feasiblecharpolylist[95, (x + 5) ^ 75 (x - 19) ^ 13]

$$\{(-19+x)(-18+x)(-17+x)^3(395-40x+x^2),$$
$$(-22+x)(-19+x)^2(-17+x)^4,\ (-19+x)^2(-18+x)(-17+x)^2(353-38x+x^2),$$
$$(-19+x)(-17+x)^3(-7102+1115x-58x^2+x^3),\ (-21+x)^2(-18+x)(-17+x)^4,$$
$$(-19+x)^2(-17+x)^2(-6350+1037x-56x^2+x^3),$$
$$(-19+x)(-17+x)^2(120\,658-26\,053x+2101x^2-75x^3+x^4),$$
$$(-21+x)(-19+x)(-17+x)^3(338-37x+x^2),$$
$$(-19+x)^2(-18+x)(-17+x)(-5993+999x-55x^2+x^3),$$
$$(-19+x)^3(-17+x)^2(334-37x+x^2),$$
$$(-21+x)(-19+x)(-18+x)(-17+x)^2(319-36x+x^2),$$
$$(-19+x)^3(-17+x)(-5674+963x-54x^2+x^3),$$
$$(-21+x)(-19+x)^2(-17+x)^2(302-35x+x^2),$$
$$(-19+x)^2(-17+x)(338-37x+x^2)(319-36x+x^2),$$
$$(-21+x)(-19+x)^3(-18+x)(-17+x)(-15+x),$$
$$(-19+x)^3(96\,398-22\,041x+1881x^2-71x^3+x^4),$$
$$(-19+x)^2(-17+x)(107\,738-23\,967x+1989x^2-73x^3+x^4),$$
$$(-19+x)^2(-18+x)(319-36x+x^2)^2,\ (-19+x)^3(-17+x)(-5666+963x-54x^2+x^3),$$
$$(-19+x)^4(-15+x)(338-37x+x^2),\ (-19+x)^3(319-36x+x^2)(302-35x+x^2),$$
$$(-19+x)^3(-18+x)(-5347+927x-53x^2+x^3),$$
$$(-19+x)^4(-17+x)(298-35x+x^2),\ (-19+x)^4(-5062+893x-52x^2+x^3),$$
$$(-19+x)^4(-18+x)(281-34x+x^2),\ (-19+x)^6(-14+x)\}$$

```
dim20list = {(-19 + x)^14 (-18 + x) (-17 + x)^3 (5 + x)^75 (395 - 40 x + x^2),
    (-22 + x) (-19 + x)^15 (-17 + x)^4 (5 + x)^75, (-19 + x)^15 (-18 + x) (-17 + x)^2 (5 + x)^75
     (353 - 38 x + x^2), (-19 + x)^14 (-17 + x)^3 (5 + x)^75 (-7102 + 1115 x - 58 x^2 + x^3),
    (-21 + x)^2 (-19 + x)^13 (-18 + x) (-17 + x)^4 (5 + x)^75,
    (-19 + x)^15 (-17 + x)^2 (5 + x)^75 (-6350 + 1037 x - 56 x^2 + x^3),
    (-19 + x)^14 (-17 + x)^2 (5 + x)^75 (120 658 - 26 053 x + 2101 x^2 - 75 x^3 + x^4),
    (-21 + x) (-19 + x)^14 (-17 + x)^3 (5 + x)^75 (338 - 37 x + x^2),
    (-19 + x)^15 (-18 + x) (-17 + x) (5 + x)^75 (-5993 + 999 x - 55 x^2 + x^3),
    (-19 + x)^16 (-17 + x)^2 (5 + x)^75 (334 - 37 x + x^2),
    (-21 + x) (-19 + x)^14 (-18 + x) (-17 + x)^2 (5 + x)^75 (319 - 36 x + x^2),
    (-19 + x)^16 (-17 + x) (5 + x)^75 (-5674 + 963 x - 54 x^2 + x^3),
    (-21 + x) (-19 + x)^15 (-17 + x)^2 (5 + x)^75 (302 - 35 x + x^2),
    (-19 + x)^15 (-17 + x) (5 + x)^75 (338 - 37 x + x^2) (319 - 36 x + x^2),
    (-21 + x) (-19 + x)^16 (-18 + x) (-17 + x) (-15 + x) (5 + x)^75,
    (-19 + x)^16 (5 + x)^75 (96 398 - 22 041 x + 1881 x^2 - 71 x^3 + x^4),
    (-19 + x)^15 (-17 + x) (5 + x)^75 (107 738 - 23 967 x + 1989 x^2 - 73 x^3 + x^4),
    (-19 + x)^15 (-18 + x) (5 + x)^75 (319 - 36 x + x^2)^2,
    (-19 + x)^16 (-17 + x) (5 + x)^75 (-5666 + 963 x - 54 x^2 + x^3),
    (-19 + x)^17 (-15 + x) (5 + x)^75 (338 - 37 x + x^2),
    (-19 + x)^16 (5 + x)^75 (319 - 36 x + x^2) (302 - 35 x + x^2),
    (-19 + x)^16 (-18 + x) (5 + x)^75 (-5347 + 927 x - 53 x^2 + x^3),
    (-19 + x)^17 (-17 + x) (5 + x)^75 (298 - 35 x + x^2),
    (-19 + x)^17 (5 + x)^75 (-5062 + 893 x - 52 x^2 + x^3),
    (-19 + x)^17 (-18 + x) (5 + x)^75 (281 - 34 x + x^2), (-19 + x)^19 (-14 + x) (5 + x)^75};

Length[dim20list]
26

modfilter[dim20list, chiSmod32n95, 32]
{(-22 + x) (-19 + x)^15 (-17 + x)^4 (5 + x)^75,
  (-21 + x)^2 (-19 + x)^13 (-18 + x) (-17 + x)^4 (5 + x)^75,
  (-19 + x)^16 (-17 + x)^2 (5 + x)^75 (334 - 37 x + x^2),
  (-21 + x) (-19 + x)^15 (-17 + x)^2 (5 + x)^75 (302 - 35 x + x^2),
  (-19 + x)^15 (-18 + x) (5 + x)^75 (319 - 36 x + x^2)^2,
  (-19 + x)^17 (-15 + x) (5 + x)^75 (338 - 37 x + x^2),
  (-19 + x)^17 (-17 + x) (5 + x)^75 (298 - 35 x + x^2), (-19 + x)^19 (-14 + x) (5 + x)^75}

dim20listmod32 = {(-22 + x) (-19 + x)^15 (-17 + x)^4 (5 + x)^75, (-21 + x)^2 (-19 + x)^13
     (-18 + x) (-17 + x)^4 (5 + x)^75, (-19 + x)^16 (-17 + x)^2 (5 + x)^75 (334 - 37 x + x^2),
    (-21 + x) (-19 + x)^15 (-17 + x)^2 (5 + x)^75 (302 - 35 x + x^2), (-19 + x)^15 (-18 + x)
     (5 + x)^75 (319 - 36 x + x^2)^2, (-19 + x)^17 (-15 + x) (5 + x)^75 (338 - 37 x + x^2),
    (-19 + x)^17 (-17 + x) (5 + x)^75 (298 - 35 x + x^2), (-19 + x)^19 (-14 + x) (5 + x)^75};
```

```
Length[dim20listmod32]
```

```
8
```

```
chi = (-21 + x)^2 (-19 + x)^13 (-18 + x) (-17 + x)^4 (5 + x)^75
```

```
(-21 + x)^2 (-19 + x)^13 (-18 + x) (-17 + x)^4 (5 + x)^75
```

```
CoefficientList[feasibleinterlacingpolylist[chi], x]
```

```
{{89 607, -20 962, 1824, -70, 1},
 {89 471, -20 954, 1824, -70, 1}, {89 319, -20 946, 1824, -70, 1}}
```

```
A = {{89 607, -20 962, 1824, -70, 1},
    {89 471, -20 954, 1824, -70, 1}, {89 319, -20 946, 1824, -70, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 89\,607 & -20\,962 & 1824 & -70 & 1 \\ 89\,471 & -20\,954 & 1824 & -70 & 1 \\ 89\,319 & -20\,946 & 1824 & -70 & 1 \end{pmatrix}$$

```
g = CoefficientList[D[chi, x] / mu[chi] // Factor, x]
```

```
{8 503 665, -1 990 902, 173 280, -6650, 95}
```

```
Array[c, 5].Transpose[A]
```

```
{89 607 c[1] - 20 962 c[2] + 1824 c[3] - 70 c[4] + c[5],
 89 471 c[1] - 20 954 c[2] + 1824 c[3] - 70 c[4] + c[5],
 89 319 c[1] - 20 946 c[2] + 1824 c[3] - 70 c[4] + c[5]}
```

```
Array[c, 5].g
```

```
8 503 665 c[1] - 1 990 902 c[2] + 173 280 c[3] - 6650 c[4] + 95 c[5]
```

```
cert = Flatten[Array[c, 5] /.
    FindInstance[8 503 665 c[1] - 1 990 902 c[2] + 173 280 c[3] - 6650 c[4] + 95 c[5] < 0 &&
      89 607 c[1] - 20 962 c[2] + 1824 c[3] - 70 c[4] + c[5] ≥ 0 &&
      89 471 c[1] - 20 954 c[2] + 1824 c[3] - 70 c[4] + c[5] ≥ 0 &&
      89 319 c[1] - 20 946 c[2] + 1824 c[3] - 70 c[4] + c[5] ≥ 0, Array[c, 5], Integers]]
```

```
{49 420, 889 549, 0, 0, 14 218 410 144}
```

```
GCD[49 420, 889 549, 0, 0, 14 218 410 144]
```

```
1
```

```
Reverse[cert]
```

```
{14 218 410 144, 0, 0, 889 549, 49 420}
```

```
cert.g
```

$$-4\,795\,218$$

```
cert.Transpose[A]
```

$$\{61\,946, 457\,218, 61\,770\}$$

```
chi = (-19 + x)^15 (-18 + x) (5 + x)^75 (319 - 36 x + x^2)^2
```

$$(-19+x)^{15}\,(-18+x)\,(5+x)^{75}\,\left(319-36\,x+x^2\right)^2$$

```
CoefficientList[feasibleinterlacingpolylist[chi], x]
```

$$\{\{80\,069, -19\,244, 1722, -68, 1\},\ \{79\,933, -19\,236, 1722, -68, 1\}, \{79\,781, -19\,228, 1722, -68, 1\}\}$$

```
A = {{80 069, -19 244, 1722, -68, 1},
   {79 933, -19 236, 1722, -68, 1}, {79 781, -19 228, 1722, -68, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 80\,069 & -19\,244 & 1722 & -68 & 1 \\ 79\,933 & -19\,236 & 1722 & -68 & 1 \\ 79\,781 & -19\,228 & 1722 & -68 & 1 \end{pmatrix}$$

```
g = CoefficientList[D[chi, x] / mu[chi] // Factor, x]
```

$$\{7\,598\,275, -1\,827\,740, 163\,590, -6460, 95\}$$

```
Array[c, 5].Transpose[A]
```

$$\{80\,069\,c[1] - 19\,244\,c[2] + 1722\,c[3] - 68\,c[4] + c[5],\ 79\,933\,c[1] - 19\,236\,c[2] + 1722\,c[3] - 68\,c[4] + c[5],\ 79\,781\,c[1] - 19\,228\,c[2] + 1722\,c[3] - 68\,c[4] + c[5]\}$$

```
Array[c, 5].g
```

$$7\,598\,275\,c[1] - 1\,827\,740\,c[2] + 163\,590\,c[3] - 6460\,c[4] + 95\,c[5]$$

```
cert = Flatten[Array[c, 5] /.
   FindInstance[7 598 275 c[1] - 1 827 740 c[2] + 163 590 c[3] - 6460 c[4] + 95 c[5] < 0 &&
     80 069 c[1] - 19 244 c[2] + 1722 c[3] - 68 c[4] + c[5] ≥ 0 &&
     79 933 c[1] - 19 236 c[2] + 1722 c[3] - 68 c[4] + c[5] ≥ 0 &&
     79 781 c[1] - 19 228 c[2] + 1722 c[3] - 68 c[4] + c[5] ≥ 0, Array[c, 5], Integers]]
```

$$\{26\,657, 479\,808, 0, 0, 7\,099\,110\,312\}$$

```
GCD[26 657, 479 808, 0, 0, 7 099 110 312]
```

$$1$$

```
Reverse[cert]
```

$$\{7\,099\,110\,312,\ 0,\ 0,\ 479\,808,\ 26\,657\}$$

```
cert.g
```

$$-1\,577\,605$$

```
cert.Transpose[A]
```

$$\{84\,493,\ 297\,605,\ 84\,205\}$$

```
chi = (-19 + x)^16 (-17 + x)^2 (5 + x)^75 (334 - 37 x + x^2)
```

$$(-19+x)^{16}\,(-17+x)^{2}\,(5+x)^{75}\,\left(334-37\,x+x^{2}\right)$$

```
CoefficientList[feasibleinterlacingpolylist[chi], x]
```

$$\{\{78\,897, -19\,108, 1718, -68, 1\},\ \{78\,913, -19\,108, 1718, -68, 1\},\ \{79\,033, -19\,116, 1718, -68, 1\},\ \{78\,761, -19\,100, 1718, -68, 1\},\ \{78\,777, -19\,100, 1718, -68, 1\},\ \{78\,793, -19\,100, 1718, -68, 1\},\ \{78\,625, -19\,092, 1718, -68, 1\},\ \{78\,641, -19\,092, 1718, -68, 1\},\ \{78\,489, -19\,084, 1718, -68, 1\}\}$$

```
A = {{79 033, -19 116, 1718, -68, 1},
   {78 897, -19 108, 1718, -68, 1}, {78 913, -19 108, 1718, -68, 1},
   {78 761, -19 100, 1718, -68, 1}, {78 777, -19 100, 1718, -68, 1},
   {78 793, -19 100, 1718, -68, 1}, {78 625, -19 092, 1718, -68, 1},
   {78 641, -19 092, 1718, -68, 1}, {78 489, -19 084, 1718, -68, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 79\,033 & -19\,116 & 1718 & -68 & 1 \\ 78\,897 & -19\,108 & 1718 & -68 & 1 \\ 78\,913 & -19\,108 & 1718 & -68 & 1 \\ 78\,761 & -19\,100 & 1718 & -68 & 1 \\ 78\,777 & -19\,100 & 1718 & -68 & 1 \\ 78\,793 & -19\,100 & 1718 & -68 & 1 \\ 78\,625 & -19\,092 & 1718 & -68 & 1 \\ 78\,641 & -19\,092 & 1718 & -68 & 1 \\ 78\,489 & -19\,084 & 1718 & -68 & 1 \end{pmatrix}$$

```
g = CoefficientList[D[chi, x] / mu[chi] // Factor, x]
```

$$\{7\,513\,695, -1\,816\,316, 163\,210, -6460, 95\}$$

```
Array[c, 5].Transpose[A]
```

```
{79 033 c[1] - 19 116 c[2] + 1718 c[3] - 68 c[4] + c[5],
 78 897 c[1] - 19 108 c[2] + 1718 c[3] - 68 c[4] + c[5],
 78 913 c[1] - 19 108 c[2] + 1718 c[3] - 68 c[4] + c[5],
 78 761 c[1] - 19 100 c[2] + 1718 c[3] - 68 c[4] + c[5],
 78 777 c[1] - 19 100 c[2] + 1718 c[3] - 68 c[4] + c[5],
 78 793 c[1] - 19 100 c[2] + 1718 c[3] - 68 c[4] + c[5],
 78 625 c[1] - 19 092 c[2] + 1718 c[3] - 68 c[4] + c[5],
 78 641 c[1] - 19 092 c[2] + 1718 c[3] - 68 c[4] + c[5],
 78 489 c[1] - 19 084 c[2] + 1718 c[3] - 68 c[4] + c[5]}
```

```
Array[c, 5].g
```

```
7 513 695 c[1] - 1 816 316 c[2] + 163 210 c[3] - 6460 c[4] + 95 c[5]
```

```
cert = Flatten[Array[c, 5] /.
   FindInstance[7 513 695 c[1] - 1 816 316 c[2] + 163 210 c[3] - 6460 c[4] + 95 c[5] < 0 &&
     79 033 c[1] - 19 116 c[2] + 1718 c[3] - 68 c[4] + c[5] ≥ 0 &&
     78 897 c[1] - 19 108 c[2] + 1718 c[3] - 68 c[4] + c[5] ≥ 0 &&
     78 913 c[1] - 19 108 c[2] + 1718 c[3] - 68 c[4] + c[5] ≥ 0 &&
     78 761 c[1] - 19 100 c[2] + 1718 c[3] - 68 c[4] + c[5] ≥ 0 &&
     78 777 c[1] - 19 100 c[2] + 1718 c[3] - 68 c[4] + c[5] ≥ 0 &&
     78 793 c[1] - 19 100 c[2] + 1718 c[3] - 68 c[4] + c[5] ≥ 0 &&
     78 625 c[1] - 19 092 c[2] + 1718 c[3] - 68 c[4] + c[5] ≥ 0 &&
     78 641 c[1] - 19 092 c[2] + 1718 c[3] - 68 c[4] + c[5] ≥ 0 &&
     78 489 c[1] - 19 084 c[2] + 1718 c[3] - 68 c[4] + c[5] ≥ 0, Array[c, 5], Integers]]
```

```
{-2190, -9058, 0, 0, 0}
```

```
GCD[-2190, -9058, 0, 0, 0]
```

```
2
```

```
cert = cert / 2
```

```
{-1095, -4529, 0, 0, 0}
```

```
Reverse[cert]
```

```
{0, 0, 0, -4529, -1095}
```

```
cert.g
```

```
-1 400 861
```

```
cert.Transpose[A]
```

```
{35 229, 147 917, 130 397, 260 605, 243 085, 225 565, 373 293, 355 773, 485 981}
```

```
chi = (-21 + x) (-19 + x)^15 (-17 + x)^2 (5 + x)^75 (302 - 35 x + x^2)
```

$$(-21+x)\,(-19+x)^{15}\,(-17+x)^{2}\,(5+x)^{75}\left(302-35\,x+x^{2}\right)$$

```
CoefficientList[feasibleinterlacingpolylist[chi], x]
```

```
{{-1501899, 442253, -51758, 3010, -87, 1},
 {-1499043, 441949, -51750, 3010, -87, 1},
 {-1499347, 441965, -51750, 3010, -87, 1},
 {-1499651, 441981, -51750, 3010, -87, 1},
 {-1496459, 441661, -51742, 3010, -87, 1},
 {-1496763, 441677, -51742, 3010, -87, 1},
 {-1497067, 441693, -51742, 3010, -87, 1},
 {-1493875, 441373, -51734, 3010, -87, 1},
 {-1494179, 441389, -51734, 3010, -87, 1},
 {-1491291, 441085, -51726, 3010, -87, 1}}
```

```
A = {{-1501899, 442253, -51758, 3010, -87, 1},
    {-1499043, 441949, -51750, 3010, -87, 1}, {-1499347, 441965,
     -51750, 3010, -87, 1}, {-1499651, 441981, -51750, 3010, -87, 1},
    {-1496459, 441661, -51742, 3010, -87, 1}, {-1496763, 441677,
     -51742, 3010, -87, 1}, {-1497067, 441693, -51742, 3010, -87, 1},
    {-1493875, 441373, -51734, 3010, -87, 1}, {-1494179, 441389,
     -51734, 3010, -87, 1}, {-1491291, 441085, -51726, 3010, -87, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix}
-1501899 & 442253 & -51758 & 3010 & -87 & 1\\
-1499043 & 441949 & -51750 & 3010 & -87 & 1\\
-1499347 & 441965 & -51750 & 3010 & -87 & 1\\
-1499651 & 441981 & -51750 & 3010 & -87 & 1\\
-1496459 & 441661 & -51742 & 3010 & -87 & 1\\
-1496763 & 441677 & -51742 & 3010 & -87 & 1\\
-1497067 & 441693 & -51742 & 3010 & -87 & 1\\
-1493875 & 441373 & -51734 & 3010 & -87 & 1\\
-1494179 & 441389 & -51734 & 3010 & -87 & 1\\
-1491291 & 441085 & -51726 & 3010 & -87 & 1
\end{pmatrix}$$

```
g = CoefficientList[D[chi, x] / mu[chi] // Factor, x]
```

```
{-142669165, 42012067, -4916938, 285950, -8265, 95}
```

```
Array[c, 6].Transpose[A]
```

```
{-1501899 c[1] + 442253 c[2] - 51758 c[3] + 3010 c[4] - 87 c[5] + c[6],
 -1499043 c[1] + 441949 c[2] - 51750 c[3] + 3010 c[4] - 87 c[5] + c[6],
 -1499347 c[1] + 441965 c[2] - 51750 c[3] + 3010 c[4] - 87 c[5] + c[6],
 -1499651 c[1] + 441981 c[2] - 51750 c[3] + 3010 c[4] - 87 c[5] + c[6],
 -1496459 c[1] + 441661 c[2] - 51742 c[3] + 3010 c[4] - 87 c[5] + c[6],
 -1496763 c[1] + 441677 c[2] - 51742 c[3] + 3010 c[4] - 87 c[5] + c[6],
 -1497067 c[1] + 441693 c[2] - 51742 c[3] + 3010 c[4] - 87 c[5] + c[6],
 -1493875 c[1] + 441373 c[2] - 51734 c[3] + 3010 c[4] - 87 c[5] + c[6],
 -1494179 c[1] + 441389 c[2] - 51734 c[3] + 3010 c[4] - 87 c[5] + c[6],
 -1491291 c[1] + 441085 c[2] - 51726 c[3] + 3010 c[4] - 87 c[5] + c[6]}
```

```
Array[c, 6].g
```

```
-142669165 c[1] + 42012067 c[2] - 4916938 c[3] + 285950 c[4] - 8265 c[5] + 95 c[6]
```

```
cert = Flatten[
  Array[c, 6] /. FindInstance[-142669165 c[1] + 42012067 c[2] - 4916938 c[3] +
       285950 c[4] - 8265 c[5] + 95 c[6] < 0 &&
     -1501899 c[1] + 442253 c[2] - 51758 c[3] + 3010 c[4] - 87 c[5] + c[6] ≥ 0 &&
     -1499043 c[1] + 441949 c[2] - 51750 c[3] + 3010 c[4] - 87 c[5] + c[6] ≥ 0 &&
     -1499347 c[1] + 441965 c[2] - 51750 c[3] + 3010 c[4] - 87 c[5] + c[6] ≥ 0 &&
     -1499651 c[1] + 441981 c[2] - 51750 c[3] + 3010 c[4] - 87 c[5] + c[6] ≥ 0 &&
     -1496459 c[1] + 441661 c[2] - 51742 c[3] + 3010 c[4] - 87 c[5] + c[6] ≥ 0 &&
     -1496763 c[1] + 441677 c[2] - 51742 c[3] + 3010 c[4] - 87 c[5] + c[6] ≥ 0 &&
     -1497067 c[1] + 441693 c[2] - 51742 c[3] + 3010 c[4] - 87 c[5] + c[6] ≥ 0 &&
     -1493875 c[1] + 441373 c[2] - 51734 c[3] + 3010 c[4] - 87 c[5] + c[6] ≥ 0 &&
     -1494179 c[1] + 441389 c[2] - 51734 c[3] + 3010 c[4] - 87 c[5] + c[6] ≥ 0 &&
     -1491291 c[1] + 441085 c[2] - 51726 c[3] + 3010 c[4] - 87 c[5] + c[6] ≥ 0,
    Array[c, 6], Integers]]
```

```
{44780, 443285, 2488265, 0, 0, 0}
```

```
GCD[44780, 443285, 2488265, 0, 0, 0]
```

```
5
```

```
cert = cert / 5
```

```
{8956, 88657, 497653, 0, 0, 0}
```

```
Reverse[cert]
```

```
{0, 0, 0, 497653, 88657, 8956}
```

```
cert.g
```

```
-10164235
```

```
cert.Transpose[A]
```

```
{292803, 2900635, 1596523, 292411, 4490947,
 3186835, 1882723, 6081259, 4777147, 7671571}
```

```
chi = (-19 + x)^17 (-15 + x) (5 + x)^75 (338 - 37 x + x^2)
```

$$(-19+x)^{17}\,(-15+x)\,(5+x)^{75}\left(338-37\,x+x^2\right)$$

```
CoefficientList[feasibleinterlacingpolylist[chi], x]
```

```
{{70 635, -17 534, 1620, -66, 1},
 {70 499, -17 526, 1620, -66, 1}, {70 515, -17 526, 1620, -66, 1},
 {70 363, -17 518, 1620, -66, 1}, {70 379, -17 518, 1620, -66, 1},
 {70 395, -17 518, 1620, -66, 1}, {70 243, -17 510, 1620, -66, 1}}
```

```
A = {{70 635, -17 534, 1620, -66, 1},
    {70 499, -17 526, 1620, -66, 1}, {70 515, -17 526, 1620, -66, 1},
    {70 363, -17 518, 1620, -66, 1}, {70 379, -17 518, 1620, -66, 1},
    {70 395, -17 518, 1620, -66, 1}, {70 243, -17 510, 1620, -66, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 70\,635 & -17\,534 & 1620 & -66 & 1 \\ 70\,499 & -17\,526 & 1620 & -66 & 1 \\ 70\,515 & -17\,526 & 1620 & -66 & 1 \\ 70\,363 & -17\,518 & 1620 & -66 & 1 \\ 70\,379 & -17\,518 & 1620 & -66 & 1 \\ 70\,395 & -17\,518 & 1620 & -66 & 1 \\ 70\,243 & -17\,510 & 1620 & -66 & 1 \end{pmatrix}$$

```
g = CoefficientList[D[chi, x] / mu[chi] // Factor, x]
```

```
{6 708 965, -1 665 682, 153 900, -6270, 95}
```

```
Array[c, 5].Transpose[A]
```

```
{70 635 c[1] - 17 534 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 499 c[1] - 17 526 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 515 c[1] - 17 526 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 363 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 379 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 395 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 243 c[1] - 17 510 c[2] + 1620 c[3] - 66 c[4] + c[5]}
```

```
Array[c, 5].g
```

```
6 708 965 c[1] - 1 665 682 c[2] + 153 900 c[3] - 6270 c[4] + 95 c[5]
```

```
cert = Flatten[Array[c, 5] /.
    FindInstance[6 708 965 c[1] - 1 665 682 c[2] + 153 900 c[3] - 6270 c[4] + 95 c[5] < 0 &&
      70 635 c[1] - 17 534 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 499 c[1] - 17 526 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 515 c[1] - 17 526 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 363 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 379 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 395 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 243 c[1] - 17 510 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0, Array[c, 5], Integers]]
```

```
{15 690, 266 716, 0, 0, 3 568 395 060}
```

```
GCD[15 690, 266 716, 0, 0, 3 568 395 060]
```

```
2
```

```
cert = cert / 2
```

```
{7845, 133 358, 0, 0, 1 784 197 530}
```

```
Reverse[cert]
```

```
{1 784 197 530, 0, 0, 133 358, 7845}
```

```
cert.g
```

```
-1 424 381
```

```
cert.Transpose[A]
```

```
{29 933, 29 877, 155 397, 29 821, 155 341, 280 861, 155 285}
```

```
chi = (-19 + x)^17 (-17 + x) (5 + x)^75 (298 - 35 x + x^2)
```

```
(-19 + x)^17 (-17 + x) (5 + x)^75 (298 - 35 x + x^2)
```

```
CoefficientList[feasibleinterlacingpolylist[chi], x]
```

```
{{70 499, -17 526, 1620, -66, 1}, {70 515, -17 526, 1620, -66, 1},
 {70 363, -17 518, 1620, -66, 1}, {70 379, -17 518, 1620, -66, 1},
 {70 395, -17 518, 1620, -66, 1}, {70 227, -17 510, 1620, -66, 1},
 {70 243, -17 510, 1620, -66, 1}, {70 091, -17 502, 1620, -66, 1}}
```

```
A = {{70 499, -17 526, 1620, -66, 1}, {70 515, -17 526, 1620, -66, 1},
    {70 363, -17 518, 1620, -66, 1}, {70 379, -17 518, 1620, -66, 1},
    {70 395, -17 518, 1620, -66, 1}, {70 227, -17 510, 1620, -66, 1},
    {70 243, -17 510, 1620, -66, 1}, {70 091, -17 502, 1620, -66, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 70\,499 & -17\,526 & 1620 & -66 & 1 \\ 70\,515 & -17\,526 & 1620 & -66 & 1 \\ 70\,363 & -17\,518 & 1620 & -66 & 1 \\ 70\,379 & -17\,518 & 1620 & -66 & 1 \\ 70\,395 & -17\,518 & 1620 & -66 & 1 \\ 70\,227 & -17\,510 & 1620 & -66 & 1 \\ 70\,243 & -17\,510 & 1620 & -66 & 1 \\ 70\,091 & -17\,502 & 1620 & -66 & 1 \end{pmatrix}$$

```
g = CoefficientList[D[chi, x] / mu[chi] // Factor, x]
```

```
{6 703 605, -1 665 314, 153 900, -6270, 95}
```

```
Array[c, 5].Transpose[A]
```

```
{70 499 c[1] - 17 526 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 515 c[1] - 17 526 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 363 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 379 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 395 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 227 c[1] - 17 510 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 243 c[1] - 17 510 c[2] + 1620 c[3] - 66 c[4] + c[5],
 70 091 c[1] - 17 502 c[2] + 1620 c[3] - 66 c[4] + c[5]}
```

```
Array[c, 5].g
```

```
6 703 605 c[1] - 1 665 314 c[2] + 153 900 c[3] - 6270 c[4] + 95 c[5]
```

```
cert = Flatten[Array[c, 5] /.
    FindInstance[6 703 605 c[1] - 1 665 314 c[2] + 153 900 c[3] - 6270 c[4] + 95 c[5] < 0 &&
      70 499 c[1] - 17 526 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 515 c[1] - 17 526 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 363 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 379 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 395 c[1] - 17 518 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 227 c[1] - 17 510 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 243 c[1] - 17 510 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0 &&
      70 091 c[1] - 17 502 c[2] + 1620 c[3] - 66 c[4] + c[5] ≥ 0, Array[c, 5], Integers]]
```

```
{-2587, -10 412, 0, 0, 0}
```

```
GCD[-2587, -10 412, 0, 0, 0]
```

```
1
```

```
Reverse[cert]
```

```
{0, 0, 0, -10 412, -2587}
```

```
cert.g
```

```
-2 976 767
```

```
cert.Transpose[A]
```

```
{99 799, 58 407, 368 335, 326 943, 285 551, 636 871, 595 479, 905 407}
```

```
chi = (-22 + x) (-19 + x)^15 (-17 + x)^4 (5 + x)^75
```

```
(-22 + x) (-19 + x)^15 (-17 + x)^4 (5 + x)^75
```

```
CoefficientList[feasibleinterlacingpolylist[chi], x]
```

```
{{-5187, 919, -53, 1}, {-5195, 919, -53, 1},
 {-5203, 919, -53, 1}, {-5211, 919, -53, 1}}
```

```
A = {{-5211, 919, -53, 1}, {-5203, 919, -53, 1},
    {-5195, 919, -53, 1}, {-5187, 919, -53, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} -5211 & 919 & -53 & 1 \\ -5203 & 919 & -53 & 1 \\ -5195 & 919 & -53 & 1 \\ -5187 & 919 & -53 & 1 \end{pmatrix}$$

```
g = CoefficientList[D[chi, x] / mu[chi] // Factor, x]
```

```
{-494 925, 87 305, -5035, 95}
```

```
FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && Array[n, 4].A == g,
 Array[n, 4], Integers]
```

```
{{n[1] → 88, n[2] → 0, n[3] → 6, n[4] → 1}}
```

```
Array[c, 4].Transpose[A]
```

```
{-5211 c[1] + 919 c[2] - 53 c[3] + c[4], -5203 c[1] + 919 c[2] - 53 c[3] + c[4],
 -5195 c[1] + 919 c[2] - 53 c[3] + c[4], -5187 c[1] + 919 c[2] - 53 c[3] + c[4]}
```

```
Array[c, 4].g
```

```
-494 925 c[1] + 87 305 c[2] - 5035 c[3] + 95 c[4]
```

```
warrant = Flatten[
  Array[c, 4] /. FindInstance[-494 925 c[1] + 87 305 c[2] - 5035 c[3] + 95 c[4] < 0 &&
      -5211 c[1] + 919 c[2] - 53 c[3] + c[4] < 0 && -5203 c[1] + 919 c[2] - 53 c[3] + c[4] ≥
       0 && -5195 c[1] + 919 c[2] - 53 c[3] + c[4] ≥ 0 &&
      -5187 c[1] + 919 c[2] - 53 c[3] + c[4] ≥ 0, Array[c, 4], Integers]]
```

```
{917, 0, 0, 4 776 043}
```

```
GCD[917, 0, 0, 4 776 043]
```

```
1
```

```
Reverse[warrant]
```

```
{4 776 043, 0, 0, 917}
```

warrant.g

$$-122\,140$$

warrant.Transpose[A]

$$\{-2444,\ 4892,\ 12\,228,\ 19\,564\}$$

chiwarrant = $(-19+x)^{14}\ (-17+x)^{3}\ (5+x)^{74}\ \left(-5211+919\,x-53\,x^2+x^3\right)$

$$(-19+x)^{14}\ (-17+x)^{3}\ (5+x)^{74}\ \left(-5211+919\,x-53\,x^2+x^3\right)$$

list = feasibleinterlacingpolylist[chiwarrant]

$$\Big\{\left(236-31\,x+x^2\right)\ \left(-5211+919\,x-53\,x^2+x^3\right),$$
$$(-17+x)\ \left(72\,340-18\,005\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\ \left(72\,256-18\,001\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\ \left(72\,264-18\,001\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,228\,640+378\,289\,x-46\,204\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\ \left(72\,272-18\,001\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,228\,776+378\,297\,x-46\,204\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\ (-13+x)\ \left(-5560+957\,x-54\,x^2+x^3\right),\ (-17+x)\ \left(288-35\,x+x^2\right)\ \left(251-32\,x+x^2\right),$$
$$(-17+x)\ \left(72\,172-17\,997\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\ (-15+x)\ \left(-4812+879\,x-52\,x^2+x^3\right),$$
$$(-17+x)\ \left(72\,188-17\,997\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\ \left(72\,196-17\,997\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,227\,484+378\,153\,x-46\,200\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\ \left(72\,204-17\,997\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,227\,620+378\,161\,x-46\,200\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\ \left(72\,212-17\,997\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,227\,756+378\,169\,x-46\,200\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\ \left(72\,220-17\,997\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$\left(251-32\,x+x^2\right)\ \left(-4892+883\,x-52\,x^2+x^3\right),$$
$$(-17+x)\ (-13+x)\ \left(-5556+957\,x-54\,x^2+x^3\right),$$
$$(-17+x)\ \left(72\,104-17\,993\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\ \left(72\,112-17\,993\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\ (-15+x)\ \left(-4808+879\,x-52\,x^2+x^3\right),$$
$$(-17+x)\ \left(72\,128-17\,993\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,226\,328+378\,017\,x-46\,196\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\ \left(72\,136-17\,993\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,226\,464+378\,025\,x-46\,196\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\ \left(72\,144-17\,993\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,226\,600+378\,033\,x-46\,196\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\ \left(311-36\,x+x^2\right)\ \left(232-31\,x+x^2\right),$$
$$-1\,226\,736+378\,041\,x-46\,196\,x^2+2798\,x^3-84\,x^4+x^5,$$

$$
\begin{aligned}
&(-17+x)\left(72\,160-17\,993\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-13+x)\left(376-39\,x+x^2\right)\left(251-32\,x+x^2\right),\\
&-1\,226\,872+378\,049\,x-46\,196\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,168-17\,993\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,227\,008+378\,057\,x-46\,196\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)(-13+x)\left(-5552+957\,x-54\,x^2+x^3\right),\\
&(-17+x)\left(72\,028-17\,989\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(72\,036-17\,989\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(332-37\,x+x^2\right)\left(217-30\,x+x^2\right),\\
&(-17+x)\left(72\,052-17\,989\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)(-15+x)\left(-4804+879\,x-52\,x^2+x^3\right),\\
&-1\,225\,172+377\,881\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,068-17\,989\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,225\,308+377\,889\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,076-17\,989\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,225\,444+377\,897\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,084-17\,989\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,225\,580+377\,905\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(269-34\,x+x^2\right)\left(268-33\,x+x^2\right),\\
&-1\,225\,732+377\,913\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,225\,716+377\,913\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,100-17\,989\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,225\,868+377\,921\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,225\,852+377\,921\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,108-17\,989\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-13+x)\left(94\,308-21\,817\,x+1875\,x^2-71\,x^3+x^4\right),\\
&-1\,225\,988+377\,929\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,116-17\,989\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-19+x)(-17+x)(-13+x)\left(292-35\,x+x^2\right),\\
&(-17+x)\left(71\,960-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,968-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,976-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,984-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-15+x)\left(376-39\,x+x^2\right)\left(217-30\,x+x^2\right),\\
&(-17+x)\left(71\,992-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,224\,016+377\,745\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)(-15+x)\left(-4800+879\,x-52\,x^2+x^3\right),\\
&-1\,224\,152+377\,753\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,008-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,224\,288+377\,761\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,016-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,224\,440+377\,769\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,224\,424+377\,769\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,024-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),
\end{aligned}
$$

$$
\begin{aligned}
&-1\,224\,576+377\,777\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,224\,560+377\,777\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,032-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,224\,712+377\,785\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,224\,696+377\,785\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(72\,040-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,224\,848+377\,793\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,224\,832+377\,793\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-19+x)(-17+x)\left(-3792+747\,x-48\,x^2+x^3\right),\\
&-1\,224\,984+377\,801\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-19+x)\left(64\,472-16\,491\,x+1563\,x^2-65\,x^3+x^4\right),\\
&(-17+x)\left(71\,892-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,900-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,908-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)(-12+x)\left(-5993+999\,x-55\,x^2+x^3\right),\\
&-1\,222\,724+377\,601\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,924-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-15+x)\left(81\,524-19\,739\,x+1763\,x^2-69\,x^3+x^4\right),\\
&(-17+x)\left(71\,932-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,222\,996+377\,617\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)(-15+x)\left(-4796+879\,x-52\,x^2+x^3\right),\\
&-1\,223\,132+377\,625\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,948-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,223\,284+377\,633\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,223\,268+377\,633\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,956-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),\\
&\left(268-33\,x+x^2\right)\left(-4565+847\,x-51\,x^2+x^3\right),\\
&-1\,223\,404+377\,641\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,964-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,223\,556+377\,649\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,223\,540+377\,649\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-19+x)(-17+x)\left(-3788+747\,x-48\,x^2+x^3\right),\\
&-1\,223\,692+377\,657\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-19+x)\left(64\,404-16\,487\,x+1563\,x^2-65\,x^3+x^4\right),\\
&-1\,223\,844+377\,665\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-19+x)\left(64\,412-16\,487\,x+1563\,x^2-65\,x^3+x^4\right),\\
&(-19+x)\left(64\,420-16\,487\,x+1563\,x^2-65\,x^3+x^4\right),\\
&(-17+x)(-16+x)\left(-4489+843\,x-51\,x^2+x^3\right),\\
&(-17+x)\left(71\,832-17\,977\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,840-17\,977\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,848-17\,977\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,221\,568+377\,465\,x-46\,180\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,856-17\,977\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,221\,704+377\,473\,x-46\,180\,x^2+2798\,x^3-84\,x^4+x^5,
\end{aligned}
$$

$$
\begin{aligned}
&(-17+x)\left(71\,864-17\,977\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-15+x)\left(81\,456-19\,735\,x+1763\,x^2-69\,x^3+x^4\right),\\
&(-17+x)\left(71\,872-17\,977\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,221\,976+377\,489\,x-46\,180\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)(-15+x)\left(-4792+879\,x-52\,x^2+x^3\right),\\
&-1\,222\,128+377\,497\,x-46\,180\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,222\,112+377\,497\,x-46\,180\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,888-17\,977\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,222\,264+377\,505\,x-46\,180\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,222\,248+377\,505\,x-46\,180\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-19+x)(-17+x)\left(-3784+747\,x-48\,x^2+x^3\right),\\
&-1\,222\,400+377\,513\,x-46\,180\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-19+x)\left(64\,336-16\,483\,x+1563\,x^2-65\,x^3+x^4\right),\\
&(-21+x)(-19+x)\left(-3064+639\,x-44\,x^2+x^3\right),\\
&(-19+x)\left(64\,352-16\,483\,x+1563\,x^2-65\,x^3+x^4\right),\\
&(-17+x)\left(71\,748-17\,973\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,756-17\,973\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,764-17\,973\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,772-17\,973\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,780-17\,973\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,220\,412+377\,329\,x-46\,176\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,788-17\,973\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,220\,548+377\,337\,x-46\,176\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,796-17\,973\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,220\,684+377\,345\,x-46\,176\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,804-17\,973\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-15+x)\left(81\,388-19\,731\,x+1763\,x^2-69\,x^3+x^4\right),\\
&(-17+x)\left(71\,812-17\,973\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,220\,972+377\,361\,x-46\,176\,x^2+2798\,x^3-84\,x^4+x^5,\\
&-1\,220\,956+377\,361\,x-46\,176\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-21+x)(-19+x)(-17+x)(-15+x)(-12+x),\\
&(-21+x)\left(58\,148-15\,201\,x+1475\,x^2-63\,x^3+x^4\right),\\
&(-19+x)\left(64\,268-16\,479\,x+1563\,x^2-65\,x^3+x^4\right),\\
&(-19+x)\left(64\,276-16\,479\,x+1563\,x^2-65\,x^3+x^4\right),\\
&(-17+x)\left(71\,680-17\,969\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)\left(71\,688-17\,969\,x+1659\,x^2-67\,x^3+x^4\right),\\
&(-17+x)(-16+x)\left(-4481+843\,x-51\,x^2+x^3\right),\\
&(-17+x)\left(71\,704-17\,969\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,219\,120+377\,185\,x-46\,172\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,712-17\,969\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,219\,256+377\,193\,x-46\,172\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,720-17\,969\,x+1659\,x^2-67\,x^3+x^4\right),\\
&-1\,219\,392+377\,201\,x-46\,172\,x^2+2798\,x^3-84\,x^4+x^5,\\
&(-17+x)\left(71\,728-17\,969\,x+1659\,x^2-67\,x^3+x^4\right),
\end{aligned}
$$

$$-1\,219\,528+377\,209\,x-46\,172\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-21+x)\,(-17+x)\,\left(-3416+693\,x-46\,x^2+x^3\right),$$
$$-1\,219\,664+377\,217\,x-46\,172\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-19+x)\,(-17+x)\,\left(-3776+747\,x-48\,x^2+x^3\right),$$
$$-1\,219\,816+377\,225\,x-46\,172\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-19+x)\,(-15+x)\,\left(-4280+813\,x-50\,x^2+x^3\right),$$
$$(-19+x)\,\left(64\,208-16\,475\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-17+x)\,\left(71\,612-17\,965\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\,\left(71\,620-17\,965\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\,\left(71\,628-17\,965\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\,\left(71\,636-17\,965\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,217\,964+377\,049\,x-46\,168\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\,\left(71\,644-17\,965\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,218\,100+377\,057\,x-46\,168\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-21+x)\,(-17+x)\,\left(-3412+693\,x-46\,x^2+x^3\right),$$
$$-1\,218\,236+377\,065\,x-46\,168\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\,\left(71\,660-17\,965\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,218\,372+377\,073\,x-46\,168\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-19+x)\,(-17+x)\,\left(-3772+747\,x-48\,x^2+x^3\right),$$
$$-1\,218\,524+377\,081\,x-46\,168\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-19+x)\,\left(64\,132-16\,471\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-19+x)\,(-15+x)\,\left(-4276+813\,x-50\,x^2+x^3\right),$$
$$(-17+x)\,\left(71\,544-17\,961\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\,\left(71\,552-17\,961\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\,\left(71\,560-17\,961\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-21+x)\,(-17+x)\,(-16+x)\,\left(213-30\,x+x^2\right),$$
$$-1\,216\,808+376\,913\,x-46\,164\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\,\left(71\,576-17\,961\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,216\,944+376\,921\,x-46\,164\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\,\left(71\,584-17\,961\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,217\,080+376\,929\,x-46\,164\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-19+x)\,(-17+x)\,\left(-3768+747\,x-48\,x^2+x^3\right),$$
$$(-19+x)\,\left(64\,064-16\,467\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-19+x)\,\left(64\,072-16\,467\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-17+x)^2\,\left(-4204+809\,x-50\,x^2+x^3\right),\ (-17+x)\,\left(71\,476-17\,957\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-21+x)\,(-17+x)\,\left(-3404+693\,x-46\,x^2+x^3\right),$$
$$(-17+x)\,\left(71\,492-17\,957\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\,\left(71\,500-17\,957\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,215\,652+376\,777\,x-46\,160\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\,\left(71\,508-17\,957\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,215\,788+376\,785\,x-46\,160\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-19+x)\,(-17+x)\,\left(-3764+747\,x-48\,x^2+x^3\right),$$
$$(-19+x)\,\left(63\,996-16\,463\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-21+x)\,(-17+x)^2\,\left(200-29\,x+x^2\right),\ (-17+x)\,\left(71\,408-17\,953\,x+1659\,x^2-67\,x^3+x^4\right),$$

$$(-17+x)\left(71\,416-17\,953\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\left(71\,424-17\,953\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,214\,360+376\,633\,x-46\,156\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-17+x)\left(71\,432-17\,953\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,214\,496+376\,641\,x-46\,156\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-19+x)(-17+x)(-16+x)\left(235-32\,x+x^2\right),$$
$$(-19+x)\left(63\,928-16\,459\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-17+x)^2\left(-4196+809\,x-50\,x^2+x^3\right),\ (-17+x)\left(71\,340-17\,949\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\left(71\,348-17\,949\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\left(71\,356-17\,949\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$-1\,213\,204+376\,497\,x-46\,152\,x^2+2798\,x^3-84\,x^4+x^5,$$
$$(-19+x)(-17+x)\left(-3756+747\,x-48\,x^2+x^3\right),$$
$$(-19+x)\left(63\,860-16\,455\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-17+x)^2\left(-4192+809\,x-50\,x^2+x^3\right),\ (-17+x)\left(71\,272-17\,945\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)\left(71\,280-17\,945\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)(-17+x)\left(-3752+747\,x-48\,x^2+x^3\right),$$
$$(-19+x)(-16+x)\left(-3987+779\,x-49\,x^2+x^3\right),$$
$$(-17+x)\left(71\,188-17\,941\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)^2\left(-4188+809\,x-50\,x^2+x^3\right),\ (-17+x)\left(71\,204-17\,941\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)(-17+x)\left(-3748+747\,x-48\,x^2+x^3\right),$$
$$(-17+x)\left(71\,120-17\,937\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-17+x)^2\left(-4184+809\,x-50\,x^2+x^3\right),\ (-19+x)(-17+x)\left(-3744+747\,x-48\,x^2+x^3\right),$$
$$(-17+x)\left(71\,052-17\,933\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-20+x)(-19+x)(-17+x)^2(-11+x),\ (-19+x)(-17+x)\left(-3736+747\,x-48\,x^2+x^3\right)\}$$

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Length[list]
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239

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listmod32 = modfilter[list * mu[chiwarrant] // Factor, chiSmod32n93, 32]
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$$\{(-19+x)^{13}(-17+x)^3(5+x)^{73}\left(72\,264-18\,001\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}(-17+x)^3(-13+x)(5+x)^{73}\left(-5560+957\,x-54\,x^2+x^3\right),$$
$$(-19+x)^{13}(-17+x)^3(-15+x)(5+x)^{73}\left(-4812+879\,x-52\,x^2+x^3\right),$$
$$(-19+x)^{13}(-17+x)^3(5+x)^{73}\left(72\,196-17\,997\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}(-17+x)^3(5+x)^{73}\left(72\,212-17\,997\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}(-17+x)^3(-13+x)(5+x)^{73}\left(-5556+957\,x-54\,x^2+x^3\right),$$
$$(-19+x)^{13}(-17+x)^2(5+x)^{73}\left(-1\,226\,464+378\,025\,x-46\,196\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}(-17+x)^2(5+x)^{73}\left(-1\,226\,736+378\,041\,x-46\,196\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}(-17+x)^2(5+x)^{73}\left(-1\,227\,008+378\,057\,x-46\,196\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}(-17+x)^2(5+x)^{73}\left(-1\,225\,308+377\,889\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}(-17+x)^2(5+x)^{73}\left(-1\,225\,580+377\,905\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}(-17+x)^2(5+x)^{73}\left(-1\,225\,852+377\,921\,x-46\,192\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}(-17+x)^3(5+x)^{73}\left(71\,960-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}(-17+x)^3(5+x)^{73}\left(71\,976-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),$$

$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,992-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(72\,008-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,224\,440+377\,769\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(72\,024-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,224\,712+377\,785\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(72\,040-17\,985\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,224\,984+377\,801\,x-46\,188\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,892-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,908-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,924-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(-15+x)\,(5+x)^{73}\,\left(-4796+879\,x-52\,x^2+x^3\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,223\,284+377\,633\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,956-17\,981\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,223\,556+377\,649\,x-46\,184\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{14}\,(-17+x)^{3}\,(5+x)^{73}\,\left(-3788+747\,x-48\,x^2+x^3\right),$$
$$(-19+x)^{14}\,(-17+x)^{2}\,(5+x)^{73}\,\left(64\,412-16\,487\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,221\,568+377\,465\,x-46\,180\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(-15+x)\,(5+x)^{73}\,\left(81\,456-19\,735\,x+1763\,x^2-69\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,222\,112+377\,497\,x-46\,180\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{14}\,(-17+x)^{2}\,(5+x)^{73}\,\left(64\,336-16\,483\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-19+x)^{14}\,(-17+x)^{2}\,(5+x)^{73}\,\left(64\,352-16\,483\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,220\,412+377\,329\,x-46\,176\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,220\,684+377\,345\,x-46\,176\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,220\,956+377\,361\,x-46\,176\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,688-17\,969\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,704-17\,969\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,720-17\,969\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-21+x)\,(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(-3416+693\,x-46\,x^2+x^3\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,219\,816+377\,225\,x-46\,172\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,620-17\,965\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,636-17\,965\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-21+x)\,(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(-3412+693\,x-46\,x^2+x^3\right),$$
$$(-19+x)^{14}\,(-17+x)^{3}\,(5+x)^{73}\,\left(-3772+747\,x-48\,x^2+x^3\right),$$
$$(-19+x)^{14}\,(-17+x)^{2}\,(-15+x)\,(5+x)^{73}\,\left(-4276+813\,x-50\,x^2+x^3\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,216\,944+376\,921\,x-46\,164\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-19+x)^{14}\,(-17+x)^{2}\,(5+x)^{73}\,\left(64\,064-16\,467\,x+1563\,x^2-65\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{2}\,(5+x)^{73}\,\left(-1\,215\,788+376\,785\,x-46\,160\,x^2+2798\,x^3-84\,x^4+x^5\right),$$
$$(-21+x)\,(-19+x)^{13}\,(-17+x)^{4}\,(5+x)^{73}\,\left(200-29\,x+x^2\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,416-17\,953\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,432-17\,953\,x+1659\,x^2-67\,x^3+x^4\right),$$
$$(-19+x)^{13}\,(-17+x)^{4}\,(5+x)^{73}\,\left(-4196+809\,x-50\,x^2+x^3\right),$$
$$(-19+x)^{13}\,(-17+x)^{3}\,(5+x)^{73}\,\left(71\,348-17\,949\,x+1659\,x^2-67\,x^3+x^4\right),$$

$$(-19+x)^{14}\,(-17+x)^{3}\,(5+x)^{73}\left(-3756+747\,x-48\,x^{2}+x^{3}\right),$$
$$(-19+x)^{14}\,(-17+x)^{2}\,(-16+x)\,(5+x)^{73}\left(-3987+779\,x-49\,x^{2}+x^{3}\right),$$
$$(-19+x)^{13}\,(-17+x)^{4}\,(5+x)^{73}\left(-4184+809\,x-50\,x^{2}+x^{3}\right),$$
$$(-20+x)\,(-19+x)^{14}\,(-17+x)^{4}\,(-11+x)\,(5+x)^{73}\Big\}$$

```
Length[listmod32]
```

60

```
CoefficientList[listmod32 / mu[chiwarrant] // Factor, x]
```

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 {-1228760, 378297, -46204, 2798, -84, 1},
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 {-1227332, 378145, -46200, 2798, -84, 1},
 {-1227604, 378161, -46200, 2798, -84, 1},
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{-1 218 696, 377 161, -46 172, 2798, -84, 1},
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{-1 217 540, 377 025, -46 168, 2798, -84, 1},
{-1 217 812, 377 041, -46 168, 2798, -84, 1},
{-1 218 084, 377 057, -46 168, 2798, -84, 1},
{-1 218 356, 377 073, -46 168, 2798, -84, 1},
{-1 218 660, 377 089, -46 168, 2798, -84, 1},
{-1 216 944, 376 921, -46 164, 2798, -84, 1},
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{-1 215 788, 376 785, -46 160, 2798, -84, 1},
{-1 213 800, 376 601, -46 156, 2798, -84, 1},
{-1 214 072, 376 617, -46 156, 2798, -84, 1},
{-1 214 344, 376 633, -46 156, 2798, -84, 1},
{-1 212 644, 376 465, -46 152, 2798, -84, 1},
{-1 212 916, 376 481, -46 152, 2798, -84, 1},
{-1 213 188, 376 497, -46 152, 2798, -84, 1},
{-1 212 048, 376 361, -46 148, 2798, -84, 1},
{-1 209 176, 376 057, -46 140, 2798, -84, 1},
{-1 208 020, 375 921, -46 136, 2798, -84, 1}}
```

```
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    {-1 227 060, 378 129, -46 200, 2798, -84, 1}, {-1 227 332, 378 145,
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    {-1 227 876, 378 177, -46 200, 2798, -84, 1}, {-1 226 464, 378 025,
     -46 196, 2798, -84, 1}, {-1 226 736, 378 041, -46 196, 2798, -84, 1},
    {-1 227 008, 378 057, -46 196, 2798, -84, 1}, {-1 225 308, 377 889,
     -46 192, 2798, -84, 1}, {-1 225 580, 377 905, -46 192, 2798, -84, 1},
    {-1 225 852, 377 921, -46 192, 2798, -84, 1}, {-1 223 320, 377 705,
     -46 188, 2798, -84, 1}, {-1 223 592, 377 721, -46 188, 2798, -84, 1},
    {-1 223 864, 377 737, -46 188, 2798, -84, 1}, {-1 224 136, 377 753,
     -46 188, 2798, -84, 1}, {-1 224 440, 377 769, -46 188, 2798, -84, 1},
    {-1 224 408, 377 769, -46 188, 2798, -84, 1}, {-1 224 712, 377 785,
     -46 188, 2798, -84, 1}, {-1 224 680, 377 785, -46 188, 2798, -84, 1},
    {-1 224 984, 377 801, -46 188, 2798, -84, 1}, {-1 222 164, 377 569,
     -46 184, 2798, -84, 1}, {-1 222 436, 377 585, -46 184, 2798, -84, 1},
    {-1 222 708, 377 601, -46 184, 2798, -84, 1}, {-1 222 980, 377 617,
     -46 184, 2798, -84, 1}, {-1 223 284, 377 633, -46 184, 2798, -84, 1},
    {-1 223 252, 377 633, -46 184, 2798, -84, 1}, {-1 223 556, 377 649,
     -46 184, 2798, -84, 1}, {-1 223 524, 377 649, -46 184, 2798, -84, 1},
    {-1 223 828, 377 665, -46 184, 2798, -84, 1}, {-1 221 568, 377 465,
     -46 180, 2798, -84, 1}, {-1 221 840, 377 481, -46 180, 2798, -84, 1},
    {-1 222 112, 377 497, -46 180, 2798, -84, 1}, {-1 222 384, 377 513,
     -46 180, 2798, -84, 1}, {-1 222 688, 377 529, -46 180, 2798, -84, 1},
    {-1 220 412, 377 329, -46 176, 2798, -84, 1}, {-1 220 684, 377 345,
     -46 176, 2798, -84, 1}, {-1 220 956, 377 361, -46 176, 2798, -84, 1},
    {-1 218 696, 377 161, -46 172, 2798, -84, 1}, {-1 218 968, 377 177,
     -46 172, 2798, -84, 1}, {-1 219 240, 377 193, -46 172, 2798, -84, 1},
    {-1 219 512, 377 209, -46 172, 2798, -84, 1}, {-1 219 816, 377 225,
     -46 172, 2798, -84, 1}, {-1 217 540, 377 025, -46 168, 2798, -84, 1},
    {-1 217 812, 377 041, -46 168, 2798, -84, 1}, {-1 218 084, 377 057,
     -46 168, 2798, -84, 1}, {-1 218 356, 377 073, -46 168, 2798, -84, 1},
    {-1 218 660, 377 089, -46 168, 2798, -84, 1}, {-1 216 944, 376 921,
     -46 164, 2798, -84, 1}, {-1 217 216, 376 937, -46 164, 2798, -84, 1},
    {-1 215 788, 376 785, -46 160, 2798, -84, 1}, {-1 213 800, 376 601,
     -46 156, 2798, -84, 1}, {-1 214 072, 376 617, -46 156, 2798, -84, 1},
    {-1 214 344, 376 633, -46 156, 2798, -84, 1}, {-1 212 644, 376 465,
     -46 152, 2798, -84, 1}, {-1 212 916, 376 481, -46 152, 2798, -84, 1},
    {-1 213 188, 376 497, -46 152, 2798, -84, 1}, {-1 212 048, 376 361,
     -46 148, 2798, -84, 1}, {-1 209 176, 376 057, -46 140, 2798, -84, 1},
    {-1 208 020, 375 921, -46 136, 2798, -84, 1}};
```

```
A1 // MatrixForm
```

$$\begin{pmatrix} -1\,228\,488 & 378\,281 & -46\,204 & 2798 & -84 & 1 \\ -1\,228\,760 & 378\,297 & -46\,204 & 2798 & -84 & 1 \\ -1\,227\,060 & 378\,129 & -46\,200 & 2798 & -84 & 1 \\ -1\,227\,332 & 378\,145 & -46\,200 & 2798 & -84 & 1 \\ -1\,227\,604 & 378\,161 & -46\,200 & 2798 & -84 & 1 \end{pmatrix}$$

$$\begin{pmatrix}
-1227876 & 378177 & -46200 & 2798 & -84 & 1 \\
-1226464 & 378025 & -46196 & 2798 & -84 & 1 \\
-1226736 & 378041 & -46196 & 2798 & -84 & 1 \\
-1227008 & 378057 & -46196 & 2798 & -84 & 1 \\
-1225308 & 377889 & -46192 & 2798 & -84 & 1 \\
-1225580 & 377905 & -46192 & 2798 & -84 & 1 \\
-1225852 & 377921 & -46192 & 2798 & -84 & 1 \\
-1223320 & 377705 & -46188 & 2798 & -84 & 1 \\
-1223592 & 377721 & -46188 & 2798 & -84 & 1 \\
-1223864 & 377737 & -46188 & 2798 & -84 & 1 \\
-1224136 & 377753 & -46188 & 2798 & -84 & 1 \\
-1224440 & 377769 & -46188 & 2798 & -84 & 1 \\
-1224408 & 377769 & -46188 & 2798 & -84 & 1 \\
-1224712 & 377785 & -46188 & 2798 & -84 & 1 \\
-1224680 & 377785 & -46188 & 2798 & -84 & 1 \\
-1224984 & 377801 & -46188 & 2798 & -84 & 1 \\
-1222164 & 377569 & -46184 & 2798 & -84 & 1 \\
-1222436 & 377585 & -46184 & 2798 & -84 & 1 \\
-1222708 & 377601 & -46184 & 2798 & -84 & 1 \\
-1222980 & 377617 & -46184 & 2798 & -84 & 1 \\
-1223284 & 377633 & -46184 & 2798 & -84 & 1 \\
-1223252 & 377633 & -46184 & 2798 & -84 & 1 \\
-1223556 & 377649 & -46184 & 2798 & -84 & 1 \\
-1223524 & 377649 & -46184 & 2798 & -84 & 1 \\
-1223828 & 377665 & -46184 & 2798 & -84 & 1 \\
-1221568 & 377465 & -46180 & 2798 & -84 & 1 \\
-1221840 & 377481 & -46180 & 2798 & -84 & 1 \\
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-1222384 & 377513 & -46180 & 2798 & -84 & 1 \\
-1222688 & 377529 & -46180 & 2798 & -84 & 1 \\
-1220412 & 377329 & -46176 & 2798 & -84 & 1 \\
-1220684 & 377345 & -46176 & 2798 & -84 & 1 \\
-1220956 & 377361 & -46176 & 2798 & -84 & 1 \\
-1218696 & 377161 & -46172 & 2798 & -84 & 1 \\
-1218968 & 377177 & -46172 & 2798 & -84 & 1 \\
-1219240 & 377193 & -46172 & 2798 & -84 & 1 \\
-1219512 & 377209 & -46172 & 2798 & -84 & 1 \\
-1219816 & 377225 & -46172 & 2798 & -84 & 1 \\
-1217540 & 377025 & -46168 & 2798 & -84 & 1 \\
-1217812 & 377041 & -46168 & 2798 & -84 & 1 \\
-1218084 & 377057 & -46168 & 2798 & -84 & 1 \\
-1218356 & 377073 & -46168 & 2798 & -84 & 1 \\
-1218660 & 377089 & -46168 & 2798 & -84 & 1 \\
-1216944 & 376921 & -46164 & 2798 & -84 & 1 \\
-1217216 & 376937 & -46164 & 2798 & -84 & 1 \\
-1215788 & 376785 & -46160 & 2798 & -84 & 1 \\
-1213800 & 376601 & -46156 & 2798 & -84 & 1 \\
-1214072 & 376617 & -46156 & 2798 & -84 & 1 \\
-1214344 & 376633 & -46156 & 2798 & -84 & 1 \\
-1212644 & 376465 & -46152 & 2798 & -84 & 1 \\
-1212916 & 376481 & -46152 & 2798 & -84 & 1 \\
-1213188 & 376497 & -46152 & 2798 & -84 & 1 \\
-1212048 & 376361 & -46148 & 2798 & -84 & 1 \\
-1209176 & 376057 & -46140 & 2798 & -84 & 1 \\
-1208020 & 375921 & -46136 & 2798 & -84 & 1
\end{pmatrix}$$

```
g1 = CoefficientList[D[chiwarrant, x] / mu[chiwarrant] // Factor, x]
```

```
{-115 382 912, 35 547 054, -4 342 840, 263 012, -7896, 94}
```

```
Array[c, 6].Transpose[A1]
```

```
{-1 228 488 c[1] + 378 281 c[2] - 46 204 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 228 760 c[1] + 378 297 c[2] - 46 204 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 227 060 c[1] + 378 129 c[2] - 46 200 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 227 332 c[1] + 378 145 c[2] - 46 200 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 227 604 c[1] + 378 161 c[2] - 46 200 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 227 876 c[1] + 378 177 c[2] - 46 200 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 226 464 c[1] + 378 025 c[2] - 46 196 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 226 736 c[1] + 378 041 c[2] - 46 196 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 227 008 c[1] + 378 057 c[2] - 46 196 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 225 308 c[1] + 377 889 c[2] - 46 192 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 225 580 c[1] + 377 905 c[2] - 46 192 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 225 852 c[1] + 377 921 c[2] - 46 192 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 223 320 c[1] + 377 705 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 223 592 c[1] + 377 721 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 223 864 c[1] + 377 737 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 224 136 c[1] + 377 753 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 224 440 c[1] + 377 769 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 224 408 c[1] + 377 769 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 224 712 c[1] + 377 785 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 224 680 c[1] + 377 785 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 224 984 c[1] + 377 801 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 222 164 c[1] + 377 569 c[2] - 46 184 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 222 436 c[1] + 377 585 c[2] - 46 184 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 222 708 c[1] + 377 601 c[2] - 46 184 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 222 980 c[1] + 377 617 c[2] - 46 184 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 223 284 c[1] + 377 633 c[2] - 46 184 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 223 252 c[1] + 377 633 c[2] - 46 184 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 223 556 c[1] + 377 649 c[2] - 46 184 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 223 524 c[1] + 377 649 c[2] - 46 184 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 223 828 c[1] + 377 665 c[2] - 46 184 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 221 568 c[1] + 377 465 c[2] - 46 180 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 221 840 c[1] + 377 481 c[2] - 46 180 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 222 112 c[1] + 377 497 c[2] - 46 180 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 222 384 c[1] + 377 513 c[2] - 46 180 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 222 688 c[1] + 377 529 c[2] - 46 180 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 220 412 c[1] + 377 329 c[2] - 46 176 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 220 684 c[1] + 377 345 c[2] - 46 176 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 220 956 c[1] + 377 361 c[2] - 46 176 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 218 696 c[1] + 377 161 c[2] - 46 172 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 218 968 c[1] + 377 177 c[2] - 46 172 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 219 240 c[1] + 377 193 c[2] - 46 172 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 219 512 c[1] + 377 209 c[2] - 46 172 c[3] + 2798 c[4] - 84 c[5] + c[6],
```

```
 -1 219 816 c[1] + 377 225 c[2] - 46 172 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 217 540 c[1] + 377 025 c[2] - 46 168 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 217 812 c[1] + 377 041 c[2] - 46 168 c[3] + 2798 c[4] - 84 c[5] + c[6],
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 -1 218 660 c[1] + 377 089 c[2] - 46 168 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 216 944 c[1] + 376 921 c[2] - 46 164 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 217 216 c[1] + 376 937 c[2] - 46 164 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 215 788 c[1] + 376 785 c[2] - 46 160 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 213 800 c[1] + 376 601 c[2] - 46 156 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 214 072 c[1] + 376 617 c[2] - 46 156 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 214 344 c[1] + 376 633 c[2] - 46 156 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 212 644 c[1] + 376 465 c[2] - 46 152 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 212 916 c[1] + 376 481 c[2] - 46 152 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 213 188 c[1] + 376 497 c[2] - 46 152 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 212 048 c[1] + 376 361 c[2] - 46 148 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 209 176 c[1] + 376 057 c[2] - 46 140 c[3] + 2798 c[4] - 84 c[5] + c[6],
 -1 208 020 c[1] + 375 921 c[2] - 46 136 c[3] + 2798 c[4] - 84 c[5] + c[6]}
```

```
Array[c, 6].g1
```

```
-115 382 912 c[1] + 35 547 054 c[2] - 4 342 840 c[3] + 263 012 c[4] - 7896 c[5] + 94 c[6]
```

```
cert1 = Flatten[
  Array[c, 6] /. FindInstance[-115 382 912 c[1] + 35 547 054 c[2] - 4 342 840 c[3] +
       263 012 c[4] - 7896 c[5] + 94 c[6] < 0 &&
     -1 228 488 c[1] + 378 281 c[2] - 46 204 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 228 760 c[1] + 378 297 c[2] - 46 204 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 227 060 c[1] + 378 129 c[2] - 46 200 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 227 332 c[1] + 378 145 c[2] - 46 200 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 227 604 c[1] + 378 161 c[2] - 46 200 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 227 876 c[1] + 378 177 c[2] - 46 200 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 226 464 c[1] + 378 025 c[2] - 46 196 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 226 736 c[1] + 378 041 c[2] - 46 196 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 227 008 c[1] + 378 057 c[2] - 46 196 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 225 308 c[1] + 377 889 c[2] - 46 192 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 225 580 c[1] + 377 905 c[2] - 46 192 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 225 852 c[1] + 377 921 c[2] - 46 192 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 223 320 c[1] + 377 705 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 223 592 c[1] + 377 721 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 223 864 c[1] + 377 737 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 224 136 c[1] + 377 753 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 224 440 c[1] + 377 769 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 224 408 c[1] + 377 769 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 224 712 c[1] + 377 785 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 224 680 c[1] + 377 785 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 224 984 c[1] + 377 801 c[2] - 46 188 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
     -1 222 164 c[1] + 377 569 c[2] - 46 184 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
```

```
    -1222436 c[1] + 377585 c[2] - 46184 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1222708 c[1] + 377601 c[2] - 46184 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1222980 c[1] + 377617 c[2] - 46184 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1223284 c[1] + 377633 c[2] - 46184 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1223252 c[1] + 377633 c[2] - 46184 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1223556 c[1] + 377649 c[2] - 46184 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1223524 c[1] + 377649 c[2] - 46184 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1223828 c[1] + 377665 c[2] - 46184 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1221568 c[1] + 377465 c[2] - 46180 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1221840 c[1] + 377481 c[2] - 46180 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1222112 c[1] + 377497 c[2] - 46180 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1222384 c[1] + 377513 c[2] - 46180 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1222688 c[1] + 377529 c[2] - 46180 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1220412 c[1] + 377329 c[2] - 46176 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1220684 c[1] + 377345 c[2] - 46176 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1220956 c[1] + 377361 c[2] - 46176 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1218696 c[1] + 377161 c[2] - 46172 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
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    -1219240 c[1] + 377193 c[2] - 46172 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1219512 c[1] + 377209 c[2] - 46172 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1219816 c[1] + 377225 c[2] - 46172 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1217540 c[1] + 377025 c[2] - 46168 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1217812 c[1] + 377041 c[2] - 46168 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1218084 c[1] + 377057 c[2] - 46168 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1218356 c[1] + 377073 c[2] - 46168 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1218660 c[1] + 377089 c[2] - 46168 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1216944 c[1] + 376921 c[2] - 46164 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1217216 c[1] + 376937 c[2] - 46164 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1215788 c[1] + 376785 c[2] - 46160 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1213800 c[1] + 376601 c[2] - 46156 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1214072 c[1] + 376617 c[2] - 46156 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1214344 c[1] + 376633 c[2] - 46156 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1212644 c[1] + 376465 c[2] - 46152 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1212916 c[1] + 376481 c[2] - 46152 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1213188 c[1] + 376497 c[2] - 46152 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1212048 c[1] + 376361 c[2] - 46148 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1209176 c[1] + 376057 c[2] - 46140 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0 &&
    -1208020 c[1] + 375921 c[2] - 46136 c[3] + 2798 c[4] - 84 c[5] + c[6] ≥ 0,
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GCD[265131, 4595613, 79981334, 0, 0, 2282735504746]
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Reverse[cert1]
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cert1.g1

−82 469 806

cert1.Transpose[A1]

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775 711, 9 259 903, 2 189 887, 10 674 079, 3 604 063, 5 016 603, 6 430 779, 7 844 955,
9 259 131, 2 189 115, 10 673 307, 3 603 291, 12 087 483, 5 017 467, 5 016 263,
6 430 439, 7 844 615, 9 258 791, 2 188 775, 6 429 667, 7 843 843, 9 258 019, 9 256 815,
10 670 991, 12 085 167, 13 499 343, 6 429 327, 10 670 219, 12 084 395, 13 498 571,
14 912 747, 7 842 731, 10 669 879, 12 084 055, 12 083 283, 13 496 255, 14 910 431,
16 324 607, 14 909 659, 16 323 835, 17 738 011, 14 909 319, 19 149 871, 20 563 275}