_2}^2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 66$. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -3 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\ -1 & -1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{94}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = K_2 \tag{95}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 4\,{J_1}^2 + 5\,J_2 J_1 \tag{96}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 5 \qquad\qquad K_{1,1,2} = 6 \tag{97}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 50 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{98}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 6 \end{bmatrix} \tag{99}$$

The genus zero instanton numbers up to degree 5 are

(100)

	0	1	2	3	4	5
0	0	36	0	0	0	0
1	366	1584	909	16	0	0
2	2670	73728	255960	231336	45216	360
3	35500	3286224	34736049	106245024	119474748	48046176
4	606264	142523712	3387935304	23702767680	66922830504	85607985132
5	12210702	6060689280	273906849222	3623779411776	19938817169442	53346064121712

9 Polyhedron 1

9.1 Partition 1 of model 1

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 0 \\ 0 & 1 & 1 & 1 & 1 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & -2 & 0 & 0 & 0 & 1 & -1 \\ 0 & 0 & 0 & -2 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & -2 & 0 & 1 & 0 & 0 & -1 \\ 0 & 0 & 0 & -2 & 0 & 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{101}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -3 & -2 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & -2 \end{bmatrix} \tag{102}$$

A positive basis for the generators of the Kähler cone is $K_1 = D_3$, $K_2 = D_1$. The Stanley Reisner ideal is

$$[D_1 D_2, D_3 D_4 D_5 D_6 D_7] \tag{103}$$

The Calabi-Yau space is defined by $6\,{K_1}^2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 68$. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -3 & -2 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & -2 \end{bmatrix} \tag{104}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = K_2 \tag{105}$$

Its second Chern class is

$$\mathrm{c}_2(X) = -3\,{J_2}^2 + 4\,{J_1}^2 + 2\,J_2 J_1 \tag{106}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 12 \qquad K_{1,1,2} = 6 \tag{107}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 60 \qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{108}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 6 \end{bmatrix} \tag{109}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	6	0	0	0	0
1	360	360	0	0	0	0
2	2682	17064	2682	0	0	0
3	35472	770280	770280	35472	0	0
4	606348	33726420	99533664	33726420	606348	0
5	12210408	1444231296	9382024152	9382024152	1444231296	12210408

(110)

10 Polyhedron 1

10.1 Partition 1 of model 1

The model has 5 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 & 1 & 1 & 0 & 1 & 0 & 1 \\ 0 & 0 & -1 & 0 & 0 & 0 & 0 & 1 & -2 & -1 \\ 0 & 0 & -1 & 0 & 1 & 0 & 0 & 0 & -1 & 0 \\ 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & -1 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & -1 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{111}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & -2 & 1 & 1 & 0 & 0 & 0 & 0 & -1 & 1 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 & 1 & 0 & 1 & -2 \end{bmatrix} \tag{112}$$

A positive basis for the generators of the Kähler cone is $K_1 = D_1 + D_6$, $K_2 = D_6$, $K_3 = D_3$. The Stanley Reisner ideal is

$$[D_6D_7, D_6D_8, D_1D_2D_8, D_3D_4D_5D_7, D_1D_2D_3D_4D_5] \tag{113}$$

The Calabi-Yau space is defined by $2\,{K_1}^2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 72$. The divisors D_8 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -4 & 2 & 2 & 1 & 1 & 1 & 0 & -1 & 0 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & 1 & 1 & 0 \end{bmatrix} \tag{114}$$

The dual basis of divisors is

$$J_1 = 1/2\,K_1 \qquad J_2 = K_2 \tag{115}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 4\,{J_1}^2 - 2\,{J_2}^2 + 5\,J_2J_1 \tag{116}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 6 \qquad K_{1,1,2} = 8 \qquad K_{1,2,2} = 8 \qquad K_{2,2,2} = 8 \tag{117}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 48 \qquad \mathrm{c}_2 \cdot J_2 = 56 \tag{118}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	8	0	0	0	0
1	56	1184	704	0	0	0
2	−272	1104	82832	130192	9704	0
3	3240	−18176	132544	13865248	36973952	13506752
4	−58432	400536	−2699264	26457848	3385637232	12854281944
5	1303840	−10532352	71413056	−577466880	7219059360	1021710328800

(119)

This is triangulation 2. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 & 1 & 1 & 0 & 1 & 0 & 1 \\ 0 & 0 & -1 & 0 & 0 & 0 & 0 & 1 & -2 & -1 \\ 0 & 0 & -1 & 0 & 1 & 0 & 0 & 0 & -1 & 0 \\ 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & -1 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & -1 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{120}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & -2 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & -1 & -1 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 & 1 & 0 & 1 & -2 \end{bmatrix} \tag{121}$$

A positive basis for the generators of the Kähler cone is $K_2 = D_1,\ K_3 = D_3,\ K_1 = D_6 + D_1$. The Stanley Reisner ideal is

$$[D_1D_2, D_6D_8, D_3D_4D_5D_7] \tag{122}$$

The Calabi-Yau space is defined by $2\,{K_1}^2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 72$. The divisors D_8 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -4 & 0 & 0 & 1 & 1 & 1 & 2 & 1 & 0 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & -1 & -1 & 0 \end{bmatrix} \tag{123}$$

The dual basis of divisors is

$$J_1 = 1/2\,K_1 \qquad J_2 = K_2 \tag{124}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 6\,{J_1}^2 - 2\,{J_2}^2 + 3\,J_2J_1 \tag{125}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 6 \qquad K_{1,1,2} = 4 \tag{126}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 48 \qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{127}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{128}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	8	0	0	0	0
1	704	1184	56	0	0	0
2	9704	130192	82832	1104	−272	0
3	291008	13506752	36973952	13865248	132544	−18176
4	10952056	1351951736	9855970048	12854281944	3385637232	26457848
5	495618240	131926687008	2028056415104	6201762710528	5040816284800	1021710328800

(129)

11 Polyhedron 2

11.1 Partition 1 of model 2

The model has 2 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 & 1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & -1 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & -1 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{130}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & -3 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \\ 0 & -1 & 1 & 1 & 0 & 0 & 0 & -1 & 0 \end{bmatrix} \tag{131}$$

A positive basis for the generators of the Kähler cone is $K_1 = D_3$, $K_2 = D_1$. The Stanley Reisner ideal is

$$[D_1 D_2, D_3 D_4 D_5 D_6 D_7] \tag{132}$$

The Calabi-Yau space is defined by $6\,{K_1}^2 + 2\,K_1 K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 72$. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -3 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \\ 0 & -1 & 1 & 1 & 0 & 0 & 0 & -1 & 0 \end{bmatrix} \tag{133}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = K_2 \tag{134}$$

Its second Chern class is

$$\mathrm{c}_2(X) = -{J_2}^2 + 4\,{J_1}^2 + 4\,J_2 J_1 \tag{135}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 8 \qquad K_{1,1,2} = 6 \tag{136}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 56 \qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{137}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 6 \end{bmatrix} \tag{138}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	18	0	0	0	0
1	348	900	36	−4	0	0
2	2706	41778	46548	1512	−306	54
3	35416	1871784	8009712	5604204	153936	−24768
4	606516	81468792	864795636	1928672640	985016556	25990110
5	12209820	3473471196	74041264872	363480492960	530436671676	214272257040

(139)

12 Polyhedron 4

12.1 Partition 1 of model 4

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 0 & 2 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -2 & 0 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{140}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & -1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 \\ -1 & -2 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 & 0 & 0 & 1 & 1 & 0 & -2 \end{bmatrix} \tag{141}$$

A positive basis for the generators of the Kähler cone is $K_1 = D_3$, $K_3 = D_1$, $K_2 = D_4$. The Stanley Reisner ideal is

$$[D_3D_7, D_4D_8, D_1D_2D_5D_6] \tag{142}$$

The Calabi-Yau space is defined by ${K_1}^2 + 3\,K_1K_2 + 2\,{K_2}^2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 72$. The divisors D_8 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -1 & -1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 \\ -2 & -4 & 1 & 1 & 0 & 2 & 1 & 1 & 0 & 0 \end{bmatrix} \tag{143}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = 1/2\,K_2 \tag{144}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 6\,{J_2}^2 + 6\,J_2J_1 \tag{145}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 4 \qquad\qquad K_{2,2,2} = 3 \tag{146}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 24 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 42 \tag{147}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{148}$$

The genus zero instanton numbers up to degree 5 are

$$
\begin{array}{|c|rrrrrr|}
\hline
 & 0 & 1 & 2 & 3 & 4 & 5 \\
\hline
0 & 0 & 704 & 9704 & 291008 & 10952056 & 495618240 \\
1 & 32 & 3904 & 416736 & 42873024 & 4258889312 & 413449786176 \\
2 & 0 & 3216 & 2030176 & 644810720 & 146713202496 & 27524945558992 \\
3 & 0 & 64 & 2699616 & 2830008448 & 1466448925952 & 522305452066176 \\
4 & 0 & -4 & 860352 & 4743969216 & 6016375594432 & 4136767940274624 \\
5 & 0 & 0 & 12768 & 3034501632 & 11540204027808 & 16213245681158080 \\
\hline
\end{array}
\qquad (149)
$$

13 Polyhedron 16

13.1 Partition 1 of model 16

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$
\left[\begin{array}{cccccccccccc}
1 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 1 & 1 & 1 & 1 & 0 & 1 & 0 & 2 & 2 \\
0 & 0 & 0 & 3 & -1 & 0 & 0 & 0 & 1 & 0 & 1 & 2 \\
0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & -1 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 1 & -2 & 0 & 0 & 0 & 1 & 0 & 1 & -1 & -1 \\
0 & 0 & 2 & -2 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & -1
\end{array}\right] \qquad (150)
$$

The Mori cone of the ambient space is generated by

$$
\left[\begin{array}{cccccccccccc}
-1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -2 & 1 & 0 & 1 \\
0 & -1 & 0 & -1 & 0 & -1 & -1 & 0 & 0 & 0 & 1 & 1 \\
0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & -2 & 0 & 0 \\
0 & 0 & 0 & 1 & 0 & 1 & 1 & 0 & 1 & 0 & 0 & -2 \\
0 & 0 & 0 & 1 & 1 & 1 & 1 & 0 & 0 & 0 & -2 & 0
\end{array}\right] \qquad (151)
$$

A positive basis for the generators of the Kähler cone is $K_5 = D_3$, $K_3 = D_1$, $K_1 = D_8 + 2\,D_1$, $K_4 = D_7 + 2\,D_8 + 4\,D_1$, $K_2 = -D_2 + D_3 + D_7 + 2\,D_8 + 4\,D_1$. The Stanley Reisner ideal is

$$
[D_1D_6, D_3D_7, D_3D_{10}, D_7D_9, D_8D_9, D_8D_{10}, D_9D_{10}, D_2D_3D_4D_5, D_2D_4D_5D_7, D_2D_4D_5D_8] \qquad (152)
$$

The Calabi-Yau space is defined by K_1K_2. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 72$. The divisors D_7, D_9, D_{10} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$
\left[\begin{array}{cccccccccccc}
-2 & -6 & 0 & 1 & 3 & 1 & 1 & 0 & 0 & 2 & 0 & 0 \\
0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & -2 & 0 & 0
\end{array}\right] \qquad (153)
$$

The dual basis of divisors is

$$
J_1 = 1/2\,K_1 \qquad J_2 = K_3 \qquad (154)
$$

Its second Chern class is

$$
\mathrm{c}_2(X) = 12\,{J_1}^2 + 4\,J_2J_1 - 3\,{J_2}^2 \qquad (155)
$$

The non-zero intersection numbers are

$$K_{1,1,1} = 2 \qquad K_{1,1,2} = 2 \tag{156}$$

The linear forms are

$$c_2 \cdot J_1 = 32 \qquad c_2 \cdot J_2 = 24 \tag{157}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{158}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	
0	0	8	0	0	0	
1	3264	9024	3264	0	0	
2	193704	6677856	14161056	6677856	193704	
3	40897216	4501790208	33088733952	58621711936	33088733952	45017
4	8869331832	2899431143088	53279323863936	234194824987824	369911930813472	2341948249
5	2585556116160	1809306027051264	68666260414628736	614033520793122816	2022411513672681984	29552649225700

(159)

14 Polyhedron 19 in the list

14.1 Partition 1 of model 19

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 & 0 & 1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & -2 & 1 & 0 & 0 & -1 & 0 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{160}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & 0 & 1 & 1 & 1 & -1 & 1 & -1 & 0 & 0 \\ 0 & -2 & 1 & 1 & 0 & 0 & 1 & 0 & 1 & -2 \\ 0 & 0 & -1 & -1 & 0 & 1 & -1 & 1 & 0 & 1 \end{bmatrix} \tag{161}$$

A positive basis for the generators of the Kähler cone is $K_1 = D_3$, $K_3 = D_4 + D_3$, $K_2 = D_1 + D_4$. The Stanley Reisner ideal is

$$[D_3D_8, D_4D_6D_7, D_4D_6D_8, D_1D_2D_3D_5, D_1D_2D_5D_7] \tag{162}$$

The Calabi-Yau space is defined by $4\,K_1K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 72$. The divisors D_8 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -4 & -2 & 1 & 1 & 2 & 0 & 1 & 0 & 1 & 0 \\ -4 & -4 & 0 & 0 & 2 & 2 & 0 & 2 & 2 & 0 \end{bmatrix} \tag{163}$$

The dual basis of divisors is

$$J_1 = 2\,K_1 - K_2 \qquad J_2 = -K_1 + K_2 \tag{164}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 3\,J_2 J_1 + 2\,{J_1}^2 - 3\,{J_2}^2 \tag{165}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 108 \qquad K_{1,1,2} = -24 \qquad K_{1,2,2} = 4 \tag{166}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 132 \qquad \mathrm{c}_2 \cdot J_2 = -36 \tag{167}$$

J_2 is an elliptic surface. This is triangulation 2. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 & 0 & 1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & -2 & 1 & 0 & 0 & -1 & 0 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{168}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \\ 0 & -2 & 0 & 0 & 0 & 1 & 0 & 1 & 1 & -1 \\ 0 & 0 & 1 & 1 & 0 & -1 & 1 & -1 & 0 & -1 \end{bmatrix} \tag{169}$$

A positive basis for the generators of the Kähler cone is $K_3 = D_1,\ K_2 = D_4 + D_1,\ K_1 = D_3$. The Stanley Reisner ideal is

$$[D_3 D_8, D_1 D_2 D_5, D_4 D_6 D_7] \tag{170}$$

The Calabi-Yau space is defined by $4\,K_1 K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 72$. The divisors D_8 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -2 & 0 & 0 & 1 & 1 & 0 & 1 & 1 & 0 \\ -4 & -2 & 1 & 1 & 2 & 0 & 1 & 0 & 1 & 0 \end{bmatrix} \tag{171}$$

The dual basis of divisors is

$$J_1 = 2\,K_2 - K_1 \qquad J_2 = K_1 - K_2 \tag{172}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 9\,J_2 J_1 + 2\,{J_1}^2 + 6\,{J_2}^2 \tag{173}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 4 \tag{174}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 24 \qquad \mathrm{c}_2 \cdot J_2 = 36 \tag{175}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{176}$$

J_2 is an elliptic surface. The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	704	9704	291008	10952056	495618240
1	128	12288	1337344	135708672	13397379072	1294300782592
2	144	103936	39945216	10230360064	2071519497472	361095490311168
3	128	638976	658513920	353338880000	130539974270976	37773988952834048
4	140	3173888	7635363648	7724662999040	4810652504762560	2177625853806633984
5	128	13639680	69465993216	123660569706496	122880050549305344	83266978978116784128

(177)

15 Polyhedron 28 in the list

15.1 Partition 1 of model 28

The model has 2 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & 1 & 1 \\ 0 & 1 & 1 & 0 & 1 & 0 & 1 & 1 & 0 & 1 & 1 & 1 & 1 \\ 0 & 0 & 0 & -3 & 1 & 0 & 0 & 0 & -1 & -1 & -2 & -2 & -1 \\ 0 & 0 & 0 & -2 & 0 & 0 & 0 & 1 & 0 & 0 & -1 & -1 & -1 \\ 0 & 0 & 0 & -1 & 0 & 1 & 0 & 0 & -1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & -1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{178}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & -2 & 0 & 1 & 0 \\ 0 & -1 & -1 & -1 & 0 & -1 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & -2 & 0 & 0 & 1 & 0 & -1 & 1 & -1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 & 0 & 0 & 1 & 0 & 1 & 0 & -2 & 0 & 0 \\ 0 & 0 & 1 & 1 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & -2 \\ 0 & 0 & 1 & 1 & 0 & 1 & 0 & 0 & 0 & 1 & 0 & -2 & 0 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & -1 & 0 & 1 & 1 & 0 & 0 \end{bmatrix} \tag{179}$$

This Mori cone is not simplicial. A positive basis for the generators of the Kähler cone is $K_6 = 1/2\,D_8 + D_6 - 3/2\,D_1 + 3/2\,D_5 + D_4 + 1/2\,D_3,\ K_5 = -1/2\,D_3 - 1/2\,D_1 + 1/2\,D_5 + 1/2\,D_8 + D_6 + D_4,\ K_2 = -1/2\,D_1 + 1/2\,D_5 + 1/2\,D_8 + D_6 + 1/2\,D_3,\ K_1 = D_6 - D_1 + D_5 + D_4,\ K_4 = 1/2\,D_3 + 1/2\,D_1 - 1/2\,D_5 - 1/2\,D_8 - D_6,\ K_3 = 3/2\,D_5 - 1/2\,D_1 + 1/2\,D_8 + D_6 + 1/2\,D_3$. The Stanley Reisner ideal is

$$[D_3D_8, D_3D_{10}, D_4D_9, D_6D_{10}, D_6D_{11}, D_8D_9, D_8D_{11}, D_9D_{10}, D_9D_{11}, D_{10}D_{11}, D_3D_6D_9, D_4D_5D_7, D_5D_7D_8, D_5D_7D_{10}, D_5D_7D_{11}, \tag{180}$$

The Calabi-Yau space is defined by $2\,K_1K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 72$. The divisors D_8, D_9, D_{10}, D_{11} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -4 & -12 & 2 & 2 & 6 & 2 & 0 & 4 & 0 & 0 & 0 & 0 & 0 \\ -12 & -12 & 0 & 0 & 6 & 6 & 6 & 0 & 6 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{181}$$

The dual basis of divisors is

$$J_1 = K_2 - 1/4\,K_1 \qquad J_2 = -1/2\,K_2 + 1/4\,K_1 \tag{182}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 16\,J_2J_1 + 8\,{J_1}^2 + 2\,{J_2}^2 \tag{183}$$

The non-zero intersection numbers are

$$K_{1,1,1} = \frac{75}{4} \qquad K_{1,1,2} = -5 \qquad K_{1,2,2} = 1 \tag{184}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 72 \qquad \mathrm{c}_2 \cdot J_2 = -24 \tag{185}$$

J_2 is an elliptic surface. This is triangulation 2. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & 1 & 1 \\ 0 & 1 & 1 & 0 & 1 & 0 & 1 & 1 & 0 & 1 & 1 & 1 & 1 \\ 0 & 0 & 0 & -3 & 1 & 0 & 0 & 0 & -1 & -1 & -2 & -2 & -1 \\ 0 & 0 & 0 & -2 & 0 & 0 & 0 & 1 & 0 & 0 & -1 & -1 & -1 \\ 0 & 0 & 0 & -1 & 0 & 1 & 0 & 0 & -1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & -1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{186}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & -1 & -1 & 0 & 0 & 0 & 0 & 0 & -1 & 1 & 1 & 0 \\ 0 & -1 & -1 & -1 & 0 & -1 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & -2 \\ 0 & 0 & 1 & 1 & 0 & 1 & 0 & 0 & 0 & 1 & 0 & -2 & 0 \\ 0 & 0 & 1 & 1 & 0 & 0 & 1 & 0 & 1 & 0 & -2 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -1 & 1 & -1 & -1 & 1 & 0 & 0 \end{bmatrix} \tag{187}$$

A positive basis for the generators of the Kähler cone is $K_6 = D_6$, $K_3 = D_3$, $K_5 = D_5 + D_6$, $K_4 = D_4 + D_8 - D_1 + D_5 + 2\,D_6$, $K_2 = D_8 - D_1 + D_5 + 2\,D_6 + D_3$, $K_1 = -D_1 + D_4 + D_5 + D_6$. The Stanley Reisner ideal is

$$[D_3D_8, D_3D_{10}, D_4D_9, D_6D_9, D_6D_{10}, D_6D_{11}, D_8D_{11}, D_9D_{10}, D_9D_{11}, D_{10}D_{11}, D_1D_2D_6, D_4D_5D_7, D_5D_7D_{10}, D_5D_7D_{11}, D_1D_2D_3 \tag{188}$$

The Calabi-Yau space is defined by K_1K_2. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 72$. The divisors D_8, D_9, D_{10}, D_{11} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -2 & 0 & 0 & 1 & 1 & 1 & 0 & 1 & 0 & 0 & 0 & 0 \\ -2 & -6 & 1 & 1 & 3 & 1 & 0 & 2 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{189}$$

The dual basis of divisors is

$$J_1 = 3/4\, K_1 - 1/4\, K_2 \qquad J_2 = -1/4\, K_1 + 1/4\, K_2 \tag{190}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 12\, J_2 J_1 + 2\, {J_1}^2 + 12\, {J_2}^2 \tag{191}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 2 \tag{192}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 24 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{193}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{194}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 0 \end{bmatrix} \tag{195}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	3264	193704	40897216	8869331832	2585556116160
1	96	84480	58787328	39090493440	24853336094208	15384774694677504
2	148	1048064	2731077824	4777961654272	6504047417702720	7526789771866457088
3	96	9029632	66941515776	252439380582912	643410594137323520	1267240664887775686656
4	140	60521984	1121769568832	8212311229630464	36029225481582655168	113097188395002902791168
5	96	341040128	14408722875392	191754703069319168	1370287344975752832000	6545198493349608639575552

(196)

16 Polyhedron 1

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 1 & 1 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & -1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{197}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & -3 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & -2 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{198}$$

A positive basis for the generators of the Kähler cone is $K_2 = D_3$, $K_1 = D_1$. The Stanley Reisner ideal is

$$[D_3 D_7, D_1 D_2 D_4 D_5 D_6] \tag{199}$$

The Calabi-Yau space is defined by $6\,K_1{}^2 + 4\,K_1K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 76$. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -3 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & -2 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{200}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = K_2 \tag{201}$$

Its second Chern class is

$$\mathrm{c}_2(X) = J_2{}^2 + 4\,J_1{}^2 + 6\,J_2J_1 \tag{202}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 4 \qquad\qquad K_{1,1,2} = 6 \tag{203}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 52 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{204}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 6 \end{bmatrix} \tag{205}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	54	0	0	0	0
1	336	2160	2160	336	0	0
2	2730	102492	583470	1011384	583470	102492
3	35360	4539024	75358080	400151088	885946464	885946464
4	606684	196580898	7141800672	82704010218	418964809644	1066633771068
5	12209232	8346574800	566341955568	12034210855968	113289157975680	555840165325248

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17 Polyhedron 1

17.1 Partition 1 of model 1

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & -1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{207}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & -4 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\ -2 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{208}$$

A positive basis for the generators of the Kähler cone is $K_2 = D_3$, $K_1 = D_1$. The Stanley Reisner ideal is

$$[D_3 D_7, D_1 D_2 D_4 D_5 D_6] \tag{209}$$

The Calabi-Yau space is defined by $4\,{K_1}^2 + 8\,K_1 K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 86$. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -1 & -4 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\ -2 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{210}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = K_2 \tag{211}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 6\,{J_1}^2 + {J_2}^2 + 2\,J_2 J_1 \tag{212}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 8 \qquad\qquad K_{1,1,2} = 4 \tag{213}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 56 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{214}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{215}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	4	0	0	0	0
1	640	640	0	0	0	0
2	10032	72224	10032	0	0	0
3	288384	7539200	7539200	288384	0	0
4	10979984	757561520	2346819520	757561520	10979984	0
5	495269504	74132328704	520834042880	520834042880	74132328704	495269504

(216)

17.2 Partition 2 of model 1

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 & 1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & -1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{217}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & -4 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\ -1 & -1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{218}$$

A positive basis for the generators of the Kähler cone is $K_2 = D_3$, $K_1 = D_1$. The Stanley Reisner ideal is

$$[D_3 D_7, D_1 D_2 D_4 D_5 D_6] \tag{219}$$

The Calabi-Yau space is defined by $4\,{K_1}^2 + 5\,K_1 K_2 + {K_2}^2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 86$. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -1 & -4 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\ -1 & -1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \tag{220}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = K_2 \tag{221}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 6\,{J_1}^2 + 5\,J_2 J_1 \tag{222}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 5 \qquad\qquad K_{1,1,2} = 4 \tag{223}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 50 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{224}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{225}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	16	0	0	0	0
1	640	2144	120	−32	3	0
2	10032	231888	356368	14608	−4920	1680
3	288384	23953120	144785584	144051072	5273880	−1505472
4	10979984	2388434784	36512550816	115675981232	85456640608	3018009984
5	495269504	232460466048	7251261673320	50833652046112	106397389165188	62800738246496

(226)

18 Polyhedron 6

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 1 \\ 0 & 1 & 1 & 1 & 1 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -2 & 0 & 1 & 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{227}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & -2 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \\ 0 & -2 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 & 0 & 0 & 1 & 1 & 0 & -2 \end{bmatrix} \tag{228}$$

A positive basis for the generators of the Kähler cone is $K_3 = D_1$, $K_2 = D_3$, $K_1 = D_4$. The Stanley Reisner ideal is

$$[D_3 D_7, D_4 D_8, D_1 D_2 D_5 D_6] \tag{229}$$

The Calabi-Yau space is defined by $2\,{K_1}^2 + 2\,K_1 K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 86$. The divisors D_8 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -4 & 1 & 1 & 0 & 2 & 1 & 1 & 0 & 0 \\ 0 & -2 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 \end{bmatrix} \tag{230}$$

The dual basis of divisors is

$$J_1 = 1/2\,K_1 \qquad J_2 = K_2 \tag{231}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 6\,{J_1}^2 + {J_2}^2 + 8\,J_2 J_1 \tag{232}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 2 \qquad\qquad K_{1,1,2} = 4 \tag{233}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 44 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{234}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{235}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	64	0	0	0	0
1	640	6912	14400	6912	640	0
2	10032	742784	8271360	31344000	48098560	31344000
3	288384	75933184	2445747712	26556152064	130867460608	329212616704
4	10979984	7518494784	532817161216	12305418469184	130700405114112	746592735013952
5	495269504	728114777344	97089446866176	4074651399444224	78142574531195136	816759204484794624

(236)

19 Polyhedron 4

19.1 Partition 1 of model 4

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 & 1 & 1 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & -3 & 1 & 0 & 0 & -2 & 0 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & -1 & 0 & 1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & -1 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{237}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & 0 & 1 & 1 & 0 & 1 & 1 & 0 & 1 & -3 \\ 0 & -2 & 1 & 1 & 1 & 0 & 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & 1 & 0 & 1 \end{bmatrix} \tag{238}$$

A positive basis for the generators of the Kähler cone is $K_3 = -D_1 + D_4 + D_3$, $K_2 = D_3$, $K_1 = D_4$. The Stanley Reisner ideal is

$$[D_3D_8, D_6D_8, D_1D_2D_3, D_4D_5D_6D_7, D_1D_2D_4D_5D_7] \tag{239}$$

The Calabi-Yau space is defined by $4\,K_1K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 100$. The divisors D_8 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -4 & 0 & 0 & 2 & 1 & 1 & 1 & 1 & 0 \\ 0 & -2 & 1 & 1 & 1 & 0 & 0 & -1 & 0 & 0 \end{bmatrix} \tag{240}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = -2\,K_1 + K_2 \tag{241}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 6\,{J_1}^2 + 7\,J_2J_1 \tag{242}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 4 \qquad K_{1,1,2} = 4 \tag{243}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 52 \qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{244}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{245}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	32	−2	0	0	0
1	576	3840	576	0	0	0
2	10360	413056	1533744	445824	−55176	98304
3	285760	42452992	561744128	1518375680	580618496	4704256
4	11007912	4217952960	134320808616	1028366160576	2261335597152	1046296810176
5	494920768	409491950592	25791106777728	411041211686912	2228121584016896	4243661500095744

(246)

This is triangulation 2. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 & 1 & 1 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & -3 & 1 & 0 & 0 & -2 & 0 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & -1 & 0 & 1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & -1 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{247}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 1 & -2 \\ 0 & -2 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & -1 & 0 & -1 \end{bmatrix} \tag{248}$$

A positive basis for the generators of the Kähler cone is $K_2 = D_3$, $K_1 = D_4$, $K_3 = D_1$. The Stanley Reisner ideal is

$$[D_1 D_2, D_3 D_8, D_4 D_5 D_6 D_7] \tag{249}$$

The Calabi-Yau space is defined by $4\,K_1 K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 100$. The divisors D_8 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -4 & 0 & 0 & 2 & 1 & 1 & 1 & 1 & 0 \\ 0 & -2 & 1 & 1 & 1 & 0 & 0 & -1 & 0 & 0 \end{bmatrix} \tag{250}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = -2\,K_1 + K_2 \tag{251}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 6\,{J_1}^2 + 7\,J_2 J_1 \tag{252}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 4 \qquad K_{1,1,2} = 4 \tag{253}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 52 \qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{254}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 4 \end{bmatrix} \tag{255}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	32	−2	0	0	0
1	576	3840	576	0	0	0
2	10360	413056	1533744	445824	−55176	98304
3	285760	42452992	561744128	1518375680	580618496	4704256
4	11007912	4217952960	134320808616	1028366160576	2261335597152	1046296810176
5	494920768	409491950592	25791106777728	411041211686912	2228121584016896	4243661500095744

(256)

20 Polyhedron 5

20.1 Partition 1 of model 5

The model has 2 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 1 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 & 1 & 1 & 1 & 1 & 1 & 2 & 2 \\ 0 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 3 & 1 & 1 & 2 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -2 & 0 & -1 & -1 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{257}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & 1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 \\ -1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & -2 & 0 & 1 \\ 0 & -1 & 0 & 0 & 0 & 0 & -1 & -1 & -1 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 1 & 0 & -2 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 1 & 0 & -2 \end{bmatrix} \tag{258}$$

A positive basis for the generators of the Kähler cone is $K_2 = D_3$, $K_4 = D_4$, $K_3 = -D_5 + D_4 + D_8 + 2\,D_3$, $K_5 = D_8 + 2\,D_3$, $K_1 = D_1$. The Stanley Reisner ideal is

$$[D_1D_2, D_3D_9, D_3D_{10}, D_4D_8, D_4D_{10}, D_8D_9, D_9D_{10}, D_3D_5D_6D_7, D_4D_5D_6D_7, D_5D_6D_7D_8] \tag{259}$$

The Calabi-Yau space is defined by $K_1K_3 + K_2K_3$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 100$. The divisors D_8, D_9, D_{10} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -1 & 0 & 1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 \\ -2 & -6 & 0 & 0 & 2 & 3 & 1 & 1 & 1 & 0 & 0 & 0 \end{bmatrix} \tag{260}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = 1/2\, K_2 \tag{261}$$

Its second Chern class is

$$c_2(X) = 12\, {J_2}^2 - {J_1}^2 + 3\, J_2 J_1 \tag{262}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 2 \qquad\qquad K_{2,2,2} = 3 \tag{263}$$

The linear forms are

$$c_2 \cdot J_1 = 24 \qquad\qquad c_2 \cdot J_2 = 42 \tag{264}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{265}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	2880	208728	39767360	8984778408	2571518571840
1	4	4752	3603528	2445085664	1580414726844	988726084819920
2	0	252	2204928	6905771456	12536489815488	17213021137437120
3	0	0	20520	2493967312	16303941022572	54281784750359040
4	0	0	−9252	17671840	4149078701904	43526767714418880
5	0	0	0	−2695040	24150423420	8540389793334960

(266)

21 Polyhedron 8

21.1 Partition 1 of model 8

The model has 2 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 0 & 0 & 0 & -3 & 1 & 0 & 0 & 0 & -1 & -1 & -2 & -1 \\ 0 & 0 & 0 & -2 & 0 & 0 & 1 & 0 & 1 & 0 & -1 & -1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{267}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & -3 & 1 & 0 \\ 0 & -2 & 0 & 0 & 1 & 1 & -1 & 0 & 1 & 0 & 0 & 0 \\ 0 & -1 & -1 & -1 & 0 & 0 & 0 & -1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & -2 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & 0 & 1 & -2 & 0 \\ 0 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & -1 & 1 & 0 & 0 \end{bmatrix} \tag{268}$$

This Mori cone is not simplicial. A positive basis for the generators of the Kähler cone is $K_5 = D_5$, $K_3 = D_3$, $K_1 = D_4 + D_5$, $K_4 = D_8 + 3\,D_4 + 2\,D_5$, $K_2 = -D_1 + 2\,D_5 + D_3 + D_8 + 3\,D_4$. The Stanley Reisner ideal is

$$[D_3D_8, D_3D_9, D_5D_8, D_5D_9, D_5D_{10}, D_8D_{10}, D_9D_{10}, D_3D_4D_7, D_4D_7D_9, D_4D_7D_{10}, D_1D_2D_3D_6, D_1D_2D_5D_6, D_1D_2D_6D_8, D_1D_2L \tag{269}$$

The Calabi-Yau space is defined by K_1K_2. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 100$. The divisors D_8, D_9, D_{10} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -6 & 1 & 1 & 3 & 0 & 2 & 1 & 0 & 0 & 0 & 0 \\ 0 & -2 & 0 & 0 & 1 & 1 & -1 & 0 & 1 & 0 & 0 & 0 \end{bmatrix} \tag{270}$$

The dual basis of divisors is

$$J_1 = 1/2\,K_1 \qquad J_2 = 1/2\,K_2 - 3/2\,K_1 \tag{271}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 12\,{J_1}^2 + 11\,J_2J_1 \tag{272}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 1 \qquad K_{1,1,2} = 2 \tag{273}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 34 \qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{274}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{275}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	
0	0	48	−2	0	0	
1	2880	45120	135200	45120	2880	
2	208728	31854624	536009384	2873844768	5329853440	
3	39767360	21253338240	1091380294400	17654952181440	123133222380800	
4	8984778408	13561202128944	1602986818855252	56998790586691440	893735526092204032	72
5	2571518571840	8412769444060608	1940157518425228928	129007680793510300992	3749287422381954161792	574923

(276)

This is triangulation 2. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 0 & 0 & 0 & -3 & 1 & 0 & 0 & 0 & -1 & -1 & -2 & -1 \\ 0 & 0 & 0 & -2 & 0 & 0 & 1 & 0 & 1 & 0 & -1 & -1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{277}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -2 & 1 & 0 \\ 0 & -1 & -1 & -1 & 0 & 0 & 0 & -1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & -2 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & 0 & 1 & -2 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 & 1 & -1 & 0 & 0 \end{bmatrix} \tag{278}$$

A positive basis for the generators of the Kähler cone is $K_4 = D_8 + 2\,D_5 + 3\,D_4$, $K_2 = D_8 + 2\,D_5 + 3\,D_4 - D_1 + D_3$, $K_5 = D_4$, $K_1 = D_5 + D_4$, $K_3 = D_3$. The Stanley Reisner ideal is

$$[D_3D_8, D_3D_9, D_4D_7, D_5D_9, D_5D_{10}, D_8D_{10}, D_9D_{10}, D_1D_2D_3D_6, D_1D_2D_5D_6, D_1D_2D_6D_8] \tag{279}$$

The Calabi-Yau space is defined by K_1K_2. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 100$. The divisors D_8, D_9, D_{10} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -6 & 1 & 1 & 3 & 0 & 2 & 1 & 0 & 0 & 0 & 0 \\ 0 & -2 & 0 & 0 & 1 & 1 & -1 & 0 & 1 & 0 & 0 & 0 \end{bmatrix} \tag{280}$$

The dual basis of divisors is

$$J_1 = 1/2\,K_1 \qquad J_2 = 1/2\,K_2 - 3/2\,K_1 \tag{281}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 12\,{J_1}^2 + 11\,J_2J_1 \tag{282}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 1 \qquad K_{1,1,2} = 2 \tag{283}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 34 \qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{284}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{285}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	
0	0	48	−2	0	0	
1	2880	45120	135200	45120	2880	
2	208728	31854624	536009384	2873844768	5329853440	
3	39767360	21253338240	1091380294400	17654952181440	123133222380800	
4	8984778408	13561202128944	1602986818855252	56998790586691440	893735526092204032	72
5	2571518571840	8412769444060608	1940157518425228928	129007680793510300992	3749287422381954161792	574923

(286)

22 Polyhedron 13

22.1 Partition 1 of model 13

The model has 2 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 2 & 2 & 2 & 3 \\ 0 & 0 & 0 & -3 & 0 & 1 & 0 & 0 & -1 & -3 & 0 & -1 & -2 & -1 & -2 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & -2 & -1 & -1 & -1 & -1 & -2 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix} \tag{287}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -2 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & -1 & 0 & 0 & 0 & 0 & -1 & -1 & 0 & -1 & -1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -2 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 & -1 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 & -1 & -1 & 0 & -1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 0 & 1 & 0 & 0 & 0 & -2 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 1 & 1 & 1 & 0 & 0 & -2 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 1 & 0 & 0 & -2 & 0 & 0 \end{bmatrix} \tag{288}$$

A positive basis for the generators of the Kähler cone is $K_5 = -D_5 + D_9 + 2\,D_2 + D_4 + D_7 + 2\,D_3$, $K_2 = -D_5 + D_7 + D_{10} + 2\,D_1 + D_4 + 2\,D_3$, $K_6 = D_4$, $K_4 = D_2$, $K_1 = D_3 + D_2$, $K_3 = D_1 + D_2 - D_5 + D_9 + D_4 + D_7 + 2\,D_3$, $K_7 = -D_5 + D_9 + D_{10} + 2\,D_1 + D_4 + D_7 + 2\,D_3$, $K_8 = D_7 + 2\,D_3 + 2\,D_2$. The Stanley Reisner ideal is

$$[D_1D_2, D_1D_{12}, D_1D_{13}, D_2D_9, D_2D_{10}, D_2D_{13}, D_3D_9, D_3D_{10}, D_3D_{11}, D_3D_{12}, D_3D_{13}, D_4D_7, D_4D_{10}, D_4D_{11}, D_4D_{13}, D_7D_9, D_7D_{10} \tag{289}$$

The Calabi-Yau space is defined by K_1K_2. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 100$. The divisors D_7, D_9, D_{10}, D_{11}, D_{12}, D_{13} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -6 & 0 & 0 & 2 & 3 & 1 & 1 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 & -1 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{290}$$

The dual basis of divisors is

$$J_1 = 1/2\,K_1 \qquad J_2 = K_4 \tag{291}$$

Its second Chern class is

$$c_2(X) = 12\,{J_1}^2 - 2\,{J_2}^2 + 3\,J_2J_1 \tag{292}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 3 \qquad K_{1,1,2} = 2 \tag{293}$$

The linear forms are

$$c_2 \cdot J_1 = 42 \qquad\qquad c_2 \cdot J_2 = 24 \tag{294}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{295}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	4	0	0	0	0
1	2880	4752	252	0	0	0
2	208728	3603528	2204928	20520	−9252	0
3	39767360	2445085664	6905771456	2493967312	17671840	−2695040
4	8984778408	1580414726844	12536489815488	16303941022572	4149078701904	24150423420
5	2571518571840	988726084819920	17213021137437120	54281784750359040	43526767714418880	8540389793334960

(296)

This is triangulation 2. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 2 & 2 & 2 & 3 \\ 0 & 0 & 0 & -3 & 0 & 1 & 0 & 0 & -1 & -3 & 0 & -1 & -2 & -1 & -2 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & -2 & -1 & -1 & -1 & -1 & -2 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix} \tag{297}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & -2 & -1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -1 & 0 & 0 & 0 & 0 & -1 & -1 & 0 & -1 & -1 & 0 & 0 & 1 & 1 \\ 0 & 0 & -1 & -1 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -2 & 0 & 0 & 1 \\ 0 & 0 & -1 & 0 & 0 & 0 & -1 & -1 & 0 & -1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 0 & 1 & 0 & 0 & 0 & -2 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 1 & 1 & 1 & 0 & 0 & -2 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 1 & 0 & 0 & -2 & 0 & 0 \end{bmatrix} \tag{298}$$

A positive basis for the generators of the Kähler cone is $K_6 = D_4$, $K_3 = D_3$, $K_1 = D_2 + D_3$, $K_4 = -D_5 + D_9 + D_1 + D_2 + D_4 + D_7 + 2\,D_3$, $K_2 = -D_5 + D_7 + 2\,D_1 + D_{10} + D_4 + 2\,D_3$, $K_8 = D_7 + 2\,D_2 + 2\,D_3$, $K_5 = 2\,D_2 - D_5 + D_9 + D_4 + D_7 + 2\,D_3$, $K_7 = -D_5 + D_9 + 2\,D_1 + D_{10} + D_4 + D_7 + 2\,D_3$. The Stanley Reisner ideal is

$$[D_1D_{12}, D_1D_{13}, D_2D_9, D_2D_{10}, D_2D_{13}, D_3D_8, D_3D_9, D_3D_{10}, D_3D_{11}, D_3D_{12}, D_3D_{13}, D_4D_7, D_4D_{10}, D_4D_{11}, D_4D_{13}, D_7D_9, D_7D_{10} \tag{299}$$

The Calabi-Yau space is defined by $K_1 K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 100$. The divisors D_7, D_9, D_{10}, D_{11}, D_{12}, D_{13} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$.

The Mori cone of the Calabi-Yau space is generated by

$$\left[\begin{array}{ccccccccccccccc} -2 & -6 & 2 & 2 & 0 & 3 & 1 & 1 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -1 & -1 & 1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \end{array}\right] \tag{300}$$

The dual basis of divisors is

$$J_1 = 1/2\, K_1 \qquad J_2 = K_3 \tag{301}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 10\, {J_1}^2 - 2\, {J_2}^2 + 5\, J_2 J_1 \tag{302}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 3 \qquad K_{1,1,2} = 4 \qquad K_{1,2,2} = 4 \qquad K_{2,2,2} = 4 \tag{303}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 42 \qquad \mathrm{c}_2 \cdot J_2 = 52 \tag{304}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	4	0	0	0	0
1	252	4752	2880	0	0	0
2	−9252	20520	2204928	3603528	208728	0
3	848628	−2695040	17671840	2493967312	6905771456	2445085664
4	−114265008	460972620	−2654170560	24150423420	4149078701904	16303941022572
5	18958064400	−92258120448	515459515968	−3831306746112	45162481474512	8540389793334960

(305)

This is triangulation 3. The Gorenstein cone after desingularization is

$$\left[\begin{array}{ccccccccccccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 2 & 2 \\ 0 & 0 & 0 & -3 & 0 & 1 & 0 & 0 & -1 & -3 & 0 & -2 & -1 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & -2 & -1 & -1 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \end{array}\right] \tag{306}$$

The Mori cone of the ambient space is generated by

$$\left[\begin{array}{ccccccccccccc} -1 & 0 & -1 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & -1 & 0 & 0 & 0 & 0 & -1 & -1 & 0 & -1 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & -1 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & -2 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 0 & 1 & 0 & 0 & -2 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 1 & 0 & -2 & 0 \end{array}\right] \tag{307}$$

A positive basis for the generators of the Kähler cone is $K_3 = D_2$, $K_5 = D_4$, $K_1 = D_3 + D_2$, $K_4 = D_1 + D_3$, $K_2 = -D_5 + 2\,D_3 + D_4 + D_7 + 2\,D_1$, $K_6 = D_7 + 2\,D_1 + 2\,D_3$. The Stanley Reisner ideal is

$$[D_1D_2, D_1D_{10}, D_1D_{11}, D_2D_9, D_3D_9, D_3D_{10}, D_3D_{11}, D_4D_7, D_4D_{10}, D_7D_{11}, D_{10}D_{11}, D_1D_5D_6D_8, D_3D_5D_6D_8, D_4D_5D_6D_8, D_5D_6 \tag{308}$$

The Calabi-Yau space is defined by K_1K_2. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 100$. The divisors D_7, D_9, D_{10}, D_{11} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -6 & 0 & 0 & 2 & 3 & 1 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 & -1 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \end{bmatrix} \tag{309}$$

The dual basis of divisors is

$$J_1 = 1/2\,K_1 \qquad J_2 = K_3 \tag{310}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 12\,{J_1}^2 - 2\,{J_2}^2 + 3\,J_2J_1 \tag{311}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 3 \qquad\qquad K_{1,1,2} = 2 \tag{312}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 42 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 24 \tag{313}$$

J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{314}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	4	0	0	0	0
1	2880	4752	252	0	0	0
2	208728	3603528	2204928	20520	−9252	0
3	39767360	2445085664	6905771456	2493967312	17671840	−2695040
4	8984778408	1580414726844	12536489815488	16303941022572	4149078701904	24150423420
5	2571518571840	988726084819920	17213021137437120	54281784750359040	43526767714418880	8540389793334960

(315)

This is triangulation 4. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 2 & 2 \\ 0 & 0 & 0 & -3 & 0 & 1 & 0 & 0 & -1 & -3 & 0 & -2 & -1 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & -2 & -1 & -1 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \end{bmatrix} \tag{316}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & 0 \\ 0 & -1 & 0 & 0 & 0 & 0 & -1 & -1 & 0 & -1 & 0 & 1 & 1 \\ 0 & 0 & -1 & -1 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & -2 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 0 & 1 & 0 & 0 & -2 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 1 & 0 & -2 & 0 \end{bmatrix} \tag{317}$$

A positive basis for the generators of the Kähler cone is $K_1 = D_2 + D_3$, $K_4 = D_1 + D_3$, $K_3 = D_3$, $K_5 = D_4$, $K_2 = -D_5 + D_4 + D_7 + 2\,D_1 + 2\,D_3$, $K_6 = D_7 + 2\,D_1 + 2\,D_3$. The Stanley Reisner ideal is

$$[D_1D_{10}, D_1D_{11}, D_2D_9, D_3D_8, D_3D_9, D_3D_{10}, D_3D_{11}, D_4D_7, D_4D_{10}, D_7D_{11}, D_{10}D_{11}, D_1D_2D_5D_6, D_1D_5D_6D_8, D_4D_5D_6D_8, D_5D \tag{318}$$

The Calabi-Yau space is defined by K_1K_2. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 100$. The divisors D_7, D_9, D_{10}, D_{11} do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -6 & 2 & 2 & 0 & 3 & 1 & 1 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & -1 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \end{bmatrix} \tag{319}$$

The dual basis of divisors is

$$J_1 = 1/2\,K_1 \qquad J_2 = K_3 \tag{320}$$

Its second Chern class is

$$\mathrm{c}_2(X) = 10\,{J_1}^2 - 2\,{J_2}^2 + 5\,J_2J_1 \tag{321}$$

The non-zero intersection numbers are

$$K_{1,1,1} = 3 \qquad K_{1,1,2} = 4 \qquad K_{1,2,2} = 4 \qquad K_{2,2,2} = 4 \tag{322}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 42 \qquad \mathrm{c}_2 \cdot J_2 = 52 \tag{323}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	4	0	0	0	0
1	252	4752	2880	0	0	0
2	−9252	20520	2204928	3603528	208728	0
3	848628	−2695040	17671840	2493967312	6905771456	2445085664
4	−114265008	460972620	−2654170560	24150423420	4149078701904	16303941022572
5	18958064400	−92258120448	515459515968	−3831306746112	45162481474512	8540389793334960

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23 Polyhedron 1 in the list

The model has 1 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 1 & 1 & 0 & 1 & 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 3 & 0 & -1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{325}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \\ -1 & 0 & 1 & 1 & 0 & 0 & 1 & 1 & -3 & 0 \\ 0 & -2 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 \end{bmatrix} \tag{326}$$

A positive basis for the generators of the Kähler cone is $K_1 = D_3$, $K_2 = D_1$, $K_3 = D_4$. The Stanley Reisner ideal is

$$[D_3D_8, D_4D_7, D_1D_2D_5D_6] \tag{327}$$

The Calabi-Yau space is defined by $2\,K_3K_2 + 4\,K_1K_3$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 128$. The divisors D_7 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \\ -1 & -6 & 1 & 1 & 0 & 3 & 1 & 1 & 0 & 0 \end{bmatrix} \tag{328}$$

The dual basis of divisors is

$$J_1 = K_1 \qquad J_2 = K_2 \tag{329}$$

Its second Chern class is

$$\mathrm{c}_2(X) = {J_1}^2 + 2\,J_2J_1 + 12\,{J_2}^2 \tag{330}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 2 \qquad\qquad K_{2,2,2} = 4 \tag{331}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 24 \qquad\qquad \mathrm{c}_2 \cdot J_2 = 52 \tag{332}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{333}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4	5
0	0	2496	223752	38637504	9100224984	2557481027520
1	2	2496	1941264	1327392512	861202986072	540194037151104
2	0	0	223752	1327392512	2859010142112	4247105405354496
3	0	0	0	38637504	861202986072	4247105405354496
4	0	0	0	0	9100224984	540194037151104
5	0	0	0	0	0	2557481027520

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24 Polyhedron 3 in the list

24.1 Partition 1 of model 3

The model has 2 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 & 1 & 1 & 1 & 0 & 1 & 1 & 1 \\ 0 & 0 & -1 & 0 & 1 & 0 & 0 & -3 & 0 & -1 & -2 \\ 0 & 0 & -1 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & -1 \\ 0 & 0 & 1 & 0 & 0 & 1 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{335}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 1 & -3 & 0 \\ 0 & -2 & -1 & -1 & 1 & 1 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 & 0 & 0 & 1 & 1 & 0 & 0 & -2 \\ 0 & 0 & 0 & 0 & 0 & -1 & -1 & -1 & 0 & 1 & 1 \end{bmatrix} \tag{336}$$

A positive basis for the generators of the Kähler cone is $K_1 = D_7$, $K_4 = -D_4 + D_7 + D_3$, $K_3 = D_1 + D_3$, $K_2 = D_3$. The Stanley Reisner ideal is

$$[D_3D_8, D_7D_9, D_8D_9, D_1D_2D_7, D_1D_2D_8, D_3D_4D_9, D_1D_2D_5D_6, D_3D_4D_5D_6, D_4D_5D_6D_7] \tag{337}$$

The Calabi-Yau space is defined by $2\,K_1K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 128$. The divisors D_8, D_9 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -2 & -12 & 0 & 0 & 6 & 2 & 2 & 2 & 2 & 0 & 0 \\ -6 & -24 & 3 & 3 & 12 & 0 & 3 & 3 & 6 & 0 & 0 \end{bmatrix} \tag{338}$$

The dual basis of divisors is

$$J_1 = 3/2\,K_2 - K_1 \qquad J_2 = -1/2\,K_2 + 1/2\,K_1 \tag{339}$$

Its second Chern class is

$$\mathrm{c}_2(X) = -58\,{J_2}^2 - 20\,J_2J_1 \tag{340}$$

The non-zero intersection numbers are

$$K_{1,1,1} = \frac{245}{2} \qquad K_{1,1,2} = -\frac{63}{2} \qquad K_{1,2,2} = 8 \qquad K_{2,2,2} = -2 \tag{341}$$

The linear forms are

$$\mathrm{c}_2 \cdot J_1 = 166 \qquad \mathrm{c}_2 \cdot J_2 = -44 \tag{342}$$

This is triangulation 2. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 & 1 & 1 & 1 & 0 & 1 & 1 & 1 \\ 0 & 0 & -1 & 0 & 1 & 0 & 0 & -3 & 0 & -1 & -2 \\ 0 & 0 & -1 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & -1 \\ 0 & 0 & 1 & 0 & 0 & 1 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{343}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -1 & 0 & 1 & 1 & 0 & -1 & 0 & 0 & 1 & -1 & 0 \\ 0 & -2 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 & 0 & 0 & 1 & 1 & 0 & 0 & -2 \\ 0 & 0 & -1 & -1 & 0 & 1 & 0 & 0 & 0 & -1 & 1 \end{bmatrix} \tag{344}$$

A positive basis for the generators of the Kähler cone is $K_3 = D_1 + D_4$, $K_1 = D_7$, $K_2 = D_3$, $K_4 = D_4 + D_7$. The Stanley Reisner ideal is

$$[D_3D_8, D_4D_9, D_7D_9, D_1D_2D_7, D_4D_5D_6, D_1D_2D_5D_6] \tag{345}$$

The Calabi-Yau space is defined by $2\,K_1K_2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 128$. The divisors D_8, D_9 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -1 & -2 & 1 & 1 & 1 & -1 & 0 & 0 & 1 & 0 & 0 \\ -1 & -6 & 0 & 0 & 3 & 1 & 1 & 1 & 1 & 0 & 0 \end{bmatrix} \tag{346}$$

The dual basis of divisors is

$$J_1 = 3/2\,K_1 - 1/2\,K_2 \qquad J_2 = -1/2\,K_1 + 1/2\,K_2 \tag{347}$$

Its second Chern class is

$$c_2(X) = 12\,{J_2}^2 + 10\,J_2J_1 \tag{348}$$

The non-zero intersection numbers are

$$K_{1,2,2} = 2 \qquad K_{2,2,2} = 2 \tag{349}$$

The linear forms are

$$c_2 \cdot J_1 = 24 \qquad c_2 \cdot J_2 = 44 \tag{350}$$

J_1 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{351}$$

The genus zero instanton numbers up to degree 5 are

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	0	1	2	3	4	5
0	0	2496	223752	38637504	9100224984	2557481027520
1	24	24000	17244192	11552340480	7397501182992	4599501889727232
2	−2	4544	92555600	239152764672	387426434941992	494590812861015424
3	0	−4096	22945824	911674812096	4444162191527440	12266354287567890432
4	0	6144	−12818168	283693717248	13387851546648736	97181124180965503488
5	0	−8192	24969216	−89080677888	4975406530694672	246059182807985648960

25 Polyhedron 18 in the list

The model has 2 triangulations. This is triangulation 1. The Gorenstein cone after desingularization is

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 & 0 & 1 & 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & -3 & 0 & 0 & 1 & 0 & -2 & -1 \\ 0 & 0 & 0 & -3 & 1 & 0 & 0 & 0 & -2 & -1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{353}$$

The Mori cone of the ambient space is generated by

$$\begin{bmatrix} -2 & -1 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & 0 & -3 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & -2 \end{bmatrix} \tag{354}$$

A positive basis for the generators of the Kähler cone is $K_2 = D_1$, $K_1 = D_3$, $K_3 = D_4$. The Stanley Reisner ideal is

$$[D_4D_7, D_1D_2D_6, D_3D_5D_8] \tag{355}$$

The Calabi-Yau space is defined by $2\,{K_1}^2$. The Hodge numbers of this Calabi-Yau manifold are $h^{1,1} = 2$ and $h^{2,1} = 128$. The divisors D_8 do not intersect the CY. The number of toric moduli is $\tilde{h}^{1,1} = 2$. The Mori cone of the Calabi-Yau space is generated by

$$\begin{bmatrix} -6 & -3 & 1 & 1 & 3 & 0 & 3 & 1 & 0 & 0 \\ -4 & -2 & 0 & 0 & 2 & 1 & 2 & 0 & 1 & 0 \end{bmatrix} \tag{356}$$

The dual basis of divisors is

$$J_1 = K_2 \qquad J_2 = 1/2\,K_1 - 3/2\,K_2 \tag{357}$$

Its second Chern class is

$$c_2(X) = 18\,J_2J_1 + 12\,{J_1}^2 + 5\,{J_2}^2 \tag{358}$$

The non-zero intersection numbers are

$$K_{1,1,2} = 2 \tag{359}$$

The linear forms are

$$c_2 \cdot J_1 = 36 \qquad\qquad c_2 \cdot J_2 = 24 \tag{360}$$

J_1 is an elliptic surface. J_2 is a K3 surface with intersection form

$$\begin{bmatrix} 2 \end{bmatrix} \tag{361}$$

The genus zero instanton numbers up to degree 5 are

	0	1	2	3	4
0	0	288	252	288	252
1	2496	216576	6391296	104994816	1209337344
2	223752	152031744	19638646848	1180450842624	43199009739072
3	38637504	100021045248	34832157566976	4962537351009792	401057938191181824
4	9100224984	63330228232704	47042083144050624	13025847457256417280	1937385878589532624320
5	2557481027520	39070309414708224	53795625831623734272	25710308960162910621696	6317389886277581330494464

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