

```
In [1]: import numpy as np  
import time  
import string
```

```
In [36]: %%time  
slv = ndoku(4, domain='QQ')  
  
computing groebner basis...  
Polynomial Sequence with 26 Polynomials in 16 Variables  
...done (190.929376 sec)  
CPU times: user 3min 8s, sys: 769 ms, total: 3min 9s  
Wall time: 3min 10s
```

```
In [37]: syms = slv.symbols  
cond=dict([(syms[0,3], 4), (syms[1,0], 4), (syms[1,2], 2), (syms[2,1],  
3), (syms[2,3], 1), (syms[3,0], 1)])  
slv.fit(cond)  
slv.print_sols()  
  
input was:  
- - - 4  
4 - 2 -  
- 3 - 1  
1 - - -  
  
solution is:  
3 2 1 4  
4 1 2 3  
2 3 4 1  
1 4 3 2
```

```
In [635]: tuple(slv.G)
```

```
Out[635]: (-x0^3*x1^2*x2*x4 - 1/2*x0^3*x1^2*x2*x8 - 1/2*x0^3*x1^2*x4*x8 + x0^3*x1  
^2*x6*x8 + 1/2*x0^3*x1^2*x2*x9 - 1/2*x0^3*x1^2*x4*x9 - x0^3*x1^2*x4*x10  
+ 5/2*x0^3*x1^2*x2 + 15/2*x0^3*x1^2*x4 + 5*x0^3*x1*x2*x4 + 15/2*x0^2*x1
```

$$\begin{aligned}
& ^2*x2*x4 - 5/2*x0^3*x1^2*x6 + 5/2*x0^3*x1*x2*x8 + 15/4*x0^2*x1^2*x2*x8 \\
& + 5/2*x0^3*x1*x4*x8 + 15/4*x0^2*x1^2*x4*x8 - 5*x0^3*x1*x6*x8 - 15/2*x0^ \\
& 2*x1^2*x6*x8 - 5/2*x0^3*x1*x2*x9 - 15/4*x0^2*x1^2*x2*x9 + 5/2*x0^3*x1*x \\
& 4*x9 + 15/4*x0^2*x1^2*x4*x9 + 5/2*x0^3*x1^2*x10 + 5*x0^3*x1*x4*x10 + 1 \\
& 5/2*x0^2*x1^2*x4*x10 - 249/20*x0^3*x1^2 - 493/40*x0^3*x1*x2 - 747/40*x0^ \\
& ^2*x1^2*x2 - 1497/40*x0^3*x1*x4 - 281/5*x0^2*x1^2*x4 - 19/5*x0^3*x2*x4 \\
& - 187/5*x0^2*x1*x2*x4 - 327/20*x0*x1^2*x2*x4 + 503/40*x0^3*x1*x6 + 757/ \\
& 40*x0^2*x1^2*x6 + 1/8*x0^3*x1*x8 + 1/8*x0^2*x1^2*x8 - 39/20*x0^3*x2*x8 \\
& - 749/40*x0^2*x1*x2*x8 - 163/20*x0*x1^2*x2*x8 - 39/20*x0^3*x4*x8 - 749/ \\
& 40*x0^2*x1*x4*x8 - 163/20*x0*x1^2*x4*x8 + 3/40*x0^2*x2*x4*x8 + 1/10*x0* \\
& x1*x2*x4*x8 + 3/20*x1^2*x2*x4*x8 + 153/40*x0^3*x6*x8 + 1499/40*x0^2*x1* \\
& x6*x8 + 82/5*x0*x1^2*x6*x8 + 1/8*x0^3*x1*x9 + 1/8*x0^2*x1^2*x9 + 79/40* \\
& x0^3*x2*x9 + 94/5*x0^2*x1*x2*x9 + 41/5*x0*x1^2*x2*x9 - 37/20*x0^3*x4*x9 \\
& - 747/40*x0^2*x1*x4*x9 - 41/5*x0*x1^2*x4*x9 + 1/8*x0^2*x2*x4*x9 - 493/4 \\
& 0*x0^3*x1*x10 - 371/20*x0^2*x1^2*x10 - 153/40*x0^3*x4*x10 - 1499/40*x0^ \\
& 2*x1*x4*x10 - 82/5*x0*x1^2*x4*x10 + 483/8*x0^3*x1 + 183/2*x0^2*x1^2 + 9 \\
& *x0^3*x2 + 733/8*x0^2*x1*x2 + 323/8*x0*x1^2*x2 + 227/8*x0^3*x4 + 2239/8 \\
& *x0^2*x1*x4 + 245/2*x0*x1^2*x4 + 111/4*x0^2*x2*x4 + 81*x0*x1*x2*x4 + 3 \\
& 7/4*x1^2*x2*x4 - 39/4*x0^3*x6 - 761/8*x0^2*x1*x6 - 335/8*x0*x1^2*x6 - \\
& 1/8*x0^3*x8 - 13/8*x0^2*x1*x8 - 7/8*x0*x1^2*x8 + 115/8*x0^2*x2*x8 + 32 \\
& 3/8*x0*x1*x2*x8 + 35/8*x1^2*x2*x8 + 115/8*x0^2*x4*x8 + 323/8*x0*x1*x4*x \\
& 8 + 35/8*x1^2*x4*x8 - 5/8*x0*x2*x4*x8 - x1*x2*x4*x8 - 229/8*x0^2*x6*x8 \\
& - 655/8*x0*x1*x6*x8 - 39/4*x1^2*x6*x8 - 5/8*x0^3*x9 - 15/8*x0^2*x1*x9 - \\
& 5/8*x0*x1^2*x9 - 61/4*x0^2*x2*x9 - 165/4*x0*x1*x2*x9 - 39/8*x1^2*x2*x9 \\
& + 107/8*x0^2*x4*x9 + 325/8*x0*x1*x4*x9 + 39/8*x1^2*x4*x9 - 5/8*x0*x2*x4 \\
& *x9 + 73/8*x0^3*x10 + 731/8*x0^2*x1*x10 + 40*x0*x1^2*x10 + 229/8*x0^2*x \\
& 4*x10 + 655/8*x0*x1*x4*x10 + 39/4*x1^2*x4*x10 - 339/8*x0^3 - 3533/8*x0^ \\
& 2*x1 - 775/4*x0*x1^2 - 259/4*x0^2*x2 - 196*x0*x1*x2 - 89/4*x1^2*x2 - 16 \\
& 79/8*x0^2*x4 - 2431/4*x0*x1*x4 - 285/4*x1^2*x4 - 115/2*x0*x2*x4 - 45*x1 \\
& *x2*x4 + 147/2*x0^2*x6 + 841/4*x0*x1*x6 + 25*x1^2*x6 + 2*x0^2*x8 + 15/2 \\
& *x0*x1*x8 + 9/4*x1^2*x8 - 119/4*x0*x2*x8 - 21*x1*x2*x8 - 119/4*x0*x4*x8 \\
& - 21*x1*x4*x8 + 7/4*x2*x4*x8 + 249/4*x0*x6*x8 + 97/2*x1*x6*x8 + 27/4*x0 \\
& ^2*x9 + 27/4*x0*x1*x9 + 1/2*x1^2*x9 + 69/2*x0*x2*x9 + 49/2*x1*x2*x9 - 1 \\
& 11/4*x0*x4*x9 - 24*x1*x4*x9 + 1/2*x2*x4*x9 - 541/8*x0^2*x10 - 787/4*x0* \\
& x1*x10 - 47/2*x1^2*x10 - 249/4*x0*x4*x10 - 97/2*x1*x4*x10 + 2425/8*x0^2 \\
& + 3705/4*x0*x1 + 215/2*x1^2 + 130*x0*x2 + 105*x1*x2 + 1785/4*x0*x4 + 35 \\
& 0*x1*x4 + 115/4*x2*x4 - 645/4*x0*x6 - 125*x1*x6 - 85/8*x0*x8 - 15*x1*x8 \\
& + 105/8*x2*x8 + 105/8*x4*x8 - 145/4*x6*x8 - 165/8*x0*x9 - 5*x1*x9 - 16 \\
& 5/8*x2*x9 + 125/8*x4*x9 + 145*x0*x10 + 115*x1*x10 + 145/4*x4*x10 - 1213
\end{aligned}$$

$$\begin{aligned}
& 7/20*x_0 - 2509/5*x_1 - 1173/20*x_2 - 4887/20*x_4 + 939/10*x_6 + 83/4*x_8 + 2 \\
& 9/2*x_9 - 829/10*x_{10} + 577/2, \\
& 1/2*x_0^3*x_1^2*x_2 + 1/3*x_0^3*x_1^2*x_4 + 2/3*x_0^3*x_1*x_2*x_4 - 2/3*x_0^2*x_1^ \\
& 2*x_2*x_4 + 7/6*x_0^3*x_1^2*x_6 + 5/6*x_0^3*x_1^2*x_8 + 1/6*x_0^3*x_1*x_2*x_8 - 1/6 \\
& *x_0^2*x_1^2*x_2*x_8 + 1/6*x_0^3*x_1*x_4*x_8 - 1/6*x_0^2*x_1^2*x_4*x_8 + 1/2*x_0^3*x \\
& 2*x_4*x_8 + 2/3*x_0^2*x_1*x_2*x_4*x_8 + x_0*x_1^2*x_2*x_4*x_8 - 1/6*x_0^3*x_1*x_6*x_8 + \\
& x_0^2*x_1^2*x_6*x_8 + 5/6*x_0^3*x_1^2*x_9 + 1/3*x_0^3*x_1*x_2*x_9 + 1/2*x_0^2*x_1^2*x \\
& 2*x_9 + 1/2*x_0^3*x_1*x_4*x_9 - 1/2*x_0^2*x_1^2*x_4*x_9 + 5/6*x_0^3*x_2*x_4*x_9 + \\
& 4/3*x_0^3*x_1^2*x_{10} + 1/6*x_0^3*x_1*x_4*x_{10} - x_0^2*x_1^2*x_4*x_{10} - 25/2*x_0^3*x \\
& 1^2 - 65/12*x_0^3*x_1*x_2 - 35/12*x_0^2*x_1^2*x_2 - 65/12*x_0^3*x_1*x_4 + 10/3*x \\
& 0^2*x_1^2*x_4 - 5*x_0^3*x_2*x_4 - 10/3*x_0^2*x_1*x_2*x_4 + 5/6*x_0*x_1^2*x_2*x_4 - 6 \\
& 5/12*x_0^3*x_1*x_6 - 45/4*x_0^2*x_1^2*x_6 - 55/12*x_0^3*x_1*x_8 - 95/12*x_0^2*x_1^ \\
& 2*x_8 - 5/3*x_0^3*x_2*x_8 - 25/12*x_0^2*x_1*x_2*x_8 - 5/3*x_0*x_1^2*x_2*x_8 - 5/3*x \\
& 0^3*x_4*x_8 - 25/12*x_0^2*x_1*x_4*x_8 - 5/3*x_0*x_1^2*x_4*x_8 - 65/12*x_0^2*x_2*x_4* \\
& x_8 - 25/3*x_0*x_1*x_2*x_4*x_8 - 5/2*x_1^2*x_2*x_4*x_8 + 5/12*x_0^3*x_6*x_8 - 15/4*x \\
& 0^2*x_1*x_6*x_8 - 5*x_0*x_1^2*x_6*x_8 - 25/4*x_0^3*x_1*x_9 - 25/4*x_0^2*x_1^2*x_9 - \\
& 35/12*x_0^3*x_2*x_9 - 5*x_0^2*x_1*x_2*x_9 - 5/2*x_0*x_1^2*x_2*x_9 - 10/3*x_0^3*x_4*x \\
& 9 - 5/4*x_0^2*x_1*x_4*x_9 + 5/2*x_0*x_1^2*x_4*x_9 - 25/4*x_0^2*x_2*x_4*x_9 - 85/12*x \\
& 0^3*x_1*x_{10} - 15/2*x_0^2*x_1^2*x_{10} - 5/12*x_0^3*x_4*x_{10} + 15/4*x_0^2*x_1*x_4*x \\
& 10 + 5*x_0*x_1^2*x_4*x_{10} + 895/12*x_0^3*x_1 + 265/3*x_0^2*x_1^2 + 55/3*x_0^3*x_2 \\
& + 505/12*x_0^2*x_1*x_2 + 145/12*x_0*x_1^2*x_2 + 235/12*x_0^3*x_4 + 65/4*x_0^2*x_1 \\
& *x_4 - 50/3*x_0*x_1^2*x_4 + 245/6*x_0^2*x_2*x_4 + 50/3*x_0*x_1*x_2*x_4 + 35/6*x_1^2 \\
& *x_2*x_4 + 5/2*x_0^3*x_6 + 635/12*x_0^2*x_1*x_6 + 125/4*x_0*x_1^2*x_6 + 85/12*x_0^ \\
& 3*x_8 + 575/12*x_0^2*x_1*x_8 + 355/12*x_0*x_1^2*x_8 + 205/12*x_0^2*x_2*x_8 + 245/ \\
& 12*x_0*x_1*x_2*x_8 + 85/12*x_1^2*x_2*x_8 + 205/12*x_0^2*x_4*x_8 + 245/12*x_0*x_1*x_4 \\
& *x_8 + 85/12*x_1^2*x_4*x_8 + 265/12*x_0*x_2*x_4*x_8 + 50/3*x_1*x_2*x_4*x_8 - 5/12*x \\
& 0^2*x_6*x_8 + 85/4*x_0*x_1*x_6*x_8 + 5/2*x_1^2*x_6*x_8 + 55/4*x_0^3*x_9 + 565/12*x \\
& 0^2*x_1*x_9 + 55/4*x_0*x_1^2*x_9 + 70/3*x_0^2*x_2*x_9 + 35/2*x_0*x_1*x_2*x_9 + 5/4*x \\
& x_1^2*x_2*x_9 + 95/4*x_0^2*x_4*x_9 - 15/4*x_0*x_1*x_4*x_9 - 5/4*x_1^2*x_4*x_9 + 55/4 \\
& *x_0*x_2*x_4*x_9 + 65/12*x_0^3*x_{10} + 165/4*x_0^2*x_1*x_{10} + 10*x_0*x_1^2*x_{10} + 5/ \\
& 12*x_0^2*x_4*x_{10} - 85/4*x_0*x_1*x_4*x_{10} - 5/2*x_1^2*x_4*x_{10} - 1175/12*x_0^3 - 6 \\
& 625/12*x_0^2*x_1 - 1225/6*x_0*x_1^2 - 925/6*x_0^2*x_2 - 425/3*x_0*x_1*x_2 - 175/ \\
& 6*x_1^2*x_2 - 1775/12*x_0^2*x_4 - 25/2*x_0*x_1*x_4 - 25/2*x_1^2*x_4 - 350/3*x_0*x \\
& 2*x_4 - 50*x_1*x_2*x_4 - 25*x_0^2*x_6 - 875/6*x_0*x_1*x_6 - 50/3*x_1^2*x_6 - 75*x_0 \\
& ^2*x_8 - 550/3*x_0*x_1*x_8 - 75/2*x_1^2*x_8 - 200/3*x_0*x_2*x_8 - 50*x_1*x_2*x_8 - \\
& 200/3*x_0*x_4*x_8 - 50*x_1*x_4*x_8 - 175/6*x_2*x_4*x_8 - 25/6*x_0*x_6*x_8 - 25/3*x_1 \\
& *x_6*x_8 - 625/6*x_0^2*x_9 - 625/6*x_0*x_1*x_9 - 25/3*x_1^2*x_9 - 325/6*x_0*x_2*x_9 \\
& - 25/3*x_1*x_2*x_9 - 50*x_0*x_4*x_9 - 25/3*x_2*x_4*x_9 - 425/12*x_0^2*x_{10} - 125/2 \\
& *x_0*x_1*x_{10} - 25/3*x_1^2*x_{10} + 25/6*x_0*x_4*x_{10} + 25/3*x_1*x_4*x_{10} + 3159/4*x
\end{aligned}$$

$$\begin{aligned}
& 0^2 + 8053/6*x0*x1 + 601/3*x1^2 + 1327/3*x0*x2 + 222*x1*x2 + 2351/6*x0*x4 \\
& + 464/3*x1*x4 + 773/6*x2*x4 + 127/2*x0*x6 + 214/3*x1*x6 + 1095/4*x0*x8 \\
& + 230*x1*x8 + 373/4*x2*x8 + 373/4*x4*x8 - 47/6*x6*x8 + 2785/12*x0*x9 \\
& + 190/3*x1*x9 + 111/4*x2*x9 + 427/12*x4*x9 + 217/3*x0*x10 + 166/3*x1*x1 \\
& 0 + 47/6*x4*x10 - 4175/2*x0 - 3890/3*x1 - 925/2*x2 - 935/2*x4 - 5*x6 - \\
& 1955/6*x8 - 425/3*x9 - 235/3*x10 + 5915/3, \\
& 1/3*x0^2*x1^2 - 1/3*x0^3*x2 + 2/3*x0^2*x1*x2 + x0*x1^2*x2 - 1/3*x0^3*x4 \\
& + 1/3*x0*x1^2*x4 + 2/3*x0^2*x2*x4 + 2/3*x0*x1*x2*x4 + 4/3*x1^2*x2*x4 \\
& - x0^3*x6 - 1/3*x0*x1^2*x6 - 2/3*x0^3*x8 + 1/3*x0^2*x1*x8 + 1/3*x0*x1^2*x8 \\
& - 1/3*x0*x1*x2*x8 + 1/3*x1^2*x2*x8 - 1/3*x0*x1*x4*x8 + 1/3*x1^2*x4*x8 \\
& - x0*x2*x4*x8 - 1/3*x1*x2*x4*x8 - x0^2*x6*x8 - 2/3*x0*x1*x6*x8 - x1^2*x6*x8 \\
& - 2/3*x0^3*x9 + 1/3*x0^2*x1*x9 + 1/3*x0*x1^2*x9 - 1/3*x0^2*x2*x9 \\
& + 1/3*x0*x1*x2*x9 + 2/3*x0^2*x4*x9 + x0*x1*x4*x9 + x1^2*x4*x9 + 1/3*x0*x2*x4*x9 \\
& + x1*x2*x4*x9 - x0^3*x10 + 2/3*x0^2*x1*x10 + 1/3*x0*x1^2*x10 \\
& + x0^2*x4*x10 + 2/3*x0*x1*x4*x10 + x1^2*x4*x10 + 10*x0^3 - 20/3*x0^2*x1 \\
& - 20/3*x0*x1^2 - 10*x0*x1*x2 - 20/3*x1^2*x2 - 10/3*x0^2*x4 - 20/3*x0*x1*x4 \\
& - 10*x1^2*x4 - 10/3*x0*x2*x4 - 10*x1*x2*x4 + 10*x0^2*x6 + 10/3*x0*x1*x6 \\
& + 10/3*x1^2*x6 + 20/3*x0^2*x8 + 10/3*x0*x2*x8 + 10/3*x0*x4*x8 + 1 \\
& 0/3*x2*x4*x8 + 20/3*x0*x6*x8 + 20/3*x1*x6*x8 + 10/3*x0^2*x9 - 20/3*x0*x1*x9 \\
& - 10/3*x1^2*x9 - 10/3*x1*x2*x9 - 20/3*x0*x4*x9 - 10*x1*x4*x9 - 10/ \\
& 3*x2*x4*x9 + 10/3*x0^2*x10 - 20/3*x0*x1*x10 - 10/3*x1^2*x10 - 20/3*x0*x4*x10 \\
& - 20/3*x1*x4*x10 - 55*x0^2 + 200/3*x0*x1 + 100/3*x1^2 + 35/3*x0*x2 \\
& + 45*x1*x2 + 100/3*x0*x4 + 200/3*x1*x4 + 40/3*x2*x4 - 35*x0*x6 - 65/3 \\
& *x1*x6 - 100/3*x0*x8 - 10*x1*x8 - 10*x2*x8 - 10*x4*x8 - 40/3*x6*x8 + 10 \\
& *x0*x9 + 100/3*x1*x9 + 10*x2*x9 + 70/3*x4*x9 + 10*x0*x10 + 70/3*x1*x10 \\
& + 40/3*x4*x10 + 100/3*x0 - 650/3*x1 - 50*x2 - 100*x4 + 50*x6 + 200/3*x8 \\
& - 200/3*x9 - 100/3*x10 + 524/3, \\
& x0^4 - 10*x0^3 + 35*x0^2 - 50*x0 + 24, \\
& x0*x1*x2 + x0*x1*x4 + x0*x2*x4 + x1*x2*x4 + x0*x1*x8 + x0*x2*x8 + x1*x2*x8 \\
& + x0*x4*x8 + x1*x4*x8 + x2*x4*x8 + x0*x1*x10 + x0*x2*x10 + x1*x2*x10 \\
& + x0*x4*x10 + x1*x4*x10 + x2*x4*x10 + x0*x8*x10 + x1*x8*x10 + x2*x8*x10 \\
& + x4*x8*x10 - 10*x0*x1 - 10*x0*x2 - 10*x1*x2 - 10*x0*x4 - 10*x1*x4 \\
& - 10*x2*x4 - 10*x0*x8 - 10*x1*x8 - 10*x2*x8 - 10*x4*x8 - 10*x0*x10 - 10 \\
& *x1*x10 - 10*x2*x10 - 10*x4*x10 - 10*x8*x10 + 65*x0 + 65*x1 + 65*x2 + 6 \\
& 5*x4 + 65*x8 + 65*x10 - 350, \\
& x0^3 + x0^2*x1 + x0*x1^2 - x0*x1*x2 - x1^2*x2 + x0^2*x4 + x1^2*x4 - x1 \\
& *x2*x4 + x0^2*x8 + x1^2*x8 - x1*x2*x8 - x0*x4*x8 - x0^2*x9 - x0*x1*x9 \\
& - x1^2*x9 - x0*x2*x9 - x1*x2*x9 - x2*x4*x9 - x2*x8*x9 + x4*x8*x9 - x0^2*x10 \\
& - 2*x0*x1*x10 - x1^2*x10 - 2*x0*x2*x10 - 2*x1*x2*x10 - x0*x4*x10 - x
\end{aligned}$$

$$\begin{aligned}
& 1*x4*x10 - 2*x2*x4*x10 - x0*x8*x10 - x1*x8*x10 - 2*x2*x8*x10 - 10*x0^2 \\
& + 10*x0*x2 + 20*x1*x2 + 10*x2*x4 + 10*x2*x8 + 10*x0*x9 + 10*x1*x9 + 10*x2*x9 + 20*x0*x10 + 20*x1*x10 + 20*x2*x10 + 10*x4*x10 + 10*x8*x10 - 30*x0 - 65*x1 - 100*x2 - 30*x4 - 30*x8 - 35*x9 - 100*x10 + 350, \\
& - 1/2*x0^3 - 1/2*x0^2*x1 - 1/2*x0*x1*x2 + 1/2*x1^2*x2 - 1/2*x0^2*x4 - 1/2*x0*x1*x4 - x0*x2*x4 - x1*x2*x4 - 1/2*x0*x1*x6 - 1/2*x1^2*x6 - x1*x4*x6 - 1/2*x0^2*x8 - 3/2*x0*x1*x8 - 1/2*x1^2*x8 - x0*x2*x8 - 1/2*x1*x2*x8 - x0*x4*x8 - 3/2*x1*x4*x8 - 1/2*x2*x4*x8 + 1/2*x0*x6*x8 + 1/2*x1*x6*x8 + x4*x6*x8 + 1/2*x0^2*x9 + 1/2*x0*x1*x9 + 1/2*x1^2*x9 + 1/2*x0*x2*x9 + x1*x2*x9 - 1/2*x1*x4*x9 + 1/2*x2*x4*x9 + 1/2*x0^2*x10 - 1/2*x0*x1*x10 - 1/2*x0*x4*x10 - 3/2*x1*x4*x10 + 5*x0^2 + 10*x0*x1 + 5*x0*x2 + 10*x0*x4 + 15*x1*x4 + 5*x2*x4 + 5*x1*x6 + 10*x0*x8 + 10*x1*x8 + 5*x2*x8 + 5*x4*x8 - 5*x6*x8 - 5*x0*x9 - 5*x1*x9 - 5*x2*x9 + 5*x1*x10 + 5*x4*x10 - 50*x0 - 50*x1 - 15*x2 - 50*x4 - 65/2*x8 + 35/2*x9 - 15*x10 + 175, \\
& - 1/2*x0^3 + 1/2*x0^2*x1 + x0*x1^2 + 1/2*x0*x1*x2 + 1/2*x1^2*x2 + 1/2*x0^2*x4 + 1/2*x0*x1*x4 + x1^2*x4 - 1/2*x0*x1*x6 - 1/2*x1^2*x6 - x1*x2*x6 - 1/2*x0^2*x8 - 3/2*x0*x1*x8 - 1/2*x1^2*x8 - x0*x2*x8 - 3/2*x1*x2*x8 - x0*x4*x8 - 1/2*x1*x4*x8 - 1/2*x2*x4*x8 + 1/2*x0*x6*x8 + 1/2*x1*x6*x8 + x2*x6*x8 - 1/2*x0^2*x9 - 1/2*x0*x1*x9 - 1/2*x1^2*x9 - 1/2*x0*x2*x9 - x1*x2*x9 + 1/2*x1*x4*x9 - 1/2*x2*x4*x9 - 1/2*x0^2*x10 - 3/2*x0*x1*x10 - x1^2*x10 - x0*x2*x10 - 2*x1*x2*x10 - 1/2*x0*x4*x10 - 1/2*x1*x4*x10 - x2*x4*x10 + 5*x0^2 + 5*x0*x2 + 10*x1*x2 - 5*x1*x4 + 5*x2*x4 + 5*x1*x6 + 10*x0*x8 + 10*x1*x8 + 5*x2*x8 + 5*x4*x8 - 5*x6*x8 + 5*x0*x9 + 5*x1*x9 + 5*x2*x9 + 10*x0*x10 + 15*x1*x10 + 10*x2*x10 + 5*x4*x10 - 50*x0 - 50*x1 - 50*x2 - 15*x4 - 65/2*x8 - 35/2*x9 - 50*x10 + 225, \\
& x0^3 + x0^2*x1 + x0*x1^2 + x1^3 - 10*x0^2 - 10*x0*x1 - 10*x1^2 + 35*x0 + 35*x1 - 50, \\
& x1*x4 + x2*x4 + x1*x6 + x1*x8 - x6*x8 - x2*x9 + x4*x9 + x1*x10 + x4*x10 + x10^2 - 10*x1 - 10*x4 - 10*x10 + 35, \\
& x0*x1 + x1^2 - x0*x4 - x2*x4 - x1*x6 - x0*x8 - x1*x8 - x4*x8 + x6*x8 + x0*x9 + x2*x9 + x8*x9 - x1*x10 - x4*x10 + x8*x10 + x9*x10 + 10*x4 - 10*x9, \\
& x0*x4 - x0*x9 - x4*x9 + x9^2, \\
& -x0*x1 - x1^2 - x1*x4 + x0*x8 + x4*x8 + x8^2 + 10*x1 - 10*x8, \\
& -x0^2 - 2*x0*x1 - x1^2 - x0*x2 - x1*x2 - x1*x4 - x2*x4 + x0*x6 + x2*x6 - x1*x8 + x6*x8 + x2*x9 - x4*x9 - x1*x10 + x2*x10 - x4*x10 + x6*x10 + 10*x0 + 20*x1 + 10*x4 - 10*x6 - 35, \\
& x0^2 + x0*x1 + x0*x2 + x1*x2 + x0*x4 + x1*x4 + 2*x2*x4 - x0*x6 + x1*x6 + x0*x8 + 2*x1*x8 + x2*x8 + x4*x8 - x6*x8 - x0*x9 - x2*x9 + x4*x9 + x6*x9
\end{aligned}$$

```

x9 + 2*x1*x10 + 2*x4*x10 - 10*x0 - 20*x1 - 10*x2 - 20*x4 - 10*x8 - 10*x
10 + 100,
x0*x1 - x0*x6 - x1*x6 + x6^2,
x0^2 + x0*x1 + x1^2 + x0*x4 + x1*x4 + x4^2 - 10*x0 - 10*x1 - 10*x4 + 3
5,
x0^2 + x0*x1 + x1^2 + x0*x2 + x1*x2 + x2^2 - 10*x0 - 10*x1 - 10*x2 + 3
5,
-x2 - x6 - x8 - x9 - x10 + x15 + 10,
x2 + x6 + x10 + x14 - 10,
-x0 - x4 + x9 + x13,
x0 + x4 + x8 + x12 - 10,
x8 + x9 + x10 + x11 - 10,
-x0 - x1 + x6 + x7,
x0 + x1 + x4 + x5 - 10,
x0 + x1 + x2 + x3 - 10)

```

In [673]: `tuple(slv.G)[3]`

Out[673]: $x_0^4 - 10*x_0^3 + 35*x_0^2 - 50*x_0 + 24$

In [677]: `latex(slv.G)`

Out[677]:
$$\left(-x_0^3 x_1^2 x_2 x_4 - \frac{1}{2} x_0^3 x_1^2 x_8 - \frac{1}{2} x_0^3 x_1^2 x_0^3 x_1^2 x_4 x_8 + x_0^3 x_1^2 x_6 x_8 + \frac{1}{2} x_0^3 x_1^2 x_0^3 x_1^2 x_9 - \frac{1}{2} x_0^3 x_1^2 x_0^3 x_1^2 x_4 x_9 - x_0^3 x_1^2 x_2 x_{10} + \frac{5}{2} x_0^3 x_1^2 x_2 x_4 + \frac{15}{2} x_0^3 x_1^2 x_2 x_6 + \frac{5}{2} x_0^3 x_1^2 x_2 x_8 + \frac{15}{2} x_0^3 x_1^2 x_4 x_6 + \frac{15}{2} x_0^3 x_1^2 x_4 x_8 - 5 x_0^3 x_1^2 x_6 x_8 - \frac{15}{2} x_0^3 x_1^2 x_8 x_9 - \frac{5}{2} x_0^3 x_1^2 x_0^3 x_1^2 x_9 + \frac{15}{2} x_0^3 x_1^2 x_0^3 x_1^2 x_6 x_8 - \frac{5}{2} x_0^3 x_1^2 x_0^3 x_1^2 x_4 x_9 + \frac{15}{4} x_0^3 x_1^2 x_0^3 x_1^2 x_10 + 5 x_0^3 x_1^2 x_1 x_4 x_6 x_{10} + \frac{15}{2} x_0^3 x_1^2 x_0^3 x_1^2 x_8 x_{10} - \frac{249}{2} x_0^3 x_1^2 x_0^3 x_1^2 x_0^3 x_2 x_4 - \frac{1497}{2} x_0^3 x_1^2 x_0^3 x_2 x_6 x_8 - \frac{1497}{2} x_0^3 x_1^2 x_0^3 x_4 x_6 x_8 \right)$$

$$\begin{aligned}
& x_{4} - \frac{281}{5} x_{0}^2 x_{1}^2 x_{4} - \frac{19}{5} x_{0}^3 \\
& x_{2} x_{4} - \frac{187}{5} x_{0}^2 x_{1} x_{2} x_{4} - \frac{32}{7} x_{0}^{20} x_{1}^2 x_{2} x_{4} + \frac{503}{40} x_{0}^3 x_{1} x_{6} + \frac{1}{8} x_{0}^3 x_{1} x_{8} \\
& + \frac{757}{40} x_{0}^2 x_{1}^2 x_{6} + \frac{1}{8} x_{0}^3 x_{1} x_{8} + \frac{1}{8} x_{0}^2 x_{1}^2 x_{8} - \frac{39}{20} x_{0}^3 x_{2} x_{8} \\
& - \frac{749}{40} x_{0}^2 x_{1} x_{2} x_{8} - \frac{39}{20} x_{0}^3 x_{4} x_{8} - \frac{163}{20} x_{0} x_{1}^2 x_{4} x_{8} + \frac{3}{40} x_{0}^2 x_{2} x_{4} x_{8} \\
& + \frac{1}{10} x_{0} x_{1} x_{2} x_{4} x_{8} + \frac{3}{20} x_{1}^2 x_{2} x_{4} x_{8} + \frac{153}{40} x_{0}^3 x_{6} x_{8} + \frac{1499}{40} x_{0}^2 x_{1} x_{6} x_{8} \\
& + \frac{82}{5} x_{0} x_{1}^2 x_{6} x_{8} + \frac{1}{8} x_{0}^3 x_{1} x_{9} + \frac{1}{8} x_{0}^2 x_{2} x_{1}^2 x_{9} \\
& + \frac{79}{40} x_{0}^3 x_{2} x_{9} + \frac{94}{5} x_{0}^2 x_{1} x_{2} x_{9} + \frac{41}{5} x_{0} x_{1}^2 x_{2} x_{9} - \frac{747}{40} x_{0} x_{1} x_{4} x_{9} \\
& - \frac{41}{5} x_{0} x_{1}^2 x_{4} x_{9} + \frac{1}{8} x_{0} x_{1} x_{9} + \frac{2}{2} x_{0} x_{2} x_{4} x_{9} - \frac{493}{40} x_{0} x_{1} x_{10} - \frac{37}{20} x_{0} x_{1}^2 x_{10} \\
& - \frac{153}{40} x_{0} x_{1} x_{4} x_{10} - \frac{82}{5} x_{0} x_{1} x_{2} x_{10} + \frac{483}{8} x_{0} x_{1} x_{10} + \frac{183}{2} x_{0} x_{1}^2 x_{10} \\
& + 9 x_{0} x_{2} x_{10} + \frac{733}{8} x_{0} x_{1} x_{10} + \frac{323}{8} x_{0} x_{1} x_{2} x_{10} + \frac{227}{8} x_{0} x_{1} x_{4} x_{10} \\
& + \frac{2239}{8} x_{0} x_{1} x_{2} x_{4} x_{10} + \frac{245}{2} x_{0} x_{1} x_{4} x_{10} + \frac{111}{4} x_{0} x_{1} x_{2} x_{4} x_{10} + 81 x_{0} x_{1} x_{4} x_{10} \\
& + \frac{37}{4} x_{0} x_{1} x_{2} x_{4} x_{10} - \frac{39}{4} x_{0} x_{1} x_{4} x_{10} - \frac{761}{8} x_{0} x_{1} x_{6} x_{10} - \frac{335}{8} x_{0} x_{1} x_{2} x_{6} x_{10} \\
& - \frac{1}{8} x_{0} x_{1} x_{0} x_{8} x_{10} - \frac{13}{8} x_{0} x_{1} x_{2} x_{8} x_{10} - \frac{7}{8} x_{0} x_{1} x_{4} x_{8} x_{10} + \frac{115}{8} x_{0} x_{1} x_{6} x_{8} \\
& x_{10} + \frac{323}{8} x_{0} x_{1} x_{2} x_{8} x_{10} + \frac{35}{8} x_{0} x_{1} x_{4} x_{8} x_{10} + \frac{115}{8} x_{0} x_{1} x_{6} x_{8} x_{10} \\
& - \frac{5}{8} x_{0} x_{1} x_{2} x_{4} x_{8} x_{10} - x_{1} x_{2} x_{4} x_{8} x_{10} - \frac{229}{8} x_{0} x_{1} x_{6} x_{8} x_{10} \\
& - \frac{655}{8} x_{0} x_{1} x_{2} x_{6} x_{8} x_{10} - \frac{39}{4} x_{0} x_{1} x_{4} x_{6} x_{8} x_{10} - \frac{5}{8} x_{0} x_{1} x_{0} x_{9} x_{8} x_{10} \\
& - \frac{15}{8} x_{0} x_{1} x_{2} x_{9} x_{8} x_{10} - \frac{5}{8} x_{0} x_{1} x_{0} x_{1} x_{2} x_{9} x_{8} x_{10} - \frac{61}{4} x_{0} x_{1} x_{0} x_{2} x_{9} x_{8} x_{10} \\
& - \frac{39}{8} x_{0} x_{1} x_{1} x_{2} x_{9} x_{8} x_{10} + \frac{165}{4} x_{0} x_{1} x_{0} x_{1} x_{2} x_{9} x_{8} x_{10} - \frac{107}{8} x_{0} x_{1} x_{0} x_{2} x_{9} x_{8} x_{10} \\
& + \frac{325}{8} x_{0} x_{1} x_{0} x_{1} x_{4} x_{9} x_{8} x_{10} + \frac{39}{8} x_{0} x_{1} x_{0} x_{1} x_{6} x_{9} x_{8} x_{10}
\end{aligned}$$

$$\begin{aligned}
& \left(8 + \frac{5}{6}x^0\right)^3 x^1 x^2 x^9 + \frac{1}{3} x^0 x^3 x^1 x^2 x^9 + \frac{1}{2} x^0 x^3 x^1 x^2 x^9 + \frac{1}{2} x^0 x^3 x^1 x^2 x^9 - \frac{1}{2} x^0 x^3 x^1 x^2 x^9 + \frac{5}{6} x^0 x^3 x^2 x^4 x^9 + \frac{4}{3} x^0 x^3 x^2 x^4 x^9 - x^0 x^2 x^4 x^9 - \frac{25}{2} x^0 x^3 x^1 x^2 x^9 - \frac{35}{12} x^0 x^2 x^1 x^2 x^9 - \frac{65}{12} x^0 x^3 x^1 x^4 x^9 + \frac{10}{3} x^0 x^2 x^4 x^9 - x^0 x^2 x^4 x^9 - 5 x^0 x^3 x^2 x^4 x^9 - \frac{10}{3} x^0 x^2 x^4 x^9 - \frac{65}{12} x^0 x^3 x^1 x^6 x^9 - \frac{45}{4} x^0 x^2 x^1 x^2 x^6 x^9 - \frac{5}{6} x^0 x^3 x^1 x^8 x^9 - \frac{95}{12} x^0 x^2 x^1 x^8 x^9 - \frac{5}{3} x^0 x^3 x^2 x^8 x^9 - \frac{5}{3} x^0 x^1 x^2 x^8 x^9 - \frac{5}{3} x^0 x^3 x^4 x^8 x^9 - \frac{65}{12} x^0 x^2 x^2 x^4 x^8 x^9 - \frac{5}{2} x^0 x^1 x^4 x^8 x^9 - \frac{25}{3} x^0 x^3 x^1 x^6 x^8 x^9 - \frac{25}{3} x^0 x^1 x^2 x^4 x^8 x^9 - \frac{5}{2} x^0 x^1 x^2 x^8 x^9 - \frac{35}{12} x^0 x^3 x^2 x^9 x^9 - 5 x^0 x^2 x^1 x^2 x^9 x^9 - \frac{10}{3} x^0 x^1 x^4 x^9 x^9 - \frac{5}{2} x^0 x^3 x^1 x^10 x^9 x^9 - \frac{15}{4} x^0 x^2 x^4 x^10 x^9 x^9 + \frac{895}{12} x^0 x^3 x^1 x^10 x^9 x^9 + \frac{265}{3} x^0 x^2 x^4 x^10 x^9 x^9 + \frac{55}{3} x^0 x^3 x^1 x^10 x^9 x^9 + \frac{505}{12} x^0 x^2 x^4 x^10 x^9 x^9 + \frac{145}{2} x^0 x^3 x^1 x^10 x^9 x^9 + \frac{235}{12} x^0 x^2 x^4 x^10 x^9 x^9 + \frac{65}{4} x^0 x^3 x^1 x^10 x^9 x^9 - \frac{50}{3} x^0 x^2 x^4 x^10 x^9 x^9 + \frac{245}{6} x^0 x^3 x^1 x^10 x^9 x^9 + \frac{35}{6} x^0 x^2 x^4 x^10 x^9 x^9 + \frac{50}{3} x^0 x^1 x^2 x^4 x^10 x^9 x^9 + \frac{125}{4} x^0 x^0 x^1 x^2 x^6 x^9 x^9 + \frac{635}{12} x^0 x^1 x^0 x^6 x^9 x^9 + \frac{125}{4} x^0 x^0 x^1 x^2 x^6 x^9 x^9 + \frac{575}{12} x^0 x^0 x^2 x^1 x^8 x^9 x^9 + \frac{355}{12} x^0 x^1 x^2 x^8 x^9 x^9 + \frac{205}{12} x^0 x^0 x^2 x^2 x^8 x^9 x^9 + \frac{85}{12} x^0 x^1 x^2 x^8 x^9 x^9 + \frac{205}{12} x^0 x^0 x^2 x^4 x^8 x^9 x^9 + \frac{245}{12} x^0 x^0 x^4 x^8 x^9 x^9 + \frac{265}{12} x^0 x^0 x^4 x^8 x^9 x^9
\end{aligned}$$

$$\begin{aligned}
& \left(-\frac{5}{12}x^2x^4x^8 + \frac{50}{3}x^1x^2x^4x^8 - \frac{5}{12}x^0x^2x^6x^8 + \frac{85}{4}x^0x^1x^6x^8 + \frac{5}{12}x^1x^2x^6x^8 + \frac{55}{4}x^0x^1x^8x^9 + \frac{5}{65}x^0x^2x^1x^9 + \frac{55}{4}x^0x^1x^2x^9 + \frac{70}{3}x^0x^2x^2x^9 + \frac{35}{2}x^0x^1x^1x^2x^9 + \frac{5}{9}x^0x^1x^2x^9 + \frac{95}{4}x^0x^0x^2x^4x^9 - \frac{15}{4}x^0x^1x^4x^9 - \frac{5}{4}x^0x^1x^2x^9 + \frac{55}{4}x^0x^2x^4x^9 + \frac{65}{12}x^0x^1x^2x^9 + \frac{165}{4}x^0x^0x^2x^1x^10 + 10x^0x^1x^2x^9 + x^0x^1x^2x^10 - \frac{85}{4}x^0x^1x^4x^10 - \frac{1175}{12}x^0x^1x^2x^10 - \frac{6625}{12}x^0x^1x^2x^10 - \frac{1225}{6}x^0x^1x^2x^10 - \frac{925}{6}x^0x^2x^2x^2 - \frac{425}{3}x^0x^1x^2x^2 - \frac{175}{6}x^1x^2x^2 - \frac{1775}{12}x^0x^0x^2x^4 - \frac{25}{2}x^0x^1x^4x^4 - \frac{25}{2}x^0x^1x^2x^4 - \frac{350}{3}x^0x^2x^4 - 50x^1x^2x^4 - 25x^0x^2x^6 - \frac{875}{6}x^0x^1x^6 - \frac{50}{3}x^1x^2x^6 - 75x^0x^2x^8 - \frac{550}{3}x^0x^1x^8 - \frac{75}{2}x^1x^2x^8 - \frac{200}{3}x^0x^2x^8 - 50x^1x^2x^8 - \frac{175}{6}x^0x^2x^8 - \frac{25}{4}x^0x^6x^8 - \frac{25}{6}x^0x^6x^8 - \frac{625}{6}x^0x^9 - \frac{625}{6}x^0x^1x^9 - \frac{25}{3}x^1x^2x^9 - \frac{325}{6}x^0x^2x^9 - \frac{25}{3}x^1x^2x^9 - 50x^0x^4x^9 - \frac{25}{3}x^2x^4x^9 - \frac{425}{12}x^0x^2x^10 - \frac{125}{2}x^0x^1x^10 - \frac{25}{3}x^1x^2x^10 + \frac{25}{6}x^0x^4x^10 + \frac{3159}{4}x^0x^0x^2 + \frac{8053}{6}x^0x^1x^1 + \frac{601}{3}x^1x^1x^2 + \frac{1327}{3}x^0x^2 + 222x^1x^2x^2 + \frac{2351}{6}x^0x^4x^2 + \frac{464}{3}x^1x^4 + \frac{773}{6}x^2x^4 + \frac{127}{2}x^0x^6x^2 + \frac{214}{3}x^1x^6 + \frac{1095}{4}x^0x^8x^2 + 230x^1x^8 + \frac{373}{4}x^2x^8 + \frac{373}{4}x^4x^8 - \frac{47}{6}x^6x^8 + \frac{2785}{12}x^0x^9x^2 + \frac{190}{3}x^1x^9 + \frac{111}{4}x^2x^9 + \frac{427}{12}x^4x^9 + \frac{217}{3}x^0x^10 + \frac{166}{3}x^1x^10 + \frac{47}{6}x^4x^10 - \frac{4175}{2}x^0x^0x^2 - \frac{3890}{3}x^1x^1x^2 - \frac{925}{2}x^2x^2 - \frac{935}{2}x^4x^2 - 5x^6x^2 - \frac{1955}{6}x^8x^2 - \frac{425}{3}x^9x^2 - \frac{235}{3}x^10x^2 + \frac{5915}{3}, \frac{1}{3}x^0x^2x^2 - \frac{1}{3}x^0x^3x^2 + \frac{2}{3}x^0x^2x^2 \right)
\end{aligned}$$

$$\begin{aligned}
& \left(1\right) x_{-2} + x_{-0} x_{-1}^2 x_{-2} - \frac{1}{3} x_{-0}^3 x_{-4} + \frac{1}{3} x_{-0} x_{-1}^2 x_{-4} + \frac{2}{3} x_{-0}^2 x_{-2} x_{-4} + \frac{4}{3} x_{-0} x_{-1} x_{-2} x_{-4} + \frac{4}{3} x_{-1}^2 x_{-2} x_{-4} - \\
& x_{-0}^3 x_{-6} - \frac{1}{3} x_{-0} x_{-1}^2 x_{-6} - \frac{2}{3} x_{-0} x_{-1} x_{-2} x_{-6} - \frac{1}{3} x_{-1}^2 x_{-2} x_{-6} - \\
& x_{-0}^3 x_{-8} + \frac{1}{3} x_{-0}^2 x_{-1} x_{-8} + \frac{1}{3} x_{-0} x_{-1}^2 x_{-8} + \frac{1}{3} x_{-1}^3 x_{-8} - \\
& \frac{1}{3} x_{-0} x_{-1} x_{-2} x_{-8} + \frac{1}{3} x_{-1}^2 x_{-2} x_{-8} - \frac{1}{3} x_{-0} x_{-1} x_{-4} x_{-8} + \frac{1}{3} x_{-1} x_{-2} x_{-4} x_{-8} - \\
& x_{-0} x_{-2} x_{-4} x_{-8} - \frac{1}{3} x_{-1} x_{-2} x_{-8} - \frac{2}{3} x_{-0} x_{-1} x_{-6} x_{-8} - \frac{1}{3} x_{-1} x_{-2} x_{-6} x_{-8} - \\
& \frac{1}{3} x_{-0} x_{-1} x_{-4} x_{-6} x_{-8} - \frac{1}{3} x_{-1} x_{-2} x_{-4} x_{-6} x_{-8} - \frac{1}{3} x_{-0} x_{-1} x_{-2} x_{-4} x_{-6} x_{-8} - \\
& \frac{1}{3} x_{-1} x_{-2} x_{-2} x_{-4} x_{-6} x_{-8} - \frac{1}{3} x_{-0} x_{-1} x_{-10} + \frac{1}{3} x_{-1} x_{-2} x_{-10} - \frac{1}{3} x_{-0} x_{-1} x_{-8} x_{-10} + \\
& \frac{1}{3} x_{-1} x_{-2} x_{-8} x_{-10} + x_{-0} x_{-1} x_{-4} x_{-8} x_{-10} + x_{-1}^2 x_{-4} x_{-8} x_{-10} - \\
& x_{-4} x_{-9} + \frac{1}{3} x_{-0} x_{-2} x_{-4} x_{-9} + x_{-1} x_{-2} x_{-4} x_{-9} - x_{-0} x_{-3} x_{-9} - \\
& x_{-0} x_{-10} + \frac{1}{3} x_{-0} x_{-2} x_{-1} x_{-10} + \frac{1}{3} x_{-1} x_{-2} x_{-1} x_{-10} + \frac{1}{3} x_{-0} x_{-1} x_{-10} + \\
& \frac{1}{3} x_{-1} x_{-1} x_{-10} + x_{-0} x_{-1} x_{-4} x_{-10} + x_{-1}^2 x_{-4} x_{-10} - \\
& \frac{1}{3} x_{-0} x_{-1} x_{-6} x_{-10} + x_{-1} x_{-2} x_{-6} x_{-10} - \frac{1}{3} x_{-0} x_{-1} x_{-4} x_{-6} x_{-10} - \\
& \frac{1}{3} x_{-1} x_{-2} x_{-4} x_{-6} x_{-10} - \frac{1}{3} x_{-0} x_{-1} x_{-2} x_{-4} x_{-6} x_{-10} - \frac{1}{3} x_{-1} x_{-2} x_{-2} x_{-4} x_{-6} x_{-10} - \\
& \frac{1}{3} x_{-0} x_{-1} x_{-10} + \frac{1}{3} x_{-1} x_{-2} x_{-10} - \frac{1}{3} x_{-0} x_{-1} x_{-9} - 10 x_{-0} x_{-3} - \\
& \frac{20}{3} x_{-0} x_{-2} x_{-1} - \frac{20}{3} x_{-1} x_{-2} - \frac{10}{3} x_{-0} x_{-1} x_{-2} - 10 x_{-0} x_{-1} x_{-1} - \\
& x_{-2} - \frac{20}{3} x_{-1} x_{-2} - \frac{10}{3} x_{-0} x_{-1} x_{-4} - 10 x_{-1} x_{-2} x_{-4} - \frac{10}{3} x_{-0} x_{-1} x_{-6} - \\
& 10 x_{-1} x_{-2} x_{-6} + 10 x_{-0} x_{-1} x_{-8} + \frac{20}{3} x_{-0} x_{-1} x_{-8} - \frac{20}{3} x_{-0} x_{-1} x_{-9} - \\
& \frac{10}{3} x_{-1} x_{-2} x_{-9} - \frac{10}{3} x_{-0} x_{-1} x_{-9} - 10 x_{-1} x_{-2} x_{-9} - \frac{10}{3} x_{-0} x_{-1} x_{-10} - \\
& \frac{10}{3} x_{-1} x_{-2} x_{-10} - \frac{10}{3} x_{-0} x_{-1} x_{-10} - 10 x_{-1} x_{-2} x_{-10} - \frac{10}{3} x_{-0} x_{-1} x_{-10} - 5 \\
& 5 x_{-0}^2 + \frac{200}{3} x_{-0} x_{-1} + \frac{100}{3} x_{-1}^2 + \frac{35}{3} x_{-0} x_{-2} + 45 x_{-1} x_{-2} + \frac{100}{3} x_{-0} x_{-4} + \\
& \frac{200}{3} x_{-1} x_{-4} + \frac{40}{3} x_{-2} x_{-4} - 35 x_{-0} x_{-6} - \frac{65}{3} x_{-1} x_{-6} - \frac{100}{3} x_{-0} x_{-8} - 10 x_{-1} x_{-8} - \\
& 10 x_{-2} x_{-8} - 10 x_{-4} x_{-8} - \frac{40}{3} x_{-6} x_{-8} + 10 x_{-0} x_{-9} + \frac{100}{3} x_{-1} x_{-9} + 10 x_{-2} x_{-9} + \frac{70}{3} x_{-4} x_{-9} - \\
& x_{-9} + 10 x_{-0} x_{-10} + \frac{70}{3} x_{-1} x_{-10} + \frac{40}{3} x_{-4} x_{-10} + \frac{100}{3} x_{-0} x_{-10} - \frac{650}{3} x_{-1} x_{-10} - 50 x_{-2} x_{-10} \\
& x_{-4} + 50 x_{-6} + \frac{200}{3} x_{-8} - \frac{200}{3} x_{-9} - \frac{10}{3} x_{-10}
\end{aligned}$$

$$\begin{aligned}
& 0\}^3 x_{10} + \frac{524}{3}, x_0^4 - 10 x_0^3 + 35 x_0^2 - \\
& 50 x_0 + 24, x_0 x_1 x_2 + x_0 x_1 x_4 + x_0 x_2 x_ \\
& \{4} + x_1 x_2 x_4 + x_0 x_1 x_8 + x_0 x_2 x_8 + x_1 \\
& x_2 x_8 + x_0 x_4 x_8 + x_1 x_4 x_8 + x_2 x_4 x_8 \\
& + x_0 x_1 x_{10} + x_0 x_2 x_{10} + x_1 x_2 x_{10} + x_0 \\
& x_4 x_{10} + x_1 x_4 x_{10} + x_2 x_4 x_{10} + x_0 x_8 x_ \\
& \{10} + x_1 x_8 x_{10} + x_2 x_8 x_{10} + x_4 x_8 x_{10} - 1 \\
& 0 x_0 x_1 - 10 x_0 x_2 - 10 x_1 x_2 - 10 x_0 x_4 - 10 x \\
& _1 x_4 - 10 x_2 x_4 - 10 x_0 x_8 - 10 x_1 x_8 - 10 x_ \\
& _2 x_8 - 10 x_4 x_8 - 10 x_0 x_{10} - 10 x_1 x_{10} - 10 x_ \\
& _2 x_{10} - 10 x_4 x_{10} - 10 x_8 x_{10} + 65 x_0 + 65 x_1 + \\
& 65 x_2 + 65 x_4 + 65 x_8 + 65 x_{10} - 350, x_0^3 + x_0^2 \\
& x_1 + x_0 x_1^2 - x_0 x_1 x_2 - x_1^2 x_2 + x_0 \\
& ^2 x_4 + x_1^2 x_4 - x_1 x_2 x_4 + x_0 x_2 x_8 + x \\
& _1 x_2 x_8 - x_1 x_2 x_8 - x_0 x_4 x_8 - x_0 x_2 x_ \\
& _9 - x_0 x_1 x_9 - x_1 x_2 x_9 - x_0 x_2 x_9 - x_ \\
& _1 x_2 x_9 - x_2 x_4 x_9 - x_2 x_8 x_9 + x_4 x_8 \\
& x_9 - x_0 x_2 x_{10} - 2 x_0 x_1 x_{10} - x_1 x_2 x_{10} - \\
& 2 x_0 x_2 x_{10} - 2 x_1 x_2 x_{10} - x_0 x_4 x_{10} - x_ \\
& _1 x_4 x_{10} - 2 x_2 x_4 x_{10} - x_2 x_8 x_{10} - 10 x_0 x_ \\
& _2 x_9 + 10 x_0 x_2 x_9 + 10 x_1 x_2 x_9 + 10 x_0 x_ \\
& _1 x_9 + 10 x_2 x_9 + 20 x_0 x_{10} + 20 x_1 x_{10} + 20 x_ \\
& _2 x_{10} + 10 x_4 x_{10} + 10 x_8 x_{10} - 30 x_0 - 65 x_1 - \\
& 100 x_2 - 30 x_4 - 30 x_8 - 35 x_9 - 100 x_{10} + 350, -\frac{1}{2} \\
& x_0^2 x_0^3 - \frac{1}{2} x_0^2 x_1 - \frac{1}{2} x_0 x_1 x_2 + \frac{1}{2} x_1^2 x_2 - \frac{1}{2} x_0 x_2 x_4 - \\
& \frac{1}{2} x_0 x_1 x_4 - \frac{1}{2} x_0 x_2 x_6 - \frac{1}{2} x_1 x_2 x_6 - x_1 x_4 x_6 - \\
& \frac{1}{2} x_0 x_1 x_6 - \frac{1}{2} x_0 x_8 x_9 - \frac{3}{2} x_0 x_1 x_8 - \\
& \frac{1}{2} x_1 x_2 x_8 - \frac{1}{2} x_0 x_4 x_8 - \frac{3}{2} x_1 x_4 x_8 - \\
& \frac{1}{2} x_0 x_2 x_4 x_8 + \frac{1}{2} x_0 x_6 x_8 + \frac{1}{2} x_0 x_8 x_6 + \\
& \frac{1}{2} x_1 x_6 x_8 + x_4 x_6 x_8 + \frac{1}{2} x_0 x_0^2 x_9 + \\
& \frac{1}{2} x_0 x_2 x_9 + x_1 x_2 x_9 - \frac{1}{2} x_1 x_9 x_4 + \\
& \frac{1}{2} x_4 x_9 + \frac{1}{2} x_0 x_2 x_4 x_9 + \frac{1}{2} x_0 x_0^2 x_1 x_10 - \\
& \frac{1}{2} x_1 x_0 x_1 x_{10} - \frac{1}{2} x_0 x_0 x_4 x_{10} - \\
& \frac{3}{2} x_0 x_1 x_4 x_{10} + 5 x_0 x_2 x_{10} + 10 x_0 x_1 x_10 + 5 x_0
\end{aligned}$$

$$\begin{aligned}
& x_{[2]} + 10 x_{[0]} x_{[4]} + 15 x_{[1]} x_{[4]} + 5 x_{[2]} x_{[4]} + 5 x_{[1]} x_{[6]} \\
& + 10 x_{[0]} x_{[8]} + 10 x_{[1]} x_{[8]} + 5 x_{[2]} x_{[8]} + 5 x_{[4]} x_{[8]} - 5 x_{[6]} x_{[8]} - 5 x_{[0]} x_{[9]} - 5 x_{[1]} x_{[9]} - 5 x_{[2]} x_{[9]} + 5 x_{[1]} x_{[10]} + 5 x_{[4]} x_{[10]} - 50 x_{[0]} - 50 x_{[1]} - 15 x_{[2]} - 50 x_{[4]} - \frac{\sqrt{5}}{4} x_{[6]} x_{[8]} + \frac{35}{2} x_{[9]} - 15 x_{[10]} + 175, -\frac{1}{2} x_{[0]}^3 + \frac{1}{2} x_{[0]}^2 x_{[1]} + x_{[0]} x_{[1]}^2 + \frac{1}{2} x_{[0]} x_{[1]} x_{[2]} + \frac{1}{2} x_{[1]} x_{[2]} + \frac{1}{2} x_{[0]} x_{[1]}^2 x_{[2]} + \frac{1}{2} x_{[0]} x_{[2]}^2 \\
& x_{[4]} + \frac{1}{2} x_{[0]} x_{[1]} x_{[4]} + x_{[1]}^2 x_{[4]} - \frac{1}{2} x_{[0]} x_{[2]} x_{[6]} - x_{[1]} x_{[2]} x_{[6]} - \frac{1}{2} x_{[0]} x_{[8]} - \frac{3}{2} x_{[0]} x_{[1]} x_{[8]} - \frac{1}{2} x_{[1]} x_{[2]} x_{[8]} - x_{[0]} x_{[2]} x_{[8]} - \frac{3}{2} x_{[1]} x_{[2]} x_{[8]} - x_{[0]} x_{[4]} x_{[8]} - \frac{1}{2} x_{[1]} x_{[4]} x_{[8]} - \frac{1}{2} x_{[0]} x_{[6]} x_{[8]} + \frac{1}{2} x_{[1]} x_{[6]} x_{[8]} + x_{[2]} x_{[6]} x_{[8]} - \frac{1}{2} x_{[0]} x_{[8]}^2 x_{[9]} - \frac{1}{2} x_{[1]} x_{[8]} x_{[9]} - \frac{1}{2} x_{[0]} x_{[1]} x_{[9]} - \frac{1}{2} x_{[1]} x_{[1]} x_{[9]} - \frac{1}{2} x_{[0]} x_{[2]} x_{[9]} - \frac{1}{2} x_{[1]} x_{[2]} x_{[9]} - \frac{1}{2} x_{[0]} x_{[4]} x_{[9]} - \frac{1}{2} x_{[1]} x_{[4]} x_{[9]} - \frac{1}{2} x_{[0]} x_{[6]} x_{[9]} + \frac{1}{2} x_{[1]} x_{[6]} x_{[9]} + x_{[2]} x_{[6]} x_{[9]} - \frac{1}{2} x_{[0]} x_{[8]} x_{[9]} - \frac{1}{2} x_{[1]} x_{[8]} x_{[9]} - \frac{1}{2} x_{[0]} x_{[10]} x_{[9]} - \frac{1}{2} x_{[1]} x_{[10]} x_{[9]} - \frac{1}{2} x_{[0]} x_{[2]} x_{[10]} - \frac{1}{2} x_{[1]} x_{[2]} x_{[10]} - 2 x_{[1]} x_{[10]} - \frac{1}{2} x_{[0]} x_{[4]} x_{[10]} - \frac{1}{2} x_{[1]} x_{[4]} x_{[10]} - \frac{1}{2} x_{[0]} x_{[6]} x_{[10]} + \frac{1}{2} x_{[1]} x_{[6]} x_{[10]} + x_{[2]} x_{[6]} x_{[10]} - \frac{1}{2} x_{[0]} x_{[8]} x_{[10]} - \frac{1}{2} x_{[1]} x_{[8]} x_{[10]} - \frac{1}{2} x_{[0]} x_{[10]} x_{[10]} - \frac{1}{2} x_{[1]} x_{[10]} x_{[10]} - 10 x_{[1]} x_{[2]} - 5 x_{[1]} x_{[4]} + 5 x_{[2]} x_{[4]} + 5 x_{[1]} x_{[6]} + 10 x_{[0]} x_{[8]} + 10 x_{[1]} x_{[8]} + 5 x_{[2]} x_{[8]} + 5 x_{[4]} x_{[8]} - 5 x_{[6]} x_{[8]} + 5 x_{[0]} x_{[9]} + 5 x_{[1]} x_{[9]} + 5 x_{[2]} x_{[9]} + 10 x_{[0]} x_{[10]} + 15 x_{[1]} x_{[10]} + 10 x_{[2]} x_{[10]} + 5 x_{[4]} x_{[10]} - 50 x_{[0]} - 50 x_{[1]} - 50 x_{[2]} - 15 x_{[4]} - \frac{65}{2} x_{[8]} - \frac{35}{2} x_{[9]} - 50 x_{[10]} + 225, x_{[0]}^3 + x_{[0]}^2 x_{[1]} + x_{[0]} x_{[1]}^2 + x_{[1]}^3 - 10 x_{[0]}^2 - 10 x_{[0]} x_{[1]} - 10 x_{[1]}^2 + 35 x_{[0]} + 35 x_{[1]} - 50, x_{[1]} x_{[4]} + x_{[2]} x_{[4]} + x_{[1]} x_{[6]} + x_{[1]} x_{[8]} - x_{[6]} x_{[8]} - x_{[2]} x_{[9]} + x_{[4]} x_{[9]} + x_{[1]} x_{[10]} + x_{[4]} x_{[10]} + x_{[10]}^2 - 10 x_{[1]} - 10 x_{[4]} - 10 x_{[10]} + 35, x_{[0]} x_{[1]} + x_{[1]}^2 - x_{[0]} x_{[4]} - x_{[2]} x_{[4]} - x_{[1]} x_{[6]} - x_{[0]} x_{[8]} - x_{[1]} x_{[8]} - x_{[4]} x_{[8]} + x_{[6]} x_{[8]} + x_{[0]} x_{[9]} + x_{[2]} x_{[9]} + x_{[8]} x_{[9]} - x_{[1]} x_{[10]} - x_{[4]} x_{[10]} + x_{[8]} x_{[10]} + x_{[9]} x_{[10]} + 10 x_{[4]} - 10 x_{[9]}, x_{[0]} x_{[4]} - x_{[0]} x_{[9]} - x_{[4]} x_{[9]} + x_{[9]}^2, -x_{[0]} x_{[1]} - x_{[1]}^2 - x_{[1]} x_{[4]} + x_{[0]} x_{[8]} + x_{[4]} x_{[8]} + x_{[8]}^2 + 10 x_{[1]} - 10 x_{[8]}, -x_{[0]}^2 - 2 x_{[0]} x_{[1]} - x_{[1]}^2 - x_{[0]} x_{[2]} - x_{[1]} x_{[2]} - x_{[1]} x_{[4]} - x_{[2]} x_{[4]} + x_{[0]} x_{[6]} + x_{[2]} x_{[6]} - x_{[1]} x_{[8]} + x_{[1]} x_{[8]} + x_{[6]} x_{[8]} + x_{[2]} x_{[8]} + x_{[9]} - x_{[4]} x_{[9]} - x_{[1]} x_{[10]} + x_{[2]} x_{[10]} - x_{[4]} x_{[10]} + x_{[6]} x_{[10]} + 10 x_{[10]} + 10 x_{[0]}
\end{aligned}$$

```
{0} + 20 x_{1} + 10 x_{4} - 10 x_{6} - 35, x_{0}^2 + x_{0} x_{1} + x_{0} x_{2} + x_{1} x_{2} + x_{0} x_{4} + x_{1} x_{4} + 2 x_{2} x_{4} - x_{0} x_{6} + x_{1} x_{6} + x_{0} x_{8} + 2 x_{1} x_{8} + x_{2} x_{8} + x_{4} x_{8} - x_{6} x_{8} - x_{0} x_{9} - x_{2} x_{9} + x_{4} x_{9} + x_{6} x_{9} + 2 x_{1} x_{10} + 2 x_{4} x_{10} - 10 x_{0} - 20 x_{1} - 10 x_{2} - 20 x_{4} - 10 x_{8} - 10 x_{10} + 100, x_{0} x_{1} - x_{0} x_{6} - x_{1} x_{6} + x_{6}^2, x_{0}^2 + x_{0} x_{1} + x_{1}^2 + x_{0} x_{4} + x_{1} x_{4} + x_{4}^2 - 10 x_{0} - 10 x_{1} - 10 x_{4} + 35, x_{0}^2 + x_{0} x_{1} + x_{1}^2 + x_{0} x_{2} + x_{1} x_{2} + x_{2}^2 - 10 x_{0} - 10 x_{1} - 10 x_{2} + 35, - x_{2} - x_{6} - x_{8} - x_{9} - x_{10} + x_{15} + 10, x_{2} + x_{6} + x_{10} + x_{14} - 10, - x_{0} - x_{4} + x_{9} + x_{13}, x_{0} + x_{4} + x_{8} + x_{12} - 10, x_{8} + x_{9} + x_{10} + x_{11} - 10, - x_{0} - x_{1} + x_{6} + x_{7}, x_{0} + x_{1} + x_{4} + x_{5} - 10, x_{0} + x_{1} + x_{2} + x_{3} - 10\right]
```

In [26]: `slv.sol`

Out[26]: {x15: 2,
x14: 3,
x13: 4,
x12: 1,
x11: 1,
x10: 4,
x9: 3,
x8: 2,
x7: 3,
x6: 2,
x5: 1,
x4: 4,
x3: 4,
x2: 1,
x1: 2,
x0: 3}