

$$\text{chi1} = (-11 + x) (-9 + x)^{14} (5 + x)^{32} (116 - 23 x + x^2) \\ (-11 + x) (-9 + x)^{14} (5 + x)^{32} (116 - 23 x + x^2)$$

$$\text{Root}[116 - 23 x + x^2, 1]$$

$$\frac{1}{2} (23 - \sqrt{65})$$

$$\text{AlgebraicNumber}\left[\frac{1}{2} (23 - \sqrt{65}), \{7/2, 2/3\}\right]^2 // \text{RootReduce}$$

$$\frac{1}{36} (4749 - 268 \sqrt{65})$$

$$\text{MinimalPolynomial}\left[\frac{1}{36} (4749 - 268 \sqrt{65}), x\right]$$

$$17884441 - 341928 x + 1296 x^2$$

$$\text{ToNumberField}\left[\text{Sqrt}\left[\frac{1}{36} (4749 - 268 \sqrt{65})\right], \frac{1}{2} (23 - \sqrt{65})\right]$$

$$\text{AlgebraicNumber}\left[\frac{1}{2} (23 - \sqrt{65}), \left\{\frac{7}{2}, \frac{2}{3}\right\}\right]$$

$$\text{ToNumberField}\left[\text{Sqrt}\left[\text{list1}[[15]] * \text{list1}[[27]] /. x \rightarrow \frac{1}{2} (23 - \sqrt{65})\right], \frac{1}{2} (23 - \sqrt{65})\right]$$

$$\text{AlgebraicNumber}\left[\frac{1}{2} (23 - \sqrt{65}), \{45, 9\}\right]$$

$$\text{For}[i = 1, i \leq \text{Length}[\text{list1}], i++,$$

$$\text{Print}[i, " ",$$

$$\text{MinimalPolynomial}\left[\text{list1}[[1]] * \text{list1}[[i]] /. x \rightarrow \frac{1}{2} (23 - \sqrt{65}), x\right] /. x \rightarrow x^2 //$$

$$\text{Factor}]$$

$$]$$

$$1 \quad (-144 - 3x + x^2) (-144 + 3x + x^2)$$

$$2 \quad 23\,040 - 945x^2 + x^4$$

$$3 \quad 182\,016 - 993x^2 + x^4$$

$$4 \quad 267\,264 - 1041x^2 + x^4$$

$$5 \quad 278\,784 - 1089x^2 + x^4$$

$$6 \quad 216\,576 - 1137x^2 + x^4$$

$$7 \quad 80\,640 - 1185x^2 + x^4$$

$$8 \quad 771\,840 - 1785x^2 + x^4$$

$$9 \quad 838\,656 - 1833x^2 + x^4$$

$$10 \quad 831\,744 - 1881x^2 + x^4$$

$$11 \quad 751\,104 - 1929x^2 + x^4$$

$$12 \quad 596\,736 - 1977x^2 + x^4$$

$$13 \quad 368\,640 - 2025x^2 + x^4$$

$$14 \quad 1\,704\,960 - 2625x^2 + x^4$$

$$15 \quad (-1296 - 9x + x^2) (-1296 + 9x + x^2)$$

$$16 \quad 1\,580\,544 - 2721x^2 + x^4$$

$$17 \quad 1\,407\,744 - 2769x^2 + x^4$$

$$18 \quad 1\,161\,216 - 2817x^2 + x^4$$

$$19 \quad 2\,822\,400 - 3465x^2 + x^4$$

$$20 \quad 2\,704\,896 - 3513x^2 + x^4$$

$$21 \quad 2\,513\,664 - 3561x^2 + x^4$$

$$22 \quad 2\,248\,704 - 3609x^2 + x^4$$

$$23 \quad 4\,124\,160 - 4305x^2 + x^4$$

$$24 \quad 3\,914\,496 - 4353x^2 + x^4$$

$$25 \quad 3\,631\,104 - 4401x^2 + x^4$$

$$26 \quad 5\,610\,240 - 5145x^2 + x^4$$

$$27 \quad (2304 - 99x + x^2) (2304 + 99x + x^2)$$

$$28 \quad 7\,280\,640 - 5985x^2 + x^4$$

```
list1 = {5419 - 2818 x + 508 x^2 - 38 x^3 + x^4, (-9 + x) (-587 + 247 x - 29 x^2 + x^3),
  5299 - 2810 x + 508 x^2 - 38 x^3 + x^4, 5315 - 2810 x + 508 x^2 - 38 x^3 + x^4,
  5331 - 2810 x + 508 x^2 - 38 x^3 + x^4, 5347 - 2810 x + 508 x^2 - 38 x^3 + x^4,
  5363 - 2810 x + 508 x^2 - 38 x^3 + x^4, (-9 + x) (-579 + 247 x - 29 x^2 + x^3),
  5227 - 2802 x + 508 x^2 - 38 x^3 + x^4, 5243 - 2802 x + 508 x^2 - 38 x^3 + x^4,
  5259 - 2802 x + 508 x^2 - 38 x^3 + x^4, 5275 - 2802 x + 508 x^2 - 38 x^3 + x^4,
  (-11 + x) (-481 + 211 x - 27 x^2 + x^3), (-9 + x) (-571 + 247 x - 29 x^2 + x^3),
  5155 - 2794 x + 508 x^2 - 38 x^3 + x^4, 5171 - 2794 x + 508 x^2 - 38 x^3 + x^4,
  5187 - 2794 x + 508 x^2 - 38 x^3 + x^4, (-11 + x) (-473 + 211 x - 27 x^2 + x^3),
  (-9 + x) (-563 + 247 x - 29 x^2 + x^3), 5083 - 2786 x + 508 x^2 - 38 x^3 + x^4,
  5099 - 2786 x + 508 x^2 - 38 x^3 + x^4, (-15 + x) (-11 + x) (31 - 12 x + x^2),
  (-15 + x) (-9 + x) (37 - 14 x + x^2), 5011 - 2778 x + 508 x^2 - 38 x^3 + x^4,
  (-11 + x) (-457 + 211 x - 27 x^2 + x^3), (-9 + x) (-547 + 247 x - 29 x^2 + x^3),
  (-11 + x) (-449 + 211 x - 27 x^2 + x^3), (-11 + x) (-9 + x) (49 - 18 x + x^2)};
```

```
Length[list1]
```

```
28
```

```
A1 = CoefficientList[list1, x];
```

```
A1 // MatrixForm
```

```
( 5419 -2818 508 -38 1 )
( 5283 -2810 508 -38 1 )
( 5299 -2810 508 -38 1 )
( 5315 -2810 508 -38 1 )
( 5331 -2810 508 -38 1 )
( 5347 -2810 508 -38 1 )
( 5363 -2810 508 -38 1 )
( 5211 -2802 508 -38 1 )
( 5227 -2802 508 -38 1 )
( 5243 -2802 508 -38 1 )
( 5259 -2802 508 -38 1 )
( 5275 -2802 508 -38 1 )
( 5291 -2802 508 -38 1 )
( 5139 -2794 508 -38 1 )
( 5155 -2794 508 -38 1 )
( 5171 -2794 508 -38 1 )
( 5187 -2794 508 -38 1 )
( 5203 -2794 508 -38 1 )
( 5067 -2786 508 -38 1 )
( 5083 -2786 508 -38 1 )
( 5099 -2786 508 -38 1 )
( 5115 -2786 508 -38 1 )
( 4995 -2778 508 -38 1 )
( 5011 -2778 508 -38 1 )
( 5027 -2778 508 -38 1 )
( 4923 -2770 508 -38 1 )
( 4939 -2770 508 -38 1 )
( 4851 -2762 508 -38 1 )
```

Dimensions[A1]

{28, 5}

gpart[chi1]

{261 563, -137 554, 24 892, -1862, 49}

Solve[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 && n[7] ≥ 0 &&
 n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 && n[14] ≥ 0 &&
 n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
 n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 &&
 n[27] ≥ 0 && n[28] ≥ 0 && Array[n, 28].A1 == gpart[chi1], Array[n, 28], Integers]

{ {n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 32,
 n[8] → 0, n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 0, n[13] → 17, n[14] → 0,
 n[15] → 0, n[16] → 0, n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0,
 n[22] → 0, n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 0} }

list1[{7, 13}] * mu[chi1] // Factor

{ (-9 + x)¹³ (5 + x)³¹ (5363 - 2810 x + 508 x² - 38 x³ + x⁴),
 (-11 + x) (-9 + x)¹³ (5 + x)³¹ (-481 + 211 x - 27 x² + x³) }

Array[m, 5].Transpose[A1]

```
{ 5419 m[1] - 2818 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5283 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5299 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5315 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5331 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5347 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5363 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5211 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5227 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5243 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5259 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5275 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5291 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5139 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5155 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5171 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5187 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5203 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5067 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5083 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5099 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5115 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4995 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5011 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5027 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4923 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4939 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4851 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] }
```

Array[m, 5].gpart[ch11]

```
261 563 m[1] - 137 554 m[2] + 24 892 m[3] - 1862 m[4] + 49 m[5]
```

```

FindInstance[261563 m[1] - 137554 m[2] + 24892 m[3] - 1862 m[4] + 49 m[5] < 0 &&
5419 m[1] - 2818 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5283 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5299 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5315 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5331 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5347 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5363 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5211 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5227 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5243 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5259 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5275 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5291 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5139 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5155 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5171 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5187 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5203 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5067 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5083 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5099 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5115 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4995 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5011 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5027 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4923 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4939 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4851 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0, Array[m, 5], Integers]
{}

```

```

FindInstance[261563 m[1] - 137554 m[2] + 24892 m[3] - 1862 m[4] + 49 m[5] < 0 &&
  5419 m[1] - 2818 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5283 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5299 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5315 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5331 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5347 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5363 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] < 0 &&
  5211 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5227 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5243 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5259 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5275 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5291 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5139 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5155 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5171 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5187 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5203 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5067 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5083 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5099 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5115 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  4995 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5011 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5027 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  4923 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  4939 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  4851 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0, Array[m, 5], Integers]

{{m[1] → -1663, m[2] → -13311, m[3] → 0, m[4] → 0, m[5] → -28491688}}

Array[m, 5] /. {m[1] → -1663, m[2] → -13311, m[3] → 0, m[4] → 0, m[5] → -28491688}
{-1663, -13311, 0, 0, -28491688}

GCD[-1663, -13311, 0, 0, -28491688]
1

Reverse[{-1663, -13311, 0, 0, -28491688}]
{-28491688, 0, 0, -13311, -1663}

{-1663, -13311, 0, 0, -28491688}.gpart[chi1]
-90687

{-1663, -13311, 0, 0, -28491688}.Transpose[A1]
{6913, 126593, 99985, 73377, 46769, 20161, -6447, 139841, 113233,
 86625, 60017, 33409, 6801, 153089, 126481, 99873, 73265, 46657, 166337,
 139729, 113121, 86513, 179585, 152977, 126369, 192833, 166225, 206081}

```

```

FindInstance[261563 m[1] - 137554 m[2] + 24892 m[3] - 1862 m[4] + 49 m[5] < 0 &&
  5419 m[1] - 2818 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5283 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5299 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5315 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5331 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5347 m[1] - 2810 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
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  5227 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5243 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5259 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5275 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5291 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] < 0 &&
  5139 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5155 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5171 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5187 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5203 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5067 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5083 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5099 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5115 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  4995 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5011 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  5027 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  4923 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  4939 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
  4851 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0, Array[m, 5], Integers]
{{m[1] → -3131, m[2] → -31318, m[3] → 0, m[4] → 0, m[5] → -71206868}}

Array[m, 5] /. {m[1] → -3131, m[2] → -31318, m[3] → 0, m[4] → 0, m[5] → -71206868}
{-3131, -31318, 0, 0, -71206868}

GCD[-3131, -31318, 0, 0, -71206868]
1

Reverse[{-3131, -31318, 0, 0, -71206868}]
{-71206868, 0, 0, -31318, -3131}

{-3131, -31318, 0, 0, -71206868}.gpart[chi1]
-174113

```



```
{-3131, -31318, 0, 0, -71206868}.Transpose[A1]
{80367, 255639, 205543, 155447, 105351, 55255, 5159, 230527, 180431, 130335,
80239, 30143, -19953, 205415, 155319, 105223, 55127, 5031, 180303,
130207, 80111, 30015, 155191, 105095, 54999, 130079, 79983, 104967}
```

```
anglesq1 = anglesquaredmat[chi1, list1] // FullSimplify;
```

```
Dimensions[anglesq1]
```

```
{28, 5}
```

```
angle1 = Sqrt[anglesq1] // FullSimplify;
```

$$\text{angle1} = \begin{pmatrix} \frac{9\sqrt{\frac{29}{14}}}{16} & \frac{1}{32}\sqrt{\frac{57}{5} + \frac{69}{\sqrt{65}}} & 2\sqrt{\frac{2}{35}}\frac{\sqrt{\frac{3}{2}}}{4} & \frac{1}{32}\sqrt{\frac{57}{5}} \\ \frac{\sqrt{167}}{16} & \text{Root}[1 - 2665\#1^2 + 16640\#1^4 \&, 4] & 0 & \frac{\sqrt{3}}{4}\sqrt{\frac{3}{2665+3200\#1^2+16640\#1^4+104967\#1^6+54999\#1^8+130079\#1^{10}+79983\#1^{12}+104967\#1^{14}+54999\#1^{16}+130079\#1^{18}+79983\#1^{20}+104967\#1^{22}+54999\#1^{24}+130079\#1^{26}+79983\#1^{28}+104967\#1^{30}+54999\#1^{32}+130079\#1^{34}+79983\#1^{36}+104967\#1^{38}+54999\#1^{40}+130079\#1^{42}+79983\#1^{44}+104967\#1^{46}+54999\#1^{48}+130079\#1^{50}+79983\#1^{52}+104967\#1^{54}+54999\#1^{56}+130079\#1^{58}+79983\#1^{60}+104967\#1^{62}+54999\#1^{64}+130079\#1^{66}+79983\#1^{68}+104967\#1^{70}+54999\#1^{72}+130079\#1^{74}+79983\#1^{76}+104967\#1^{78}+54999\#1^{80}+130079\#1^{82}+79983\#1^{84}+104967\#1^{86}+54999\#1^{88}+130079\#1^{90}+79983\#1^{92}+104967\#1^{94}+54999\#1^{96}+130079\#1^{98}+79983\#1^{100}+104967\#1^{102}+54999\#1^{104}+130079\#1^{106}+79983\#1^{108}+104967\#1^{110}+54999\#1^{112}+130079\#1^{114}+79983\#1^{116}+104967\#1^{118}+54999\#1^{120}+130079\#1^{122}+79983\#1^{124}+104967\#1^{126}+54999\#1^{128}+130079\#1^{130}+79983\#1^{132}+104967\#1^{134}+54999\#1^{136}+130079\#1^{138}+79983\#1^{140}+104967\#1^{142}+54999\#1^{144}+130079\#1^{146}+79983\#1^{148}+104967\#1^{150}+54999\#1^{152}+130079\#1^{154}+79983\#1^{156}+104967\#1^{158}+54999\#1^{160}+130079\#1^{162}+79983\#1^{164}+104967\#1^{166}+54999\#1^{168}+130079\#1^{170}+79983\#1^{172}+104967\#1^{174}+54999\#1^{176}+130079\#1^{178}+79983\#1^{180}+104967\#1^{182}+54999\#1^{184}+130079\#1^{186}+79983\#1^{188}+104967\#1^{190}+54999\#1^{192}+130079\#1^{194}+79983\#1^{196}+104967\#1^{198}+54999\#1^{200}+130079\#1^{202}+79983\#1^{204}+104967\#1^{206}+54999\#1^{208}+130079\#1^{210}+79983\#1^{212}+104967\#1^{214}+54999\#1^{216}+130079\#1^{218}+79983\#1^{220}+104967\#1^{222}+54999\#1^{224}+130079\#1^{226}+79983\#1^{228}+104967\#1^{230}+54999\#1^{232}+130079\#1^{234}+79983\#1^{236}+104967\#1^{238}+54999\#1^{240}+130079\#1^{242}+79983\#1^{244}+104967\#1^{246}+54999\#1^{248}+130079\#1^{250}+79983\#1^{252}+104967\#1^{254}+54999\#1^{256}+130079\#1^{258}+79983\#1^{260}+104967\#1^{262}+54999\#1^{264}+130079\#1^{266}+79983\#1^{268}+104967\#1^{270}+54999\#1^{272}+130079\#1^{274}+79983\#1^{276}+104967\#1^{278}+54999\#1^{280}+130079\#1^{282}+79983\#1^{284}+104967\#1^{286}+54999\#1^{288}+130079\#1^{290}+79983\#1^{292}+104967\#1^{294}+54999\#1^{296}+130079\#1^{298}+79983\#1^{300}+104967\#1^{302}+54999\#1^{304}+130079\#1^{306}+79983\#1^{308}+104967\#1^{310}+54999\#1^{312}+130079\#1^{314}+79983\#1^{316}+104967\#1^{318}+54999\#1^{320}+130079\#1^{322}+79983\#1^{324}+104967\#1^{326}+54999\#1^{328}+130079\#1^{330}+79983\#1^{332}+104967\#1^{334}+54999\#1^{336}+130079\#1^{338}+79983\#1^{340}+104967\#1^{342}+54999\#1^{344}+130079\#1^{346}+79983\#1^{348}+104967\#1^{350}+54999\#1^{352}+130079\#1^{354}+79983\#1^{356}+104967\#1^{358}+54999\#1^{360}+130079\#1^{362}+79983\#1^{364}+104967\#1^{366}+54999\#1^{368}+130079\#1^{370}+79983\#1^{372}+104967\#1^{374}+54999\#1^{376}+130079\#1^{378}+79983\#1^{380}+104967\#1^{382}+54999\#1^{384}+130079\#1^{386}+79983\#1^{388}+104967\#1^{390}+54999\#1^{392}+130079\#1^{394}+79983\#1^{396}+104967\#1^{398}+54999\#1^{400}+130079\#1^{402}+79983\#1^{404}+104967\#1^{406}+54999\#1^{408}+130079\#1^{410}+79983\#1^{412}+104967\#1^{414}+54999\#1^{416}+130079\#1^{418}+79983\#1^{420}+104967\#1^{422}+54999\#1^{424}+130079\#1^{426}+79983\#1^{428}+104967\#1^{430}+54999\#1^{432}+130079\#1^{434}+79983\#1^{436}+104967\#1^{438}+54999\#1^{440}+130079\#1^{442}+79983\#1^{444}+104967\#1^{446}+54999\#1^{448}+130079\#1^{450}+79983\#1^{452}+104967\#1^{454}+54999\#1^{456}+130079\#1^{458}+79983\#1^{460}+104967\#1^{462}+54999\#1^{464}+130079\#1^{466}+79983\#1^{468}+104967\#1^{470}+54999\#1^{472}+130079\#1^{474}+79983\#1^{476}+104967\#1^{478}+54999\#1^{480}+130079\#1^{482}+79983\#1^{484}+104967\#1^{486}+54999\#1^{488}+130079\#1^{490}+79983\#1^{492}+104967\#1^{494}+54999\#1^{496}+130079\#1^{498}+79983\#1^{500}+104967\#1^{502}+54999\#1^{504}+130079\#1^{506}+79983\#1^{508}+104967\#1^{510}+54999\#1^{512}+130079\#1^{514}+79983\#1^{516}+104967\#1^{518}+54999\#1^{520}+130079\#1^{522}+79983\#1^{524}+104967\#1^{526}+54999\#1^{528}+130079\#1^{530}+79983\#1^{532}+104967\#1^{534}+54999\#1^{536}+130079\#1^{538}+79983\#1^{540}+104967\#1^{542}+54999\#1^{544}+130079\#1^{546}+79983\#1^{548}+104967\#1^{550}+54999\#1^{552}+130079\#1^{554}+79983\#1^{556}+104967\#1^{558}+54999\#1^{560}+130079\#1^{562}+79983\#1^{564}+104967\#1^{566}+54999\#1^{568}+130079\#1^{570}+79983\#1^{572}+104967\#1^{574}+54999\#1^{576}+130079\#1^{578}+79983\#1^{580}+104967\#1^{582}+54999\#1^{584}+130079\#1^{586}+79983\#1^{588}+104967\#1^{590}+54999\#1^{592}+130079\#1^{594}+79983\#1^{596}+104967\#1^{598}+54999\#1^{600}+130079\#1^{602}+79983\#1^{604}+104967\#1^{606}+54999\#1^{608}+130079\#1^{610}+79983\#1^{612}+104967\#1^{614}+54999\#1^{616}+130079\#1^{618}+79983\#1^{620}+104967\#1^{622}+54999\#1^{624}+130079\#1^{626}+79983\#1^{628}+104967\#1^{630}+54999\#1^{632}+130079\#1^{634}+79983\#1^{636}+104967\#1^{638}+54999\#1^{640}+130079\#1^{642}+79983\#1^{644}+104967\#1^{646}+54999\#1^{648}+130079\#1^{650}+79983\#1^{652}+104967\#1^{654}+54999\#1^{656}+130079\#1^{658}+79983\#1^{660}+104967\#1^{662}+54999\#1^{664}+130079\#1^{666}+79983\#1^{668}+104967\#1^{670}+54999\#1^{672}+130079\#1^{674}+79983\#1^{676}+104967\#1^{678}+54999\#1^{680}+130079\#1^{682}+79983\#1^{684}+104967\#1^{686}+54999\#1^{688}+130079\#1^{690}+79983\#1^{692}+104967\#1^{694}+54999\#1^{696}+130079\#1^{698}+79983\#1^{700}+104967\#1^{702}+54999\#1^{704}+130079\#1^{706}+79983\#1^{708}+104967\#1^{710}+54999\#1^{712}+130079\#1^{714}+79983\#1^{716}+104967\#1^{718}+54999\#1^{720}+130079\#1^{722}+79983\#1^{724}+104967\#1^{726}+54999\#1^{728}+130079\#1^{730}+79983\#1^{732}+104967\#1^{734}+54999\#1^{736}+130079\#1^{738}+79983\#1^{740}+104967\#1^{742}+54999\#1^{744}+130079\#1^{746}+79983\#1^{748}+104967\#1^{750}+54999\#1^{752}+130079\#1^{754}+79983\#1^{756}+104967\#1^{758}+54999\#1^{760}+130079\#1^{762}+79983\#1^{764}+104967\#1^{766}+54999\#1^{768}+130079\#1^{770}+79983\#1^{772}+104967\#1^{774}+54999\#1^{776}+130079\#1^{778}+79983\#1^{780}+104967\#1^{782}+54999\#1^{784}+130079\#1^{786}+79983\#1^{788}+104967\#1^{790}+54999\#1^{792}+130079\#1^{794}+79983\#1^{796}+104967\#1^{798}+54999\#1^{800}+130079\#1^{802}+79983\#1^{804}+104967\#1^{806}+54999\#1^{808}+130079\#1^{810}+79983\#1^{812}+104967\#1^{814}+54999\#1^{816}+130079\#1^{818}+79983\#1^{820}+104967\#1^{822}+54999\#1^{824}+130079\#1^{826}+79983\#1^{828}+104967\#1^{830}+54999\#1^{832}+130079\#1^{834}+79983\#1^{836}+104967\#1^{838}+54999\#1^{840}+130079\#1^{842}+79983\#1^{844}+104967\#1^{846}+54999\#1^{848}+130079\#1^{850}+79983\#1^{852}+104967\#1^{854}+54999\#1^{856}+130079\#1^{858}+79983\#1^{860}+104967\#1^{862}+54999\#1^{864}+130079\#1^{866}+79983\#1^{868}+104967\#1^{870}+54999\#1^{872}+130079\#1^{874}+79983\#1^{876}+104967\#1^{878}+54999\#1^{880}+130079\#1^{882}+79983\#1^{884}+104967\#1^{886}+54999\#1^{888}+130079\#1^{890}+79983\#1^{892}+104967\#1^{894}+54999\#1^{896}+130079\#1^{898}+79983\#1^{900}+104967\#1^{902}+54999\#1^{904}+130079\#1^{906}+79983\#1^{908}+104967\#1^{910}+54999\#1^{912}+130079\#1^{914}+79983\#1^{916}+104967\#1^{918}+54999\#1^{920}+130079\#1^{922}+79983\#1^{924}+104967\#1^{926}+54999\#1^{928}+130079\#1^{930}+79983\#1^{932}+104967\#1^{934}+54999\#1^{936}+130079\#1^{938}+79983\#1^{940}+104967\#1^{942}+54999\#1^{944}+130079\#1^{946}+79983\#1^{948}+104967\#1^{950}+54999\#1^{952}+130079\#1^{954}+79983\#1^{956}+104967\#1^{958}+54999\#1^{960}+130079\#1^{962}+79983\#1^{964}+104967\#1^{966}+54999\#1^{968}+130079\#1^{970}+79983\#1^{972}+104967\#1^{974}+54999\#1^{976}+130079\#1^{978}+79983\#1^{980}+104967\#1^{982}+54999\#1^{984}+130079\#1^{986}+79983\#1^{988}+104967\#1^{990}+54999\#1^{992}+130079\#1^{994}+79983\#1^{996}+104967\#1^{998}+54999\#1^{1000}+130079\#1^{998}+79983\#1^{996}+104967\#1^{994}+54999\#1^{992}+130079\#1^{990}+79983\#1^{988}+104967\#1^{986}+54999\#1^{984}+130079\#1^{982}+79983\#1^{980}+104967\#1^{978}+54999\#1^{976}+130079\#1^{974}+79983\#1^{972}+104967\#1^{970}+54999\#1^{968}+130079\#1^{966}+79983\#1^{964}+104967\#1^{962}+54999\#1^{960}+130079\#1^{958}+79983\#1^{956}+104967\#1^{954}+54999\#1^{952}+130079\#1^{950}+79983\#1^{948}+104967\#1^{946}+54999\#1^{944}+130079\#1^{942}+79983\#1^{940}+104967\#1^{938}+54999\#1^{936}+130079\#1^{934}+79983\#1^{932}+104967\#1^{930}+54999\#1^{928}+130079\#1^{926}+79983\#1^{924}+104967\#1^{922}+54999\#1^{920}+130079\#1^{918}+79983\#1^{916}+104967\#1^{914}+54999\#1^{912}+130079\#1^{910}+79983\#1^{908}+104967\#1^{906}+54999\#1^{904}+130079\#1^{902}+79983\#1^{900}+104967\#1^{898}+54999\#1^{896}+130079\#1^{894}+79983\#1^{892}+104967\#1^{890}+54999\#1^{888}+130079\#1^{886}+79983\#1^{884}+104967\#1^{882}+54999\#1^{880}+130079\#1^{878}+79983\#1^{876}+104967\#1^{874}+54999\#1^{872}+130079\#1^{870}+79983\#1^{868}+104967\#1^{866}+54999\#1^{864}+130079\#1^{862}+79983\#1^{860}+104967\#1^{858}+54999\#1^{856}+130079\#1^{854}+79983\#1^{852}+104967\#1^{850}+54999\#1^{848}+130079\#1^{846}+79983\#1^{844}+104967\#1^{842}+54999\#1^{840}+130079\#1^{838}+79983\#1^{836}+104967\#1^{834}+54999\#1^{832}+130079\#1^{830}+79983\#1^{828}+104967\#1^{826}+54999\#1^{824}+130079\#1^{822}+79983\#1^{820}+104967\#1^{818}+54999\#1^{816}+130079\#1^{814}+79983\#1^{812}+104967\#1^{810}+54999\#1^{808}+130079\#1^{806}+79983\#1^{804}+104967\#1^{802}+54999\#1^{800}+130079\#1^{798}+79983\#1^{796}+104967\#1^{794}+54999\#1^{792}+130079\#1^{790}+79983\#1^{788}+104967\#1^{786}+54999\#1^{784}+130079\#1^{782}+79983\#1^{780}+104967\#1^{778}+54999\#1^{776}+130079\#1^{774}+79983\#1^{772}+104967\#1^{770}+54999\#1^{768}+130079\#1^{766}+79983\#1^{764}+104967\#1^{762}+54999\#1^{760}+130079\#1^{758}+79983\#1^{756}+104967\#1^{754}+54999\#1^{752}+130079\#1^{750}+79983\#1^{748}+104967\#1^{746}+54999\#1^{744}+130079\#1^{742}+79983\#1^{740}+104967\#1^{738}+54999\#1^{736}+130079\#1^{734}+79983\#1^{732}+104967\#1^{730}+54999\#1^{728}+130079\#1^{726}+79983\#1^{724}+104967\#1^{722}+54999\#1^{720}+130079\#1^{718}+79983\#1^{716}+104967\#1^{714}+54999\#1^{712}+130079\#1^{710}+79983\#1^{708}+104967\#1^{706}+54999\#1^{704}+130079\#1^{702}+79983\#1^{700}+104967\#1^{698}+54999\#1^{696}+130079\#1^{694}+79983\#1^{692}+104967\#1^{690}+54999\#1^{688}+130079\#1^{686}+79983\#1^{684}+104967\#1^{682}+54999\#1^{680}+130079\#1^{678}+79983\#1^{676}+104967\#1^{674}+54999\#1^{672}+130079\#1^{670}+79983\#1^{668}+104967\#1^{666}+54999\#1^{664}+130079\#1^{662}+79983\#1^{660}+104967\#1^{658}+54999\#1^{656}+130079\#1^{654}+79983\#1^{652}+104967\#1^{650}+54999\#1^{648}+130079\#1^{646}+79983\#1^{644}+104967\#1^{642}+54999\#1^{640}+130079\#1^{638}+79983\#1^{636}+104967\#1^{634}+54999\#1^{632}+130079\#1^{630}+79983\#1^{628}+104967\#1^{626}+54999\#1^{624}+130079\#1^{622}+79983\#1^{620}+104967\#1^{618}+54999\#1^{616}+130079\#1^{614}+79983\#1^{612}+104967\#1^{610}+54999\#1^{608}+130079\#1^{606}+79983\#1^{604}+104967\#1^{602}+54999\#1^{600}+130079\#1^{598}+79983\#1^{596}+104967\#1^{594}+54999\#1^{592}+130079\#1^{590}+79983\#1^{588}+104967\#1^{586}+54999\#1^{584}+130079\#1^{582}+79983\#1^{580}+104967\#1^{578}+54999\#1^{576}+130079\#1^{574}+79983\#1^{572}+104967\#1^{570}+54999\#1^{568}+130079\#1^{566}+79983\#1^{564}+104967\#1^{562}+54999\#1^{560}+130079\#1^{558}+79983\#1^{556}+104967\#1^{554}+54999\#1^{552}+130079\#1^{550}+79983\#1^{548}+104967\#1^{546}+54999\#1^{544}+130079\#1^{542}+79983\#1^{540}+104967\#1^{538}+54999\#1^{536}+130079\#1^{534}+79983\#1^{532}+104967\#1^{530}+54999\#1^{528}+130079\#1^{526}+79983\#1^{524}+104967\#1^{522}+54999\#1^{520}+130079\#1^{518}+79983\#1^{516}+104967\#1^{514}+54999\#1^{512}+130079\#1^{510}+79983\#1^{508}+104967\#1^{506}+54999\#1^{504}+130079\#1^{502}+79983\#1^{500}+104967\#1^{498}+54999\#1^{496}+130079\#1^{494}+79983\#1^{492}+104967\#1^{490}+54999\#1^{488}+130079\#1^{486}+79983\#1^{484}+104967\#1^{482}+54999\#1^{480}+130079\#1^{478}+79983\#1^{476}+104967\#1^{474}+54999\#1^{472}+130079\#1^{470}+79983\#1^{468}+104967\#1^{466}+54999\#1^{464}+130079\#1^{462}+79983\#1^{460}+104967\#1^{458}+54999\#1^{456}+130079\#1^{454}+79983\#1^{452}+104967\#1^{450}+54999\#1^{448}+130079\#1^{446}+79983\#1^{444}+104967\#1^{442}+54999\#1^{440}+130079\#1^{438}+79983\#1^{436}+104967\#1^{434}+54999\#1^{432}+130079\#1^{430}+79983\#1^{428}+104967\#1^{426}+54999\#1^{424}+130079\#1^{422}+79983\#1^{420}+104967\#1^{418}+54999\#1^{416}+130079\#1^{414}+79983\#1^{412}+104967\#1^{410}+54999\#1^{408}+130079\#1^{406}+79983\#1^{404}+104967\#1^{402}+54999\#1^{400}+130079\#1^{398}+79983\#1^{396}+104967\#1^{394}+54999\#1^{392}+130079\#1^{390}+79983\#1^{388}+104967\#1^{386}+549$$

$\frac{8}{16} \sqrt{\frac{331}{2}}$	$\frac{1}{32} \sqrt{\frac{640}{5} + 128 \sqrt{\frac{5}{13}}}$	0	$\frac{\sqrt{\frac{3}{2}}}{4}$	$\text{Root}[49 - 1729 \#1^2]$
$\frac{\sqrt{\frac{1159}{7}}}{16}$	$\text{Root}[587 - 19435 \#1^2 + 83200 \#1^4 \&, 4]$	$\sqrt{\frac{2}{35}}$	$\frac{1}{4}$	$\text{Root}[587 - 19435 \#1^2 + 83200 \#1^4 \&, 4]$
$\frac{\sqrt{\frac{2319}{14}}}{16}$	$\frac{1}{32} \sqrt{\frac{531}{5} + 107 \sqrt{\frac{5}{13}}}$	$\frac{2}{\sqrt{35}}$	$\frac{1}{4 \sqrt{2}}$	$\frac{1}{32} \sqrt{\frac{531}{5} - 107 \sqrt{\frac{5}{13}}}$
$\frac{\sqrt{\frac{145}{14}}}{4}$	$\frac{1}{8} \sqrt{\frac{29}{5} + 5 \sqrt{\frac{5}{13}}}$	$\sqrt{\frac{6}{35}}$	0	$\frac{1}{8} \sqrt{\frac{29}{5} - 5 \sqrt{\frac{5}{13}}}$
$\frac{\sqrt{165}}{16}$	$\sqrt{\frac{75}{512} + \frac{427}{512 \sqrt{65}}}$	0	$\frac{1}{4}$	$\sqrt{\frac{75}{512} - \frac{427}{512 \sqrt{65}}}$
$\frac{\sqrt{\frac{2311}{14}}}{16}$	$\frac{1}{32} \sqrt{\frac{683}{5} + \frac{719}{\sqrt{65}}}$	$\sqrt{\frac{2}{35}}$	$\frac{1}{4 \sqrt{2}}$	$\frac{1}{32} \sqrt{\frac{683}{5} - \frac{719}{\sqrt{65}}}$
$\frac{17}{8 \sqrt{7}}$	$\sqrt{\frac{77}{640} + \frac{73}{128 \sqrt{65}}}$	$\frac{2}{\sqrt{35}}$	0	$\frac{1}{8} \sqrt{\frac{77}{10} - \frac{73}{\sqrt{65}}}$
$\frac{\sqrt{\frac{329}{2}}}{16}$	$\frac{1}{32} \sqrt{167 + \frac{903}{\sqrt{65}}}$	0	$\frac{1}{4 \sqrt{2}}$	$\frac{1}{32} \sqrt{167 - \frac{903}{\sqrt{65}}}$
$\frac{3}{\sqrt{14}}$	$\frac{1}{2} \sqrt{\frac{3}{5} + \frac{3}{\sqrt{65}}}$	$\sqrt{\frac{2}{35}}$	0	$\frac{1}{2} \sqrt{\frac{3}{5} - \frac{3}{\sqrt{65}}}$
$\frac{\sqrt{41}}{8}$	$\text{Root}[79 - 1495 \#1^2 + 4160 \#1^4 \&, 4]$	0	0	$\text{Root}[79 - 1495 \#1^2 + 4160 \#1^4 \&, 4]$

Dimensions[angle1]

{28, 5}

orderedroots[minipoly[chil]]

$\left\{-5, \frac{1}{2} (23 - \sqrt{65}), 9, 11, \frac{1}{2} (23 + \sqrt{65})\right\}$

chil

$(-11 + x) (-9 + x)^{14} (5 + x)^{32} (116 - 23 x + x^2)$

coeff[chil, (x + 5) (x - 9)] // FullSimplify

$\left\{\frac{1}{2} (115 - 19 \sqrt{65}), 32, \frac{1}{2} (115 + 19 \sqrt{65})\right\}$

combinationangle $\left[\left\{\frac{1}{2} (115 - 19 \sqrt{65}), 32, \frac{1}{2} (115 + 19 \sqrt{65})\right\},\right.$

$\left.\{7, 13\}, \{2, 4, 5\}, \text{angle1}\right] // \text{FullSimplify}$

$\left\{\sqrt{\frac{1}{13} (109 - 8 \sqrt{14})}, \text{Root}[845 - 218 \#1^2 + 13 \#1^4 \&, 1],\right.$

$\left.\sqrt{\frac{1}{13} (109 - 8 \sqrt{14})}, \text{Root}[845 - 218 \#1^2 + 13 \#1^4 \&, 1]\right\}$

compatible $\left[\left\{\sqrt{\frac{1}{13} (109 - 8 \sqrt{14})}, \text{Root}[845 - 218 \#1^2 + 13 \#1^4 \&, 1],\right.\right.$

$\left.\left.\sqrt{\frac{1}{13} (109 - 8 \sqrt{14})}, \text{Root}[845 - 218 \#1^2 + 13 \#1^4 \&, 1]\right\}\right]$

0

```
chi2 = (-9 + x)14 (5 + x)32 (-1264 + 369 x - 34 x2 + x3)
(-9 + x)14 (5 + x)32 (-1264 + 369 x - 34 x2 + x3)
```

```
list2 = {5307 - 2802 x + 508 x2 - 38 x3 + x4,
  5323 - 2802 x + 508 x2 - 38 x3 + x4, 5339 - 2802 x + 508 x2 - 38 x3 + x4,
  5187 - 2794 x + 508 x2 - 38 x3 + x4, (-11 + x) (-473 + 211 x - 27 x2 + x3),
  5219 - 2794 x + 508 x2 - 38 x3 + x4, (-15 + x) (-349 + 163 x - 23 x2 + x3),
  5251 - 2794 x + 508 x2 - 38 x3 + x4, 5267 - 2794 x + 508 x2 - 38 x3 + x4,
  (-9 + x) (-563 + 247 x - 29 x2 + x3), 5083 - 2786 x + 508 x2 - 38 x3 + x4,
  5099 - 2786 x + 508 x2 - 38 x3 + x4, (-15 + x) (-11 + x) (31 - 12 x + x2),
  5131 - 2786 x + 508 x2 - 38 x3 + x4, 5147 - 2786 x + 508 x2 - 38 x3 + x4,
  5163 - 2786 x + 508 x2 - 38 x3 + x4, 5179 - 2786 x + 508 x2 - 38 x3 + x4,
  (-15 + x) (-9 + x) (37 - 14 x + x2), 5011 - 2778 x + 508 x2 - 38 x3 + x4,
  (-11 + x) (-457 + 211 x - 27 x2 + x3), 5043 - 2778 x + 508 x2 - 38 x3 + x4,
  5059 - 2778 x + 508 x2 - 38 x3 + x4, 5075 - 2778 x + 508 x2 - 38 x3 + x4,
  (-9 + x) (-547 + 247 x - 29 x2 + x3), (-11 + x) (-449 + 211 x - 27 x2 + x3),
  4955 - 2770 x + 508 x2 - 38 x3 + x4, 4971 - 2770 x + 508 x2 - 38 x3 + x4,
  4987 - 2770 x + 508 x2 - 38 x3 + x4, (-11 + x) (-9 + x) (49 - 18 x + x2),
  4867 - 2762 x + 508 x2 - 38 x3 + x4, 4883 - 2762 x + 508 x2 - 38 x3 + x4,
  4899 - 2762 x + 508 x2 - 38 x3 + x4, (-9 + x) (-531 + 247 x - 29 x2 + x3),
  4795 - 2754 x + 508 x2 - 38 x3 + x4, (-9 + x) (-523 + 247 x - 29 x2 + x3)};
```

```
Length[list2]
```

```
35
```

```
A2 = CoefficientList[list2, x];
```

A2 // MatrixForm

$$\begin{pmatrix} 5307 & -2802 & 508 & -38 & 1 \\ 5323 & -2802 & 508 & -38 & 1 \\ 5339 & -2802 & 508 & -38 & 1 \\ 5187 & -2794 & 508 & -38 & 1 \\ 5203 & -2794 & 508 & -38 & 1 \\ 5219 & -2794 & 508 & -38 & 1 \\ 5235 & -2794 & 508 & -38 & 1 \\ 5251 & -2794 & 508 & -38 & 1 \\ 5267 & -2794 & 508 & -38 & 1 \\ 5067 & -2786 & 508 & -38 & 1 \\ 5083 & -2786 & 508 & -38 & 1 \\ 5099 & -2786 & 508 & -38 & 1 \\ 5115 & -2786 & 508 & -38 & 1 \\ 5131 & -2786 & 508 & -38 & 1 \\ 5147 & -2786 & 508 & -38 & 1 \\ 5163 & -2786 & 508 & -38 & 1 \\ 5179 & -2786 & 508 & -38 & 1 \\ 4995 & -2778 & 508 & -38 & 1 \\ 5011 & -2778 & 508 & -38 & 1 \\ 5027 & -2778 & 508 & -38 & 1 \\ 5043 & -2778 & 508 & -38 & 1 \\ 5059 & -2778 & 508 & -38 & 1 \\ 5075 & -2778 & 508 & -38 & 1 \\ 4923 & -2770 & 508 & -38 & 1 \\ 4939 & -2770 & 508 & -38 & 1 \\ 4955 & -2770 & 508 & -38 & 1 \\ 4971 & -2770 & 508 & -38 & 1 \\ 4987 & -2770 & 508 & -38 & 1 \\ 4851 & -2762 & 508 & -38 & 1 \\ 4867 & -2762 & 508 & -38 & 1 \\ 4883 & -2762 & 508 & -38 & 1 \\ 4899 & -2762 & 508 & -38 & 1 \\ 4779 & -2754 & 508 & -38 & 1 \\ 4795 & -2754 & 508 & -38 & 1 \\ 4707 & -2746 & 508 & -38 & 1 \end{pmatrix}$$

Dimensions[A2]

{35, 5}

gpart[chi2]

{258 947, -137 002, 24 892, -1862, 49}

```

Solve[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 && n[7] ≥ 0 &&
  n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 && n[14] ≥ 0 &&
  n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 && n[21] ≥ 0 &&
  n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 &&
  n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 &&
  n[34] ≥ 0 && n[35] ≥ 0 && Array[n, 35].A2 == gpart[chi2], Array[n, 35], Integers]

{{n[1] → 0, n[2] → 0, n[3] → 12, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
  n[8] → 0, n[9] → 37, n[10] → 0, n[11] → 0, n[12] → 0, n[13] → 0, n[14] → 0,
  n[15] → 0, n[16] → 0, n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0,
  n[22] → 0, n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 0,
  n[29] → 0, n[30] → 0, n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0}}

list2[{{3, 9}}] * mu[chi2] // Factor
{ (-9 + x)13 (5 + x)31 (5339 - 2802 x + 508 x2 - 38 x3 + x4),
  (-9 + x)13 (5 + x)31 (5267 - 2794 x + 508 x2 - 38 x3 + x4) }

```

Array[m, 5].Transpose[A2]

```
{ 5307 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5323 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5339 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5187 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5203 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5219 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5235 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5251 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5267 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5067 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5083 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5099 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5115 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5131 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5147 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5163 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5179 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4995 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5011 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5027 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5043 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5059 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  5075 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4923 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4939 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4955 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4971 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4987 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4851 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4867 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4883 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4899 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4779 m[1] - 2754 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4795 m[1] - 2754 m[2] + 508 m[3] - 38 m[4] + m[5] ,
  4707 m[1] - 2746 m[2] + 508 m[3] - 38 m[4] + m[5] }
```

Array[m, 5].gpart[chi2]

```
258 947 m[1] - 137 002 m[2] + 24 892 m[3] - 1862 m[4] + 49 m[5]
```

```

FindInstance[258 947 m[1] - 137 002 m[2] + 24 892 m[3] - 1862 m[4] + 49 m[5] < 0 &&
5307 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5323 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5339 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5187 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5203 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5219 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5235 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5251 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5267 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5067 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5083 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5099 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5115 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5131 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5147 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5163 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5179 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4995 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5011 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5027 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5043 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5059 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5075 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4923 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4939 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4955 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4971 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4987 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4851 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4867 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4883 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4899 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4779 m[1] - 2754 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4795 m[1] - 2754 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4707 m[1] - 2746 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0, Array[m, 5], Integers]
{}

```

```

FindInstance[258 947 m[1] - 137 002 m[2] + 24 892 m[3] - 1862 m[4] + 49 m[5] < 0 &&
5307 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5323 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5339 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] < 0 &&
5187 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5203 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5219 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5235 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5251 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5267 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5067 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5083 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5099 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5115 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5131 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5147 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5163 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5179 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4995 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5011 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5027 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5043 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5059 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5075 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4923 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4939 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4955 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4971 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4987 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4851 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4867 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4883 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4899 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4779 m[1] - 2754 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4795 m[1] - 2754 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4707 m[1] - 2746 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0, Array[m, 5], Integers]
{{m[1] → -2201, m[2] → -15 413, m[3] → 0, m[4] → 0, m[5] → -31 466 028}}

Array[m, 5] /. {m[1] → -2201, m[2] → -15 413, m[3] → 0, m[4] → 0, m[5] → -31 466 028}
{-2201, -15 413, 0, 0, -31 466 028}

GCD[-2201, -15 413, 0, 0, -31 466 028]
1

Reverse[{-2201, -15 413, 0, 0, -31 466 028}]
{-31 466 028, 0, 0, -15 413, -2201}

```



```
{-2201, -15 413, 0, 0, -31 466 028}.gpart[chi2]
```

```
-165 893
```

```
{-2201, -15 413, 0, 0, -31 466 028}.Transpose[A2]
```

```
{40 491, 5275, -29 941, 181 307, 146 091, 110 875, 75 659, 40 443, 5227,  
 322 123, 286 907, 251 691, 216 475, 181 259, 146 043, 110 827, 75 611, 357 291,  
 322 075, 286 859, 251 643, 216 427, 181 211, 392 459, 357 243, 322 027,  
 286 811, 251 595, 427 627, 392 411, 357 195, 321 979, 462 795, 427 579, 497 963}
```

```

FindInstance[258 947 m[1] - 137 002 m[2] + 24 892 m[3] - 1862 m[4] + 49 m[5] < 0 &&
5307 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5323 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5339 m[1] - 2802 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5187 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5203 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5219 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5235 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5251 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5267 m[1] - 2794 m[2] + 508 m[3] - 38 m[4] + m[5] < 0 &&
5067 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5083 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5099 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5115 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5131 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5147 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5163 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5179 m[1] - 2786 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4995 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5011 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5027 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5043 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5059 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
5075 m[1] - 2778 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4923 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4939 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4955 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4971 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4987 m[1] - 2770 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4851 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4867 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4883 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4899 m[1] - 2762 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4779 m[1] - 2754 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4795 m[1] - 2754 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0 &&
4707 m[1] - 2746 m[2] + 508 m[3] - 38 m[4] + m[5] ≥ 0, Array[m, 5], Integers]
{{m[1] → -1428, m[2] → -14 283, m[3] → 0, m[4] → 0, m[5] → -32 393 128}}

Array[m, 5] /. {m[1] → -1428, m[2] → -14 283, m[3] → 0, m[4] → 0, m[5] → -32 393 128}
{-1428, -14 283, 0, 0, -32 393 128}

GCD[-1428, -14 283, 0, 0, -32 393 128]
1

Reverse[{-1428, -14 283, 0, 0, -32 393 128}]
{-32 393 128, 0, 0, -14 283, -1428}

```

```
{-1428, -14283, 0, 0, -32393128}.gpart[chi2]
```

```
-240022
```

```
{-1428, -14283, 0, 0, -32393128}.Transpose[A2]
```

```
{49442, 26594, 3746, 106538, 83690, 60842, 37994, 15146,
-7702, 163634, 140786, 117938, 95090, 72242, 49394, 26546, 3698,
152186, 129338, 106490, 83642, 60794, 37946, 140738, 117890, 95042,
72194, 49346, 129290, 106442, 83594, 60746, 117842, 94994, 106394}
```

```
anglesq2 = anglesquaredmat[chi2, list2] // FullSimplify;
```

```
Dimensions[anglesq2]
```

```
{35, 5}
```

```
angle2 = Sqrt[anglesq2] // FullSimplify;
```

```
angle2 // MatrixForm
```

$$\begin{pmatrix} \sqrt{\frac{4674}{7147}} \text{Root}\left[-1 + 8065 \#1^2 - 273304 \#1^4 + 2074672 \#1^6 \&, 5\right] & \sqrt{\frac{3}{14}} \text{Root}\left[-1 + \right. \\ 2 \sqrt{\frac{167}{1021}} \text{Root}\left[-67 + 17547 \#1^2 - 794512 \#1^4 + 8298688 \#1^6 \&, 5\right] & \frac{1}{2} \text{Root}\left[-67 + \right. \\ \sqrt{\frac{4678}{7147}} \text{Root}\left[-3 + 811 \#1^2 - 61976 \#1^4 + 1037336 \#1^6 \&, 4\right] & \sqrt{\frac{2}{7}} \text{Root}\left[-3 \right. \\ \sqrt{\frac{4654}{7147}} \text{Root}\left[-59 + 121611 \#1^2 - 2005584 \#1^4 + 8298688 \#1^6 \&, 5\right] & \frac{\sqrt{\frac{3}{7}}}{2} \text{Root}\left[-59 + 1 \right. \\ 4 \sqrt{\frac{291}{7147}} \text{Root}\left[-27 + 5751 \#1^2 - 106680 \#1^4 + 518668 \#1^6 \&, 5\right] & \frac{1}{\sqrt{7}} \text{Root}\left[-27 \right. \\ \sqrt{\frac{4658}{7147}} \text{Root}\left[-523 + 66075 \#1^2 - 1408176 \#1^4 + 8298688 \#1^6 \&, 6\right] & \frac{\sqrt{\frac{5}{7}}}{2} \text{Root}\left[-523 + \right. \\ 2 \sqrt{\frac{1165}{7147}} \text{Root}\left[-107 + 10947 \#1^2 - 277368 \#1^4 + 2074672 \#1^6 \&, 6\right] & \sqrt{\frac{3}{14}} \text{Root}\left[-107 \right. \\ 3 \sqrt{\frac{74}{1021}} \text{Root}\left[-243 + 25155 \#1^2 - 810768 \#1^4 + 8298688 \#1^6 \&, 6\right] & \frac{1}{2} \text{Root}\left[-243 \right. \\ 2 \sqrt{\frac{1166}{7147}} \text{Root}\left[-1 + 159 \#1^2 - 8001 \#1^4 + 129667 \#1^6 \&, 6\right] & \sqrt{\frac{2}{7}} \text{Root}\left[- \right. \\ \sqrt{\frac{662}{1021}} \text{Root}\left[-27 + 31939 \#1^2 - 364744 \#1^4 + 1037336 \#1^6 \&, 6\right] & 0 \text{Root}\left[-27 + \right. \\ 2 \sqrt{\frac{1159}{7147}} \text{Root}\left[-1091 + 211035 \#1^2 - 2619248 \#1^4 + 8298688 \#1^6 \&, 6\right] & \frac{1}{2\sqrt{7}} \text{Root}\left[-1091 + \right. \\ \sqrt{\frac{4638}{7147}} \text{Root}\left[-377 + 42553 \#1^2 - 580136 \#1^4 + 2074672 \#1^6 \&, 6\right] & \frac{1}{\sqrt{14}} \text{Root}\left[-377 \right. \\ 4 \sqrt{\frac{290}{7147}} \text{Root}\left[-1563 + 133043 \#1^2 - 2021840 \#1^4 + 8298688 \#1^6 \&, 6\right] & \frac{\sqrt{\frac{3}{7}}}{2} \text{Root}\left[-1563 + \right. \\ \sqrt{\frac{4642}{7147}} \text{Root}\left[-169 + 12441 \#1^2 - 215392 \#1^4 + 1037336 \#1^6 \&, 6\right] & \frac{1}{\sqrt{7}} \text{Root}\left[-169 \right. \\ 6 \sqrt{\frac{129}{7147}} \text{Root}\left[-971 + 69667 \#1^2 - 1424432 \#1^4 + 8298688 \#1^6 \&, 6\right] & \frac{\sqrt{\frac{5}{7}}}{2} \text{Root}\left[-971 + \right. \\ \sqrt{\frac{4646}{7147}} \text{Root}\left[-129 + 10865 \#1^2 - 281432 \#1^4 + 2074672 \#1^6 \&, 6\right] & \sqrt{\frac{3}{14}} \text{Root}\left[-129 \right. \\ 2 \sqrt{\frac{166}{1021}} \text{Root}\left[-83 + 20907 \#1^2 - 827024 \#1^4 + 8298688 \#1^6 \&, 6\right] & \frac{1}{2} \text{Root}\left[-83 + \right. \\ - \sqrt{\frac{165}{1021}} \text{Root}\left[-83 + 20907 \#1^2 - 827024 \#1^4 + 8298688 \#1^6 \&, 6\right] & - \text{Root}\left[-83 + \right. \end{pmatrix}$$

$$\begin{array}{llll}
2 \sqrt{\frac{-1021}{1021}} & \text{Root}[-107 + 8339 \#1^4 - 91694 \#1^7 + 259334 \#1^{10} \&, 6] & 0 & \text{Root}[-10 \\
\sqrt{\frac{4622}{7147}} & \text{Root}[-3379 + 218451 \#1^2 - 2635504 \#1^4 + 8298688 \#1^6 \&, 6] & \frac{1}{2\sqrt{7}} & \text{Root}[-3379 + \\
\frac{68}{\sqrt{7147}} & \text{Root}[-747 + 43427 \#1^2 - 584200 \#1^4 + 2074672 \#1^6 \&, 6] & \frac{1}{\sqrt{14}} & \text{Root}[-747 \\
3 \sqrt{\frac{514}{7147}} & \text{Root}[-2347 + 132619 \#1^2 - 2038096 \#1^4 + 8298688 \#1^6 \&, 6] & \frac{\sqrt{\frac{3}{7}}}{2} & \text{Root}[-2347 + \\
2 \sqrt{\frac{1157}{7147}} & \text{Root}[-97 + 5949 \#1^2 - 108712 \#1^4 + 518668 \#1^6 \&, 6] & \frac{1}{\sqrt{7}} & \text{Root}[-97 \\
\sqrt{\frac{4630}{7147}} & \text{Root}[-699 + 61403 \#1^2 - 1440688 \#1^4 + 8298688 \#1^6 \&, 6] & \frac{\sqrt{\frac{5}{7}}}{2} & \text{Root}[-699 + \\
\sqrt{\frac{658}{1021}} & \text{Root}[-691 + 33291 \#1^2 - 368808 \#1^4 + 1037336 \#1^6 \&, 6] & 0 & \text{Root}[-691 \\
48 \sqrt{\frac{2}{7147}} & \text{Root}[-4563 + 214011 \#1^2 - 2651760 \#1^4 + 8298688 \#1^6 \&, 6] & \frac{1}{2\sqrt{7}} & \text{Root}[-4563 + \\
\sqrt{\frac{4610}{7147}} & \text{Root}[-841 + 41337 \#1^2 - 588264 \#1^4 + 2074672 \#1^6 \&, 6] & \frac{1}{\sqrt{14}} & \text{Root}[-841 \\
2 \sqrt{\frac{1153}{7147}} & \text{Root}[-2027 + 120339 \#1^2 - 2054352 \#1^4 + 8298688 \#1^6 \&, 6] & \frac{\sqrt{\frac{3}{7}}}{2} & \text{Root}[-2027 + \\
\sqrt{\frac{4614}{7147}} & \text{Root}[-81 + 9873 \#1^2 - 219456 \#1^4 + 1037336 \#1^6 \&, 6] & \frac{1}{\sqrt{7}} & \text{Root}[-81 \\
4 \sqrt{\frac{41}{1021}} & \text{Root}[-96 + 3968 \#1^2 - 46355 \#1^4 + 129667 \#1^6 \&, 6] & 0 & \text{Root}[-96 \\
\sqrt{\frac{4594}{7147}} & \text{Root}[-4259 + 197715 \#1^2 - 2668016 \#1^4 + 8298688 \#1^6 \&, 6] & \frac{1}{2\sqrt{7}} & \text{Root}[-4259 + \\
2 \sqrt{\frac{1149}{7147}} & \text{Root}[-563 + 36283 \#1^2 - 592328 \#1^4 + 2074672 \#1^6 \&, 6] & \frac{1}{\sqrt{14}} & \text{Root}[-563 \\
11 \sqrt{\frac{38}{7147}} & \text{Root}[-219 + 96203 \#1^2 - 2070608 \#1^4 + 8298688 \#1^6 \&, 6] & \frac{\sqrt{\frac{3}{7}}}{2} & \text{Root}[-219 + \\
\sqrt{\frac{654}{1021}} & \text{Root}[-611 + 28715 \#1^2 - 372872 \#1^4 + 1037336 \#1^6 \&, 6] & 0 & \text{Root}[-611 \\
2 \sqrt{\frac{1145}{7147}} & \text{Root}[-2083 + 169563 \#1^2 - 2684272 \#1^4 + 8298688 \#1^6 \&, 6] & \frac{1}{2\sqrt{7}} & \text{Root}[-2083 + \\
2 \sqrt{\frac{163}{1021}} & \text{Root}[-43 + 6051 \#1^2 - 93726 \#1^4 + 259334 \#1^6 \&, 6] & 0 & \text{Root}[-43
\end{array}$$

Dimensions[angle2]

{35, 5}

orderedroots[minipoly[chi2]]

{-5, Root[-1264 + 369 #1 - 34 #1² + #1³ &, 1], 9,
Root[-1264 + 369 #1 - 34 #1² + #1³ &, 2], Root[-1264 + 369 #1 - 34 #1² + #1³ &, 3]}

chi2

$(-9 + x)^{14} (5 + x)^{32} (-1264 + 369 x - 34 x^2 + x^3)$

coeff[chi2, (x + 5) (x - 9)] // FullSimplify

{Root[130688 + 1792 #1 - 147 #1² + #1³ &, 1],
Root[130688 + 1792 #1 - 147 #1² + #1³ &, 2], Root[130688 + 1792 #1 - 147 #1² + #1³ &, 3]}

```

combinationangle[{Root[130 688 + 1792 #1 - 147 #12 + #13 &, 1],
  Root[130 688 + 1792 #1 - 147 #12 + #13 &, 2],
  Root[130 688 + 1792 #1 - 147 #12 + #13 &, 3]}, {3, 9},
{2, 4, 5}, angle2] // FullSimplify
{Root[330 625 - 1 789 316 #12 + 1 619 846 #14 - 308 356 #16 + 16 129 #18 &, 7],
  Root[330 625 - 1 789 316 #12 + 1 619 846 #14 - 308 356 #16 + 16 129 #18 &, 3],
  Root[330 625 - 1 789 316 #12 + 1 619 846 #14 - 308 356 #16 + 16 129 #18 &, 5],
  Root[330 625 - 1 789 316 #12 + 1 619 846 #14 - 308 356 #16 + 16 129 #18 &, 1]}

compatible[{Root[330 625 - 1 789 316 #12 + 1 619 846 #14 - 308 356 #16 + 16 129 #18 &, 7],
  Root[330 625 - 1 789 316 #12 + 1 619 846 #14 - 308 356 #16 + 16 129 #18 &, 3],
  Root[330 625 - 1 789 316 #12 + 1 619 846 #14 - 308 356 #16 + 16 129 #18 &, 5],
  Root[330 625 - 1 789 316 #12 + 1 619 846 #14 - 308 356 #16 + 16 129 #18 &, 1]}]
0

```

$$\text{chi3} = (-9 + x)^{12} (5 + x)^{32} (95 - 20x + x^2) (-1068 + 327x - 32x^2 + x^3) \\ (-9 + x)^{12} (5 + x)^{32} (95 - 20x + x^2) (-1068 + 327x - 32x^2 + x^3)$$

$$\text{list3} = \{(-9 + x) (95 - 20x + x^2) (-501 + 215x - 27x^2 + x^3), \\ 430163 - 321952x + 96755x^2 - 15016x^3 + 1273x^4 - 56x^5 + x^6, \\ (95 - 20x + x^2) (4525 - 2436x + 458x^2 - 36x^3 + x^4), \\ (95 - 20x + x^2) (4541 - 2436x + 458x^2 - 36x^3 + x^4), \\ (-9 + x) (-46723 + 30269x - 7358x^2 + 850x^3 - 47x^4 + x^5), \\ 422315 - 319496x + 96507x^2 - 15008x^3 + 1273x^4 - 56x^5 + x^6, \\ 422027 - 319464x + 96507x^2 - 15008x^3 + 1273x^4 - 56x^5 + x^6, \\ (-9 + x)^2 (5211 - 2786x + 508x^2 - 38x^3 + x^4), \\ (-9 + x) (-46867 + 30285x - 7358x^2 + 850x^3 - 47x^4 + x^5), \\ (-9 + x) (95 - 20x + x^2) (-493 + 215x - 27x^2 + x^3), \\ 423835 - 319816x + 96523x^2 - 15008x^3 + 1273x^4 - 56x^5 + x^6, \\ 423547 - 319784x + 96523x^2 - 15008x^3 + 1273x^4 - 56x^5 + x^6, \\ 423323 - 319752x + 96523x^2 - 15008x^3 + 1273x^4 - 56x^5 + x^6, \\ (95 - 20x + x^2) (4453 - 2428x + 458x^2 - 36x^3 + x^4), \\ 424843 - 320072x + 96539x^2 - 15008x^3 + 1273x^4 - 56x^5 + x^6, \\ (109 - 22x + x^2) (95 - 20x + x^2) (41 - 14x + x^2), \\ (95 - 20x + x^2) (4485 - 2428x + 458x^2 - 36x^3 + x^4), \\ (-9 + x) (-45883 + 30093x - 7350x^2 + 850x^3 - 47x^4 + x^5), \\ (-9 + x) (-45851 + 30093x - 7350x^2 + 850x^3 - 47x^4 + x^5),$$

$$\begin{aligned}
& (-9+x) (-46\,059 + 30\,109\,x - 7350\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& 414\,179 - 317\,008\,x + 96\,259\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& (-9+x) (-46\,027 + 30\,109\,x - 7350\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x) (-45\,995 + 30\,109\,x - 7350\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x)^2 (5107 - 2778\,x + 508\,x^2 - 38\,x^3 + x^4), \\
& 415\,763 - 317\,328\,x + 96\,275\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& 415\,475 - 317\,296\,x + 96\,275\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& (-9+x) (-46\,171 + 30\,125\,x - 7350\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& 415\,187 - 317\,264\,x + 96\,275\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& (-9+x) (-46\,139 + 30\,125\,x - 7350\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x)^2 (109 - 22\,x + x^2) (47 - 16\,x + x^2), (-9+x) (95 - 20\,x + x^2) \\
& \quad (-485 + 215\,x - 27\,x^2 + x^3), (109 - 22\,x + x^2) (3823 - 2142\,x + 416\,x^2 - 34\,x^3 + x^4), \\
& 416\,771 - 317\,584\,x + 96\,291\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& 416\,483 - 317\,552\,x + 96\,291\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& (-9+x) (-46\,283 + 30\,141\,x - 7350\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (95 - 20\,x + x^2) (4381 - 2420\,x + 458\,x^2 - 36\,x^3 + x^4), \\
& 418\,003 - 317\,872\,x + 96\,307\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& (95 - 20\,x + x^2) (4397 - 2420\,x + 458\,x^2 - 36\,x^3 + x^4), \\
& (-11+x) (-9+x) (4089 - 2348\,x + 454\,x^2 - 36\,x^3 + x^4), \\
& (-9+x) (-44\,947 + 29\,917\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x) (-45\,123 + 29\,933\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x) (-45\,091 + 29\,933\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x) (-45\,299 + 29\,949\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x) (-45\,267 + 29\,949\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x) (109 - 22\,x + x^2) (-415 + 191\,x - 25\,x^2 + x^3), \\
& (-9+x) (-45\,203 + 29\,949\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x) (-45\,443 + 29\,965\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& 408\,635 - 315\,096\,x + 96\,043\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& (-9+x) (-45\,411 + 29\,965\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& 408\,347 - 315\,064\,x + 96\,043\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& (-9+x) (-45\,379 + 29\,965\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x) (-45\,347 + 29\,965\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x)^2 (95 - 20\,x + x^2) (53 - 18\,x + x^2), \\
& 409\,931 - 315\,384\,x + 96\,059\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& (-9+x) (-45\,555 + 29\,981\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& 409\,643 - 315\,352\,x + 96\,059\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& (-9+x) (-45\,523 + 29\,981\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (139 - 24\,x + x^2) (95 - 20\,x + x^2) (31 - 12\,x + x^2), \\
& 411\,227 - 315\,672\,x + 96\,075\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\
& (95 - 20\,x + x^2) (4325 - 2412\,x + 458\,x^2 - 36\,x^3 + x^4), \\
& (-9+x) (-44\,331 + 29\,773\,x - 7334\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x) (-44\,475 + 29\,789\,x - 7334\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\
& (-9+x) (-44\,443 + 29\,789\,x - 7334\,x^2 + 850\,x^3 - 47\,x^4 + x^5),
\end{aligned}$$

```

(-9 + x) (-44 651 + 29 805 x - 7334 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (139 - 24 x + x^2) (-321 + 159 x - 23 x^2 + x^3),
(-9 + x) (-44 587 + 29 805 x - 7334 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (95 - 20 x + x^2) (-469 + 215 x - 27 x^2 + x^3),
(-9 + x) (-44 827 + 29 821 x - 7334 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (-44 795 + 29 821 x - 7334 x^2 + 850 x^3 - 47 x^4 + x^5),
402 803 - 313 152 x + 95 827 x^2 - 14 984 x^3 + 1273 x^4 - 56 x^5 + x^6,
(-9 + x) (-44 763 + 29 821 x - 7334 x^2 + 850 x^3 - 47 x^4 + x^5),
(95 - 20 x + x^2) (4237 - 2404 x + 458 x^2 - 36 x^3 + x^4),
(-9 + x) (-43 683 + 29 629 x - 7326 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (-43 859 + 29 645 x - 7326 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (-43 827 + 29 645 x - 7326 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (95 - 20 x + x^2) (-461 + 215 x - 27 x^2 + x^3),
(-9 + x) (-44 003 + 29 661 x - 7326 x^2 + 850 x^3 - 47 x^4 + x^5),
(95 - 20 x + x^2) (4165 - 2396 x + 458 x^2 - 36 x^3 + x^4),
(-9 + x) (-43 067 + 29 485 x - 7318 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (95 - 20 x + x^2) (-453 + 215 x - 27 x^2 + x^3)};

```

```
Length[list3]
```

```
80
```

```
A3 = CoefficientList[list3, x];
```

```
A3 // MatrixForm
```

```

( 428 355 -321 600 96 739 -15 016 1273 -56 1 )
( 430 163 -321 952 96 755 -15 016 1273 -56 1 )
( 429 875 -321 920 96 755 -15 016 1273 -56 1 )
( 431 395 -322 240 96 771 -15 016 1273 -56 1 )
( 420 507 -319 144 96 491 -15 008 1273 -56 1 )
( 422 315 -319 496 96 507 -15 008 1273 -56 1 )
( 422 027 -319 464 96 507 -15 008 1273 -56 1 )
( 422 091 -319 464 96 507 -15 008 1273 -56 1 )
( 421 803 -319 432 96 507 -15 008 1273 -56 1 )
( 421 515 -319 400 96 507 -15 008 1273 -56 1 )
( 423 835 -319 816 96 523 -15 008 1273 -56 1 )
( 423 547 -319 784 96 523 -15 008 1273 -56 1 )
( 423 323 -319 752 96 523 -15 008 1273 -56 1 )
( 423 035 -319 720 96 523 -15 008 1273 -56 1 )
( 424 843 -320 072 96 539 -15 008 1273 -56 1 )
( 424 555 -320 040 96 539 -15 008 1273 -56 1 )
( 426 075 -320 360 96 555 -15 008 1273 -56 1 )
( 412 947 -316 720 96 243 -15 000 1273 -56 1 )
( 412 659 -316 688 96 243 -15 000 1273 -56 1 )
( 414 531 -317 040 96 259 -15 000 1273 -56 1 )
( 414 179 -317 008 96 259 -15 000 1273 -56 1 )
( 414 243 -317 008 96 259 -15 000 1273 -56 1 )
( 413 955 -316 976 96 259 -15 000 1273 -56 1 )
( 413 667 -316 944 96 259 -15 000 1273 -56 1 )
( 415 763 -317 328 96 275 -15 000 1273 -56 1 )
( 415 475 -317 296 96 275 -15 000 1273 -56 1 )
( 415 530 -317 300 96 275 -15 000 1273 -56 1 )

```

415 539	-317 296	96 275	-15 000	1273	-56	1
415 187	-317 264	96 275	-15 000	1273	-56	1
415 251	-317 264	96 275	-15 000	1273	-56	1
414 963	-317 232	96 275	-15 000	1273	-56	1
414 675	-317 200	96 275	-15 000	1273	-56	1
416 707	-317 584	96 291	-15 000	1273	-56	1
416 771	-317 584	96 291	-15 000	1273	-56	1
416 483	-317 552	96 291	-15 000	1273	-56	1
416 547	-317 552	96 291	-15 000	1273	-56	1
416 195	-317 520	96 291	-15 000	1273	-56	1
418 003	-317 872	96 307	-15 000	1273	-56	1
417 715	-317 840	96 307	-15 000	1273	-56	1
404 811	-314 232	95 995	-14 992	1273	-56	1
404 523	-314 200	95 995	-14 992	1273	-56	1
406 107	-314 520	96 011	-14 992	1273	-56	1
405 819	-314 488	96 011	-14 992	1273	-56	1
407 691	-314 840	96 027	-14 992	1273	-56	1
407 403	-314 808	96 027	-14 992	1273	-56	1
407 115	-314 776	96 027	-14 992	1273	-56	1
406 827	-314 744	96 027	-14 992	1273	-56	1
408 987	-315 128	96 043	-14 992	1273	-56	1
408 635	-315 096	96 043	-14 992	1273	-56	1
408 699	-315 096	96 043	-14 992	1273	-56	1
408 347	-315 064	96 043	-14 992	1273	-56	1
408 411	-315 064	96 043	-14 992	1273	-56	1
408 123	-315 032	96 043	-14 992	1273	-56	1
407 835	-315 000	96 043	-14 992	1273	-56	1
409 931	-315 384	96 059	-14 992	1273	-56	1
409 995	-315 384	96 059	-14 992	1273	-56	1
409 643	-315 352	96 059	-14 992	1273	-56	1
409 707	-315 352	96 059	-14 992	1273	-56	1
409 355	-315 320	96 059	-14 992	1273	-56	1
411 227	-315 672	96 075	-14 992	1273	-56	1
410 875	-315 640	96 075	-14 992	1273	-56	1
398 979	-312 288	95 779	-14 984	1273	-56	1
400 275	-312 576	95 795	-14 984	1273	-56	1
399 987	-312 544	95 795	-14 984	1273	-56	1
401 859	-312 896	95 811	-14 984	1273	-56	1
401 571	-312 864	95 811	-14 984	1273	-56	1
401 283	-312 832	95 811	-14 984	1273	-56	1
400 995	-312 800	95 811	-14 984	1273	-56	1
403 443	-313 216	95 827	-14 984	1273	-56	1
403 155	-313 184	95 827	-14 984	1273	-56	1
402 803	-313 152	95 827	-14 984	1273	-56	1
402 867	-313 152	95 827	-14 984	1273	-56	1
402 515	-313 120	95 827	-14 984	1273	-56	1
393 147	-310 344	95 563	-14 976	1273	-56	1
394 731	-310 664	95 579	-14 976	1273	-56	1
394 443	-310 632	95 579	-14 976	1273	-56	1
394 155	-310 600	95 579	-14 976	1273	-56	1
396 027	-310 952	95 595	-14 976	1273	-56	1
395 675	-310 920	95 595	-14 976	1273	-56	1
387 603	-308 432	95 347	-14 968	1273	-56	1
387 315	-308 400	95 347	-14 968	1273	-56	1

Dimensions[A3]

{80, 7}

gpart[chi3]

{20 773 755, -15 668 520, 4 728 683, -735 328, 62 377, -2744, 49}

```
FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 &&
  n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 &&
  n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 &&
  n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 &&
  n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 && n[43] ≥ 0 &&
  n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 && n[49] ≥ 0 &&
  n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 && n[55] ≥ 0 &&
  n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 && n[61] ≥ 0 &&
  n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 && n[67] ≥ 0 &&
  n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 && n[73] ≥ 0 &&
  n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 && n[79] ≥ 0 &&
  n[80] ≥ 0 && Array[n, 80].A3 == gpart[chi3], Array[n, 80], Integers]
```

```
{ {n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
  n[8] → 0, n[9] → 0, n[10] → 0, n[11] → 9, n[12] → 4, n[13] → 0, n[14] → 0,
  n[15] → 0, n[16] → 0, n[17] → 28, n[18] → 0, n[19] → 0, n[20] → 0,
  n[21] → 0, n[22] → 0, n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0,
  n[27] → 0, n[28] → 0, n[29] → 0, n[30] → 0, n[31] → 0, n[32] → 7,
  n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0, n[37] → 1, n[38] → 0, n[39] → 0,
  n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0, n[44] → 0, n[45] → 0, n[46] → 0,
  n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0, n[52] → 0, n[53] → 0,
  n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0, n[58] → 0, n[59] → 0, n[60] → 0,
  n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0, n[65] → 0, n[66] → 0, n[67] → 0,
  n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0, n[72] → 0, n[73] → 0, n[74] → 0,
  n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0, n[79] → 0, n[80] → 0 } }
```

```

Array[n, 80] /. {n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0,
  n[6] → 0, n[7] → 0, n[8] → 0, n[9] → 0, n[10] → 0, n[11] → 9, n[12] → 4,
  n[13] → 0, n[14] → 0, n[15] → 0, n[16] → 0, n[17] → 28, n[18] → 0,
  n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0, n[23] → 0, n[24] → 0,
  n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 0, n[29] → 0, n[30] → 0, n[31] → 0,
  n[32] → 7, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0, n[37] → 1, n[38] → 0,
  n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0, n[44] → 0, n[45] → 0,
  n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0, n[52] → 0,
  n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0, n[58] → 0, n[59] → 0,
  n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0, n[65] → 0, n[66] → 0,
  n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0, n[72] → 0, n[73] → 0,
  n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0, n[79] → 0, n[80] → 0}
{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 9, 4, 0, 0, 0, 0, 28, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 7, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0}

```

11, 12, 17, 32, 37

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] == 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 &&
  n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 &&
  n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 &&
  n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 &&
  n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 && n[43] ≥ 0 &&
  n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 && n[49] ≥ 0 &&
  n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 && n[55] ≥ 0 &&
  n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 && n[61] ≥ 0 &&
  n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 && n[67] ≥ 0 &&
  n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 && n[73] ≥ 0 &&
  n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 && n[79] ≥ 0 &&
  n[80] ≥ 0 && Array[n, 80].A3 == gpart[chi3], Array[n, 80], Integers]
{}

```



```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 &&
  n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 &&
  n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 &&
  n[32] == 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 &&
  n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 && n[43] ≥ 0 &&
  n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 && n[49] ≥ 0 &&
  n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 && n[55] ≥ 0 &&
  n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 && n[61] ≥ 0 &&
  n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 && n[67] ≥ 0 &&
  n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 && n[73] ≥ 0 &&
  n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 && n[79] ≥ 0 &&
  n[80] ≥ 0 && Array[n, 80].A3 == gpart[chi3], Array[n, 80], Integers]
{ {n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
  n[8] → 0, n[9] → 0, n[10] → 0, n[11] → 10, n[12] → 1, n[13] → 0, n[14] → 0,
  n[15] → 0, n[16] → 0, n[17] → 34, n[18] → 0, n[19] → 0, n[20] → 0,
  n[21] → 0, n[22] → 0, n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0,
  n[27] → 0, n[28] → 0, n[29] → 0, n[30] → 0, n[31] → 0, n[32] → 0,
  n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0, n[37] → 0, n[38] → 0, n[39] → 3,
  n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0, n[44] → 0, n[45] → 0, n[46] → 0,
  n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0, n[52] → 0, n[53] → 0,
  n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0, n[58] → 0, n[59] → 0, n[60] → 1,
  n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0, n[65] → 0, n[66] → 0, n[67] → 0,
  n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0, n[72] → 0, n[73] → 0, n[74] → 0,
  n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0, n[79] → 0, n[80] → 0} }

```

```
FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 &&
  n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 &&
  n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 &&
  n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 && n[37] == 0 &&
  n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 && n[43] ≥ 0 &&
  n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 && n[49] ≥ 0 &&
  n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 && n[55] ≥ 0 &&
  n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 && n[61] ≥ 0 &&
  n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 && n[67] ≥ 0 &&
  n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 && n[73] ≥ 0 &&
  n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 && n[79] ≥ 0 &&
  n[80] ≥ 0 && Array[n, 80].A3 == gpart[chi3], Array[n, 80], Integers]
```

```
{ {n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
  n[8] → 0, n[9] → 0, n[10] → 0, n[11] → 10, n[12] → 4, n[13] → 0, n[14] → 0,
  n[15] → 0, n[16] → 0, n[17] → 28, n[18] → 0, n[19] → 0, n[20] → 0,
  n[21] → 0, n[22] → 0, n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0,
  n[27] → 0, n[28] → 0, n[29] → 0, n[30] → 0, n[31] → 0, n[32] → 6,
  n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0, n[37] → 0, n[38] → 0, n[39] → 0,
  n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0, n[44] → 0, n[45] → 0, n[46] → 0,
  n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0, n[52] → 0, n[53] → 0,
  n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0, n[58] → 0, n[59] → 0, n[60] → 1,
  n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0, n[65] → 0, n[66] → 0, n[67] → 0,
  n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0, n[72] → 0, n[73] → 0, n[74] → 0,
  n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0, n[79] → 0, n[80] → 0 } }
```

```
list3[{11, 17}] * mu[chi3] // Factor
```

```
{ (-9 + x)11 (5 + x)31 (423 835 - 319 816 x + 96 523 x2 - 15 008 x3 + 1273 x4 - 56 x5 + x6),
  (-9 + x)11 (5 + x)31 (95 - 20 x + x2) (4485 - 2428 x + 458 x2 - 36 x3 + x4) }
```

```
Array[m, 7].Transpose[A3]
```

```
{ 428 355 m[1] - 321 600 m[2] + 96 739 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7],
  430 163 m[1] - 321 952 m[2] + 96 755 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7],
  429 875 m[1] - 321 920 m[2] + 96 755 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7],
  431 395 m[1] - 322 240 m[2] + 96 771 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7],
  420 507 m[1] - 319 144 m[2] + 96 491 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
  422 315 m[1] - 319 496 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
  422 027 m[1] - 319 464 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
  422 091 m[1] - 319 464 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
  421 803 m[1] - 319 432 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
  421 515 m[1] - 319 400 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
  423 835 m[1] - 319 816 m[2] + 96 523 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
  423 547 m[1] - 319 784 m[2] + 96 523 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
  423 323 m[1] - 319 752 m[2] + 96 523 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
  423 035 m[1] - 319 720 m[2] + 96 523 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
  424 843 m[1] - 320 072 m[2] + 96 539 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7],
```

424 555 m[1] - 320 040 m[2] + 96 539 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 426 075 m[1] - 320 360 m[2] + 96 555 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 412 947 m[1] - 316 720 m[2] + 96 243 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 412 659 m[1] - 316 688 m[2] + 96 243 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 414 531 m[1] - 317 040 m[2] + 96 259 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 414 179 m[1] - 317 008 m[2] + 96 259 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 414 243 m[1] - 317 008 m[2] + 96 259 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 413 955 m[1] - 316 976 m[2] + 96 259 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 413 667 m[1] - 316 944 m[2] + 96 259 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 415 763 m[1] - 317 328 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 415 475 m[1] - 317 296 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 415 539 m[1] - 317 296 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 415 187 m[1] - 317 264 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 415 251 m[1] - 317 264 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 414 963 m[1] - 317 232 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 414 675 m[1] - 317 200 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 416 707 m[1] - 317 584 m[2] + 96 291 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 416 771 m[1] - 317 584 m[2] + 96 291 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 416 483 m[1] - 317 552 m[2] + 96 291 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 416 547 m[1] - 317 552 m[2] + 96 291 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 416 195 m[1] - 317 520 m[2] + 96 291 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 418 003 m[1] - 317 872 m[2] + 96 307 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 417 715 m[1] - 317 840 m[2] + 96 307 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 404 811 m[1] - 314 232 m[2] + 95 995 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 404 523 m[1] - 314 200 m[2] + 95 995 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 107 m[1] - 314 520 m[2] + 96 011 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 405 819 m[1] - 314 488 m[2] + 96 011 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 691 m[1] - 314 840 m[2] + 96 027 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 403 m[1] - 314 808 m[2] + 96 027 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 115 m[1] - 314 776 m[2] + 96 027 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 827 m[1] - 314 744 m[2] + 96 027 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 987 m[1] - 315 128 m[2] + 96 043 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 635 m[1] - 315 096 m[2] + 96 043 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 699 m[1] - 315 096 m[2] + 96 043 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 347 m[1] - 315 064 m[2] + 96 043 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 411 m[1] - 315 064 m[2] + 96 043 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 123 m[1] - 315 032 m[2] + 96 043 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 835 m[1] - 315 000 m[2] + 96 043 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 409 931 m[1] - 315 384 m[2] + 96 059 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 409 995 m[1] - 315 384 m[2] + 96 059 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 409 643 m[1] - 315 352 m[2] + 96 059 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 409 707 m[1] - 315 352 m[2] + 96 059 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 409 355 m[1] - 315 320 m[2] + 96 059 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 411 227 m[1] - 315 672 m[2] + 96 075 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 410 875 m[1] - 315 640 m[2] + 96 075 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 398 979 m[1] - 312 288 m[2] + 95 779 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 400 275 m[1] - 312 576 m[2] + 95 795 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,

$399\,987\,m[1] - 312\,544\,m[2] + 95\,795\,m[3] - 14\,984\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $401\,859\,m[1] - 312\,896\,m[2] + 95\,811\,m[3] - 14\,984\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $401\,571\,m[1] - 312\,864\,m[2] + 95\,811\,m[3] - 14\,984\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $401\,283\,m[1] - 312\,832\,m[2] + 95\,811\,m[3] - 14\,984\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $400\,995\,m[1] - 312\,800\,m[2] + 95\,811\,m[3] - 14\,984\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $403\,443\,m[1] - 313\,216\,m[2] + 95\,827\,m[3] - 14\,984\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $403\,155\,m[1] - 313\,184\,m[2] + 95\,827\,m[3] - 14\,984\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $402\,803\,m[1] - 313\,152\,m[2] + 95\,827\,m[3] - 14\,984\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $402\,867\,m[1] - 313\,152\,m[2] + 95\,827\,m[3] - 14\,984\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $402\,515\,m[1] - 313\,120\,m[2] + 95\,827\,m[3] - 14\,984\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $393\,147\,m[1] - 310\,344\,m[2] + 95\,563\,m[3] - 14\,976\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $394\,731\,m[1] - 310\,664\,m[2] + 95\,579\,m[3] - 14\,976\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $394\,443\,m[1] - 310\,632\,m[2] + 95\,579\,m[3] - 14\,976\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $394\,155\,m[1] - 310\,600\,m[2] + 95\,579\,m[3] - 14\,976\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $396\,027\,m[1] - 310\,952\,m[2] + 95\,595\,m[3] - 14\,976\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $395\,675\,m[1] - 310\,920\,m[2] + 95\,595\,m[3] - 14\,976\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $387\,603\,m[1] - 308\,432\,m[2] + 95\,347\,m[3] - 14\,968\,m[4] + 1273\,m[5] - 56\,m[6] + m[7],$
 $387\,315\,m[1] - 308\,400\,m[2] + 95\,347\,m[3] - 14\,968\,m[4] + 1273\,m[5] - 56\,m[6] + m[7]\}$

Array[m, 7].gpart[chi3]

$20\,773\,755\,m[1] - 15\,668\,520\,m[2] + 4\,728\,683\,m[3] -$
 $735\,328\,m[4] + 62\,377\,m[5] - 2744\,m[6] + 49\,m[7]$

FindInstance[20 773 755 m[1] - 15 668 520 m[2] +

$4\,728\,683\,m[3] - 735\,328\,m[4] + 62\,377\,m[5] - 2744\,m[6] + 49\,m[7] < 0 \&\&$
 $428\,355\,m[1] - 321\,600\,m[2] + 96\,739\,m[3] - 15\,016\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $430\,163\,m[1] - 321\,952\,m[2] + 96\,755\,m[3] - 15\,016\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $429\,875\,m[1] - 321\,920\,m[2] + 96\,755\,m[3] - 15\,016\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $431\,395\,m[1] - 322\,240\,m[2] + 96\,771\,m[3] - 15\,016\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $420\,507\,m[1] - 319\,144\,m[2] + 96\,491\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $422\,315\,m[1] - 319\,496\,m[2] + 96\,507\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $422\,027\,m[1] - 319\,464\,m[2] + 96\,507\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $422\,091\,m[1] - 319\,464\,m[2] + 96\,507\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $421\,803\,m[1] - 319\,432\,m[2] + 96\,507\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $421\,515\,m[1] - 319\,400\,m[2] + 96\,507\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $423\,835\,m[1] - 319\,816\,m[2] + 96\,523\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $423\,547\,m[1] - 319\,784\,m[2] + 96\,523\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $423\,323\,m[1] - 319\,752\,m[2] + 96\,523\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $423\,035\,m[1] - 319\,720\,m[2] + 96\,523\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $424\,843\,m[1] - 320\,072\,m[2] + 96\,539\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $424\,555\,m[1] - 320\,040\,m[2] + 96\,539\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $426\,075\,m[1] - 320\,360\,m[2] + 96\,555\,m[3] - 15\,008\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $412\,947\,m[1] - 316\,720\,m[2] + 96\,243\,m[3] - 15\,000\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $412\,659\,m[1] - 316\,688\,m[2] + 96\,243\,m[3] - 15\,000\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $414\,531\,m[1] - 317\,040\,m[2] + 96\,259\,m[3] - 15\,000\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $414\,179\,m[1] - 317\,008\,m[2] + 96\,259\,m[3] - 15\,000\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$
 $414\,243\,m[1] - 317\,008\,m[2] + 96\,259\,m[3] - 15\,000\,m[4] + 1273\,m[5] - 56\,m[6] + m[7] \geq 0 \&\&$

413 955 m[1]	- 316 976 m[2]	+ 96 259 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
413 667 m[1]	- 316 944 m[2]	+ 96 259 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
415 763 m[1]	- 317 328 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
415 475 m[1]	- 317 296 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
415 539 m[1]	- 317 296 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
415 187 m[1]	- 317 264 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
415 251 m[1]	- 317 264 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
414 963 m[1]	- 317 232 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
414 675 m[1]	- 317 200 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 707 m[1]	- 317 584 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 771 m[1]	- 317 584 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 483 m[1]	- 317 552 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 547 m[1]	- 317 552 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 195 m[1]	- 317 520 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
418 003 m[1]	- 317 872 m[2]	+ 96 307 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
417 715 m[1]	- 317 840 m[2]	+ 96 307 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
404 811 m[1]	- 314 232 m[2]	+ 95 995 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
404 523 m[1]	- 314 200 m[2]	+ 95 995 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
406 107 m[1]	- 314 520 m[2]	+ 96 011 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
405 819 m[1]	- 314 488 m[2]	+ 96 011 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 691 m[1]	- 314 840 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 403 m[1]	- 314 808 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 115 m[1]	- 314 776 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
406 827 m[1]	- 314 744 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 987 m[1]	- 315 128 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 635 m[1]	- 315 096 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 699 m[1]	- 315 096 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 347 m[1]	- 315 064 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 411 m[1]	- 315 064 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 123 m[1]	- 315 032 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 835 m[1]	- 315 000 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
409 931 m[1]	- 315 384 m[2]	+ 96 059 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
409 995 m[1]	- 315 384 m[2]	+ 96 059 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
409 643 m[1]	- 315 352 m[2]	+ 96 059 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
409 707 m[1]	- 315 352 m[2]	+ 96 059 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
409 355 m[1]	- 315 320 m[2]	+ 96 059 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
411 227 m[1]	- 315 672 m[2]	+ 96 075 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
410 875 m[1]	- 315 640 m[2]	+ 96 075 m[3]	- 14 992 m[4]</				


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402 803 m[1] - 313 152 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
402 867 m[1] - 313 152 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
402 515 m[1] - 313 120 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
393 147 m[1] - 310 344 m[2] + 95 563 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
394 731 m[1] - 310 664 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
394 443 m[1] - 310 632 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
394 155 m[1] - 310 600 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
396 027 m[1] - 310 952 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
395 675 m[1] - 310 920 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 603 m[1] - 308 432 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 315 m[1] - 308 400 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{}

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FindInstance[20 773 755 m[1] - 15 668 520 m[2] +
  4 728 683 m[3] - 735 328 m[4] + 62 377 m[5] - 2744 m[6] + 49 m[7] < 0 &&
428 355 m[1] - 321 600 m[2] + 96 739 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
430 163 m[1] - 321 952 m[2] + 96 755 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
429 875 m[1] - 321 920 m[2] + 96 755 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
431 395 m[1] - 322 240 m[2] + 96 771 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
420 507 m[1] - 319 144 m[2] + 96 491 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
422 315 m[1] - 319 496 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
422 027 m[1] - 319 464 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
422 091 m[1] - 319 464 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
421 803 m[1] - 319 432 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
421 515 m[1] - 319 400 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
423 835 m[1] - 319 816 m[2] + 96 523 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] < 0 &&
423 547 m[1] - 319 784 m[2] + 96 523 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
423 323 m[1] - 319 752 m[2] + 96 523 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
423 035 m[1] - 319 720 m[2] + 96 523 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
424 843 m[1] - 320 072 m[2] + 96 539 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
424 555 m[1] - 320 040 m[2] + 96 539 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
426 075 m[1] - 320 360 m[2] + 96 555 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
412 947 m[1] - 316 720 m[2] + 96 243 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
412 659 m[1] - 316 688 m[2] + 96 243 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 531 m[1] - 317 040 m[2] + 96 259 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 179 m[1] - 317 008 m[2] + 96 259 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 243 m[1] - 317 008 m[2] + 96 259 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
413 955 m[1] - 316 976 m[2] + 96 259 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
413 667 m[1] - 316 944 m[2] + 96 259 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 763 m[1] - 317 328 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 475 m[1] - 317 296 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 539 m[1] - 317 296 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 187 m[1] - 317 264 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 251 m[1] - 317 264 m[2] + 96 275 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&

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414 963 m[1]	- 317 232 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
414 675 m[1]	- 317 200 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 707 m[1]	- 317 584 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 771 m[1]	- 317 584 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 483 m[1]	- 317 552 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 547 m[1]	- 317 552 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 195 m[1]	- 317 520 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
418 003 m[1]	- 317 872 m[2]	+ 96 307 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
417 715 m[1]	- 317 840 m[2]	+ 96 307 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
404 811 m[1]	- 314 232 m[2]	+ 95 995 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
404 523 m[1]	- 314 200 m[2]	+ 95 995 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
406 107 m[1]	- 314 520 m[2]	+ 96 011 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
405 819 m[1]	- 314 488 m[2]	+ 96 011 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 691 m[1]	- 314 840 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 403 m[1]	- 314 808 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 115 m[1]	- 314 776 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
406 827 m[1]	- 314 744 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 987 m[1]	- 315 128 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 635 m[1]	- 315 096 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 699 m[1]	- 315 096 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 347 m[1]	- 315 064 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 411 m[1]	- 315 064 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
408 123 m[1]	- 315 032 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 835 m[1]	- 315 000 m[2]	+ 96 043 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
409 931 m[1]	- 315 384 m[2]	+ 96 059 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
409 995 m[1]	- 315 384 m[2]	+ 96 059 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
409 643 m[1]	- 315 352 m[2]	+ 96 059 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
409 707 m[1]	- 315 352 m[2]	+ 96 059 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
409 355 m[1]	- 315 320 m[2]	+ 96 059 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
411 227 m[1]	- 315 672 m[2]	+ 96 075 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
410 875 m[1]	- 315 640 m[2]	+ 96 075 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
398 979 m[1]	- 312 288 m[2]	+ 95 779 m[3]	- 14 984 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
400 275 m[1]	- 312 576 m[2]	+ 95 795 m[3]	- 14 984 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
399 987 m[1]	- 312 544 m[2]	+ 95 795 m[3]	- 14 984 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
401 859 m[1]	- 312 896 m[2]	+ 95 811 m[3]	- 14 984 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
401 571 m[1]	- 312 864 m[2]	+ 95 811 m[3]	- 14 984 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
401 283 m[1]	- 312 832 m[2]	+ 95 811 m[3]	- 14 984 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
400 995 m[1]	- 312 800 m[2]	+ 95 811 m[3]	- 14 984 m[4]</				

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396 027 m[1] - 310 952 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
395 675 m[1] - 310 920 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 603 m[1] - 308 432 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 315 m[1] - 308 400 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{{m[1] → 0, m[2] → 1 311 608, m[3] → 23 608 945,
  m[4] → 329 213 615, m[5] → 0, m[6] → 0, m[7] → 3 081 463 054 228}}

Array[m, 7] /. {m[1] → 0, m[2] → 1 311 608, m[3] → 23 608 945,
  m[4] → 329 213 615, m[5] → 0, m[6] → 0, m[7] → 3 081 463 054 228}
{0, 1 311 608, 23 608 945, 329 213 615, 0, 0, 3 081 463 054 228}

GCD[0, 1 311 608, 23 608 945, 329 213 615, 0, 0, 3 081 463 054 228]
1

Reverse[{0, 1 311 608, 23 608 945, 329 213 615, 0, 0, 3 081 463 054 228}]
{3 081 463 054 228, 0, 0, 329 213 615, 23 608 945, 1 311 608, 0}

{0, 1 311 608, 23 608 945, 329 213 615, 0, 0, 3 081 463 054 228}.gpart[chi3]
-38 744 273

{0, 1 311 608, 23 608 945, 329 213 615, 0, 0, 3 081 463 054 228}.Transpose[A3]
{84 008 943, 66 047, 42 037 503, 66 063, 84 008 751, 65 855, 42 037 311, 42 037 311,
84 008 767, 125 980 223, -41 905 585, 65 871, 42 037 327, 84 008 783, 65 887,
42 037 343, 65 903, 42 037 103, 84 008 559, 65 663, 42 037 119, 42 037 119,
84 008 575, 125 980 031, 65 679, 42 037 135, 42 037 135, 84 008 591, 84 008 591,
125 980 047, 167 951 503, 42 037 151, 42 037 151, 84 008 607, 84 008 607, 125 980 063,
42 037 167, 84 008 623, 84 008 367, 125 979 823, 84 008 383, 125 979 839, 42 036 943,
84 008 399, 125 979 855, 167 951 311, 42 036 959, 84 008 415, 84 008 415, 125 979 871,
125 979 871, 167 951 327, 209 922 783, 84 008 431, 84 008 431, 125 979 887,
125 979 887, 167 951 343, 84 008 447, 125 979 903, 167 951 119, 167 951 135,
209 922 591, 125 979 695, 167 951 151, 209 922 607, 251 894 063, 84 008 255,
125 979 711, 167 951 167, 167 951 167, 209 922 623, 251 893 871, 209 922 431,
251 893 887, 293 865 343, 209 922 447, 251 893 903, 293 865 167, 335 836 623}

FindInstance[20 773 755 m[1] - 15 668 520 m[2] +
  4 728 683 m[3] - 735 328 m[4] + 62 377 m[5] - 2744 m[6] + 49 m[7] < 0 &&
  428 355 m[1] - 321 600 m[2] + 96 739 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  430 163 m[1] - 321 952 m[2] + 96 755 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  429 875 m[1] - 321 920 m[2] + 96 755 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  431 395 m[1] - 322 240 m[2] + 96 771 m[3] - 15 016 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  420 507 m[1] - 319 144 m[2] + 96 491 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  422 315 m[1] - 319 496 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  422 027 m[1] - 319 464 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  422 091 m[1] - 319 464 m[2] + 96 507 m[3] - 15 008 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&

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421 803 m[1]	- 319 432 m[2]	+ 96 507 m[3]	- 15 008 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
421 515 m[1]	- 319 400 m[2]	+ 96 507 m[3]	- 15 008 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
423 835 m[1]	- 319 816 m[2]	+ 96 523 m[3]	- 15 008 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
423 547 m[1]	- 319 784 m[2]	+ 96 523 m[3]	- 15 008 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
423 323 m[1]	- 319 752 m[2]	+ 96 523 m[3]	- 15 008 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
423 035 m[1]	- 319 720 m[2]	+ 96 523 m[3]	- 15 008 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
424 843 m[1]	- 320 072 m[2]	+ 96 539 m[3]	- 15 008 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
424 555 m[1]	- 320 040 m[2]	+ 96 539 m[3]	- 15 008 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
426 075 m[1]	- 320 360 m[2]	+ 96 555 m[3]	- 15 008 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	< 0 &&
412 947 m[1]	- 316 720 m[2]	+ 96 243 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
412 659 m[1]	- 316 688 m[2]	+ 96 243 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
414 531 m[1]	- 317 040 m[2]	+ 96 259 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
414 179 m[1]	- 317 008 m[2]	+ 96 259 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
414 243 m[1]	- 317 008 m[2]	+ 96 259 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
413 955 m[1]	- 316 976 m[2]	+ 96 259 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
413 667 m[1]	- 316 944 m[2]	+ 96 259 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
415 763 m[1]	- 317 328 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
415 475 m[1]	- 317 296 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
415 539 m[1]	- 317 296 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
415 187 m[1]	- 317 264 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
415 251 m[1]	- 317 264 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
414 963 m[1]	- 317 232 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
414 675 m[1]	- 317 200 m[2]	+ 96 275 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 707 m[1]	- 317 584 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 771 m[1]	- 317 584 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 483 m[1]	- 317 552 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 547 m[1]	- 317 552 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
416 195 m[1]	- 317 520 m[2]	+ 96 291 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
418 003 m[1]	- 317 872 m[2]	+ 96 307 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
417 715 m[1]	- 317 840 m[2]	+ 96 307 m[3]	- 15 000 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
404 811 m[1]	- 314 232 m[2]	+ 95 995 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
404 523 m[1]	- 314 200 m[2]	+ 95 995 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
406 107 m[1]	- 314 520 m[2]	+ 96 011 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
405 819 m[1]	- 314 488 m[2]	+ 96 011 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 691 m[1]	- 314 840 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 403 m[1]	- 314 808 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
407 115 m[1]	- 314 776 m[2]	+ 96 027 m[3]	- 14 992 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
406 827 m[1]	- 314 744 m[2]	+ 96 027 m[3]	- 14 992 m[4				

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409 643 m[1] - 315 352 m[2] + 96 059 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
409 707 m[1] - 315 352 m[2] + 96 059 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
409 355 m[1] - 315 320 m[2] + 96 059 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
411 227 m[1] - 315 672 m[2] + 96 075 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
410 875 m[1] - 315 640 m[2] + 96 075 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 979 m[1] - 312 288 m[2] + 95 779 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 275 m[1] - 312 576 m[2] + 95 795 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
399 987 m[1] - 312 544 m[2] + 95 795 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
401 859 m[1] - 312 896 m[2] + 95 811 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
401 571 m[1] - 312 864 m[2] + 95 811 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
401 283 m[1] - 312 832 m[2] + 95 811 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 995 m[1] - 312 800 m[2] + 95 811 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
403 443 m[1] - 313 216 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
403 155 m[1] - 313 184 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
402 803 m[1] - 313 152 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
402 867 m[1] - 313 152 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
402 515 m[1] - 313 120 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
393 147 m[1] - 310 344 m[2] + 95 563 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
394 731 m[1] - 310 664 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
394 443 m[1] - 310 632 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
394 155 m[1] - 310 600 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
396 027 m[1] - 310 952 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
395 675 m[1] - 310 920 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 603 m[1] - 308 432 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 315 m[1] - 308 400 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]

{{m[1] → -26 537, m[2] → -107 333,
  m[3] → -239 073, m[4] → 0, m[5] → 0, m[6] → 0, m[7] → 0}}

Array[m, 7] /. {m[1] → -26 537, m[2] → -107 333,
  m[3] → -239 073, m[4] → 0, m[5] → 0, m[6] → 0, m[7] → 0}
{-26 537, -107 333, -239 073, 0, 0, 0, 0}

GCD[-26 537, -107 333, -239 073, 0, 0, 0, 0]
1

Reverse[{-26 537, -107 333, -239 073, 0, 0, 0, 0}]
{0, 0, 0, 0, -239 073, -107 333, -26 537}

{-26 537, -107 333, -239 073, 0, 0, 0, 0}.gpart[chi3]
-24 310 134

```

```
{-26537, -107333, -239073, 0, 0, 0, 0}.Transpose[A3]
{23353218, 9330370, 13538370, 3723522, 27295850, 13273002, 17481002,
15782634, 19990634, 24198634, 3458154, 7666154, 10175786, 14383786, 360938,
4568938, -5245910, 27030482, 31238482, 15517266, 21423634, 19725266,
23933266, 28141266, 9910418, 14118418, 12420050, 18326418, 16628050,
20836050, 25044050, 8511570, 6813202, 11021202, 9322834, 15229202, 1206354,
5414354, 35181114, 39389114, 27875898, 32083898, 16362682, 20570682,
24778682, 28986682, 9057466, 14963834, 13265466, 19171834, 17473466,
21681466, 25889466, 7658618, 5960250, 11866618, 10168250, 16074618, 353402,
6259770, 32929314, 25624098, 29832098, 14110882, 18318882, 22526882,
26734882, 2597666, 6805666, 12712034, 11013666, 16920034, 30677514,
19164298, 23372298, 27580298, 11859082, 17765450, 24217714, 28425714}
```

```
anglesq3 = anglesquaredmat[chi3, list3] // FullSimplify;
```

```
Dimensions[anglesq3]
```

```
{80, 7}
```

```
angle3 = Sqrt[anglesq3] // FullSimplify;
```

```
angle3 // MatrixForm
```

$3 \sqrt{\frac{66}{907}}$	$\text{Root}[-12 + 16406 \#1^2 - 270119 \#1^4 + 782741 \#1^6 \&, 5]$	0
$\sqrt{\frac{228814}{349195}}$	$\text{Root}[-71 + 43919 \#1^2 - 4981236 \#1^4 + 28178676 \#1^6 \&, 5]$	$\sqrt{\frac{1}{110}} (4 -$
$8 \sqrt{\frac{65}{6349}}$	$\text{Root}[-316 + 72530 \#1^2 - 1757931 \#1^4 + 7044669 \#1^6 \&, 5]$	0
$\sqrt{\frac{4162}{6349}}$	$\text{Root}[-116 + 22022 \#1^2 - 1084791 \#1^4 + 7044669 \#1^6 \&, 5]$	0
$2 \sqrt{\frac{8137}{49885}}$	$\text{Root}[-321 + 178643 \#1^2 - 2666670 \#1^4 + 9392892 \#1^6 \&, 5]$	$\text{Root}[1 - 70 \#1^2 +$
$2 \sqrt{\frac{11398}{69839}}$	$\text{Root}[-239 + 84269 \#1^2 - 3256962 \#1^4 + 28178676 \#1^6 \&, 5]$	$\frac{1}{2} \sqrt{\frac{1}{55}} (15$
$\sqrt{\frac{227946}{349195}}$	$\text{Root}[-1351 + 254621 \#1^2 - 5307450 \#1^4 + 28178676 \#1^6 \&, 5]$	$\text{Root}[1 - 70 \#1^2 +$
$2 \sqrt{\frac{8141}{49885}}$	$\text{Root}[-27 + 4911 \#1^2 - 157929 \#1^4 + 782741 \#1^6 \&, 5]$	$\sqrt{\frac{1}{55}} (4 +$
$9 \sqrt{\frac{402}{49885}}$	$\text{Root}[-1241 + 150497 \#1^2 - 2578644 \#1^4 + 9392892 \#1^6 \&, 5]$	$\sqrt{\frac{1}{110}} (4 -$
$4 \sqrt{\frac{37}{907}}$	$\text{Root}[-724 + 67124 \#1^2 - 815535 \#1^4 + 2348223 \#1^6 \&, 5]$	0
$\sqrt{\frac{45614}{69839}}$	$\text{Root}[-3 + 3041 \#1^2 - 564402 \#1^4 + 28178676 \#1^6 \&, 4]$	$\frac{1}{2} \sqrt{\frac{1}{55}} (15$
$2 \sqrt{\frac{57014}{349195}}$	$\text{Root}[-491 + 71777 \#1^2 - 2614890 \#1^4 + 28178676 \#1^6 \&, 5]$	$\text{Root}[1 - 70 \#1^2 +$
$2 \sqrt{\frac{57011}{349195}}$	$\text{Root}[-1851 + 197075 \#1^2 - 5043372 \#1^4 + 28178676 \#1^6 \&, 5]$	$\sqrt{\frac{1}{110}} (4 -$
$\sqrt{\frac{4146}{6349}}$	$\text{Root}[-1424 + 112364 \#1^2 - 1773465 \#1^4 + 7044669 \#1^6 \&, 5]$	0
$\sqrt{\frac{228154}{349195}}$	$\text{Root}[-139 + 41123 \#1^2 - 2350812 \#1^4 + 28178676 \#1^6 \&, 4]$	$\sqrt{\frac{1}{110}} (4 -$

$2 \sqrt{\frac{1031}{6349}}$	Root $[-588 + 47\,972 \#1^2 - 1\,100\,325 \#1^4 + 7\,044\,669 \#1^6 \&, 5]$	0
$5 \sqrt{\frac{166}{6349}}$	Root $[-16 + 2732 \#1^2 - 142\,395 \#1^4 + 2\,348\,223 \#1^6 \&, 4]$	0
$2 \sqrt{\frac{737}{4535}}$	Root $[-7 + 50\,387 \#1^2 - 1\,408\,416 \#1^4 + 9\,392\,892 \#1^6 \&, 6]$	$\frac{1}{\sqrt{10}}$
$\sqrt{\frac{32\,426}{49\,885}}$	Root $[-81 + 28\,940 \#1^2 - 522\,978 \#1^4 + 2\,348\,223 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (7 -$
$2 \sqrt{\frac{8111}{49\,885}}$	Root $[-13 + 3483 \#1^2 - 212\,298 \#1^4 + 3\,130\,964 \#1^6 \&, 5]$	$\sqrt{\frac{31}{220}} +$
$2 \sqrt{\frac{56\,773}{349\,195}}$	Root $[-109 + 21\,290 \#1^2 - 895\,794 \#1^4 + 7\,044\,669 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (7 -$
$\sqrt{\frac{32\,442}{49\,885}}$	Root $[-327 + 50\,297 \#1^2 - 1\,320\,390 \#1^4 + 9\,392\,892 \#1^6 \&, 5]$	$\sqrt{\frac{23}{220}} +$
$2 \sqrt{\frac{1622}{9977}}$	Root $[-1049 + 116\,579 \#1^2 - 2\,003\,886 \#1^4 + 9\,392\,892 \#1^6 \&, 5]$	$\frac{1}{2} \sqrt{\frac{1}{55}} (15$
$7 \sqrt{\frac{662}{49\,885}}$	Root $[-799 + 69\,765 \#1^2 - 895\,794 \#1^4 + 3\,130\,964 \#1^6 \&, 5]$	Root $[1 - 70 \#1^2 +$
$2 \sqrt{\frac{56\,801}{349\,195}}$	Root $[-73 + 17\,279 \#1^2 - 1\,268\,610 \#1^4 + 28\,178\,676 \#1^6 \&, 6]$	$\sqrt{\frac{23}{220}} +$
$\sqrt{\frac{45\,438}{69\,839}}$	Root $[-1071 + 114\,509 \#1^2 - 3\,319\,098 \#1^4 + 28\,178\,676 \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{1}{55}} (15$
$2 \sqrt{\frac{8114}{49\,885}}$	Root $[-293 + 35\,597 \#1^2 - 1\,232\,364 \#1^4 + 9\,392\,892 \#1^6 \&, 5]$	$\sqrt{\frac{3}{110}} (4 -$
$2 \sqrt{\frac{56\,794}{349\,195}}$	Root $[-3659 + 291\,041 \#1^2 - 5\,369\,586 \#1^4 + 28\,178\,676 \#1^6 \&, 6]$	Root $[1 - 70 \#1^2 +$
$3 \sqrt{\frac{3606}{49\,885}}$	Root $[-331 + 25\,697 \#1^2 - 478\,965 \#1^4 + 2\,348\,223 \#1^6 \&, 5]$	$\sqrt{\frac{1}{55}} (4 +$
$2 \sqrt{\frac{8113}{49\,885}}$	Root $[-1047 + 65\,471 \#1^2 - 866\,452 \#1^4 + 3\,130\,964 \#1^6 \&, 5]$	$\sqrt{\frac{1}{110}} (4 -$
$\sqrt{\frac{590}{907}}$	Root $[-1484 + 79\,118 \#1^2 - 820\,713 \#1^4 + 2\,348\,223 \#1^6 \&, 5]$	0
$9 \sqrt{\frac{2806}{349\,195}}$	Root $[-159 + 52\,661 \#1^2 - 2\,677\,026 \#1^4 + 28\,178\,676 \#1^6 \&, 6]$	Root $[1 - 70 \#1^2 +$
$2 \sqrt{\frac{56\,822}{349\,195}}$	Root $[-257 + 25\,007 \#1^2 - 763\,755 \#1^4 + 7\,044\,669 \#1^6 \&, 5]$	$\sqrt{\frac{1}{55}} (4 +$
$\sqrt{\frac{227\,274}{349\,195}}$	Root $[-4303 + 279\,287 \#1^2 - 5\,105\,508 \#1^4 + 28\,178\,676 \#1^6 \&, 5]$	$\sqrt{\frac{1}{110}} (4 -$
$2 \sqrt{\frac{8117}{49\,885}}$	Root $[-861 + 74\,387 \#1^2 - 1\,827\,834 \#1^4 + 9\,392\,892 \#1^6 \&, 4]$	$\sqrt{\frac{17}{220}} +$
$2 \sqrt{\frac{1033}{6349}}$	Root $[-2556 + 134\,462 \#1^2 - 1\,788\,999 \#1^4 + 7\,044\,669 \#1^6 \&, 5]$	0
$2 \sqrt{\frac{56\,846}{349\,195}}$	Root $[-623 + 67\,799 \#1^2 - 2\,412\,948 \#1^4 + 28\,178\,676 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (4 -$
$\sqrt{\frac{4134}{6349}}$	Root $[-892 + 56\,186 \#1^2 - 1\,115\,859 \#1^4 + 7\,044\,669 \#1^6 \&, 6]$	0
$4 \sqrt{\frac{2019}{49\,885}}$	Root $[-3 + 2741 \#1^2 - 505\,718 \#1^4 + 3\,130\,964 \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{3}{55}} (7$
$\sqrt{\frac{32\,302}{49\,885}}$	Root $[-413 + 74\,747 \#1^2 - 2\,200\,650 \#1^4 + 9\,392\,892 \#1^6 \&, 6]$	Root $[1 - 130 \#1^2 +$
$\sqrt{\frac{2938}{4535}}$	Root $[-89 + 12\,669 \#1^2 - 476\,376 \#1^4 + 3\,130\,964 \#1^6 \&, 6]$	$\frac{1}{\sqrt{10}}$
$2 \sqrt{\frac{8079}{49\,885}}$	Root $[-283 + 26\,360 \#1^2 - 528\,156 \#1^4 + 2\,348\,223 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (7 -$
$\sqrt{\frac{32\,334}{49\,885}}$	Root $[-47 + 11\,273 \#1^2 - 657\,606 \#1^4 + 9\,392\,892 \#1^6 \&, 6]$	$\sqrt{\frac{31}{220}} +$
$2 \sqrt{\frac{8083}{49\,885}}$	Root $[-201 + 17\,727 \#1^2 - 447\,034 \#1^4 + 3\,130\,964 \#1^6 \&, 6]$	$\sqrt{\frac{23}{220}} +$

$\sqrt{\frac{6466}{9977}}$	Root $[-1833 + 121\,523 \, \#1^2 - 2\,024\,598 \, \#1^4 + 9\,392\,892 \, \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{1}{55}} (15$
$6 \sqrt{\frac{898}{49\,885}}$	Root $[-3929 + 216\,299 \, \#1^2 - 2\,708\,094 \, \#1^4 + 9\,392\,892 \, \#1^6 \&, 6]$	Root $[1 - 70 \, \#1^2 +$
$2 \sqrt{\frac{8087}{49\,885}}$	Root $[-16 + 2732 \, \#1^2 - 142\,395 \, \#1^4 + 2\,348\,223 \, \#1^6 \&, 4]$	$\sqrt{\frac{2}{55}} (4 +$
$2 \sqrt{\frac{11\,321}{69\,839}}$	Root $[-79 + 73\,805 \, \#1^2 - 3\,381\,234 \, \#1^4 + 28\,178\,676 \, \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{1}{55}} (15$
$3 \sqrt{\frac{3594}{49\,885}}$	Root $[-243 + 17\,915 \, \#1^2 - 417\,692 \, \#1^4 + 3\,130\,964 \, \#1^6 \&, 5]$	$\sqrt{\frac{3}{110}} (4 -$
$\sqrt{\frac{226\,406}{349\,195}}$	Root $[-3567 + 256\,517 \, \#1^2 - 5\,431\,722 \, \#1^4 + 28\,178\,676 \, \#1^6 \&, 6]$	Root $[1 - 70 \, \#1^2 +$
$2 \sqrt{\frac{8086}{49\,885}}$	Root $[-557 + 30\,749 \, \#1^2 - 484\,143 \, \#1^4 + 2\,348\,223 \, \#1^6 \&, 6]$	$\sqrt{\frac{1}{55}} (4 +$
$\sqrt{\frac{32\,342}{49\,885}}$	Root $[-4753 + 218\,681 \, \#1^2 - 2\,620\,068 \, \#1^4 + 9\,392\,892 \, \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (4 -$
$14 \sqrt{\frac{3}{907}}$	Root $[-708 + 28\,400 \, \#1^2 - 275\,297 \, \#1^4 + 782\,741 \, \#1^6 \&, 6]$	0
$\sqrt{\frac{226\,518}{349\,195}}$	Root $[-267 + 26\,279 \, \#1^2 - 779\,289 \, \#1^4 + 7\,044\,669 \, \#1^6 \&, 6]$	$\sqrt{\frac{1}{55}} (4 +$
$2 \sqrt{\frac{1618}{9977}}$	Root $[-119 + 13\,233 \, \#1^2 - 388\,350 \, \#1^4 + 3\,130\,964 \, \#1^6 \&, 4]$	$\sqrt{\frac{5}{44}} + \frac{1}{4}$
$2 \sqrt{\frac{56\,626}{349\,195}}$	Root $[-5123 + 290\,555 \, \#1^2 - 5\,167\,644 \, \#1^4 + 28\,178\,676 \, \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (4 -$
$\sqrt{\frac{32\,358}{49\,885}}$	Root $[-2029 + 109\,859 \, \#1^2 - 1\,848\,546 \, \#1^4 + 9\,392\,892 \, \#1^6 \&, 5]$	$\sqrt{\frac{17}{220}} + \frac{1}{4}$
$\sqrt{\frac{4118}{6349}}$	Root $[-3136 + 138\,824 \, \#1^2 - 1\,804\,533 \, \#1^4 + 7\,044\,669 \, \#1^6 \&, 6]$	0
$2 \sqrt{\frac{56\,654}{349\,195}}$	Root $[-947 + 92\,597 \, \#1^2 - 2\,853\,078 \, \#1^4 + 28\,178\,676 \, \#1^6 \&, 4]$	$\sqrt{\frac{17}{220}} + \frac{1}{4}$
$2 \sqrt{\frac{1030}{6349}}$	Root $[-452 + 46\,664 \, \#1^2 - 1\,131\,393 \, \#1^4 + 7\,044\,669 \, \#1^6 \&, 6]$	0
$\sqrt{\frac{32\,206}{49\,885}}$	Root $[-47 + 5956 \, \#1^2 - 177\,778 \, \#1^4 + 782\,741 \, \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (7 -$
$6 \sqrt{\frac{179}{9977}}$	Root $[-499 + 34\,273 \, \#1^2 - 681\,770 \, \#1^4 + 3\,130\,964 \, \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{1}{55}} (15$
$\sqrt{\frac{32\,218}{49\,885}}$	Root $[-4149 + 199\,655 \, \#1^2 - 2\,728\,806 \, \#1^4 + 9\,392\,892 \, \#1^6 \&, 6]$	Root $[1 - 70 \, \#1^2 +$
$2 \sqrt{\frac{8059}{49\,885}}$	Root $[-493 + 48\,245 \, \#1^2 - 1\,273\,788 \, \#1^4 + 9\,392\,892 \, \#1^6 \&, 6]$	$\sqrt{\frac{3}{110}} (4 -$
$\sqrt{\frac{32\,234}{49\,885}}$	Root $[-189 + 9963 \, \#1^2 - 163\,107 \, \#1^4 + 782\,741 \, \#1^6 \&, 6]$	$\sqrt{\frac{1}{55}} (4 +$
$2 \sqrt{\frac{8058}{49\,885}}$	Root $[-5309 + 217\,301 \, \#1^2 - 2\,640\,780 \, \#1^4 + 9\,392\,892 \, \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (4 -$
$\sqrt{\frac{586}{907}}$	Root $[-2452 + 85\,370 \, \#1^2 - 831\,069 \, \#1^4 + 2\,348\,223 \, \#1^6 \&, 6]$	0
$2 \sqrt{\frac{733}{4535}}$	Root $[-7 + 3677 \, \#1^2 - 502\,266 \, \#1^4 + 9\,392\,892 \, \#1^6 \&, 5]$	$\frac{1}{2} \sqrt{\frac{3}{5}} +$
$5 \sqrt{\frac{258}{9977}}$	Root $[-681 + 49\,463 \, \#1^2 - 1\,185\,762 \, \#1^4 + 9\,392\,892 \, \#1^6 \&, 5]$	$\sqrt{\frac{5}{44}} + \frac{1}{4}$
$\sqrt{\frac{225\,734}{349\,195}}$	Root $[-2007 + 230\,879 \, \#1^2 - 5\,229\,780 \, \#1^4 + 28\,178\,676 \, \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (4 -$
$2 \sqrt{\frac{8062}{49\,885}}$	Root $[-1 + 47 \, \#1^2 - 722 \, \#1^4 + 3628 \, \#1^6 \&, 6]$	$\sqrt{\frac{17}{220}} + \frac{1}{4}$
$6 \sqrt{\frac{114}{6349}}$	Root $[-2588 + 125\,450 \, \#1^2 - 1\,820\,067 \, \#1^4 + 7\,044\,669 \, \#1^6 \&, 6]$	0
$2 \sqrt{\frac{8027}{49\,885}}$	Root $[-763 + 53\,121 \, \#1^2 - 916\,506 \, \#1^4 + 3\,130\,964 \, \#1^6 \&, 6]$	Root $[1 - 70 \, \#1^2 +$

$2 \sqrt{\frac{8031}{49885}}$	$\text{Root}[-169 + 23117 \#1^2 - 494499 \#1^4 + 2348223 \#1^6 \&, 6]$	$\sqrt{\frac{1}{55}} (4 +$
$\sqrt{\frac{32122}{49885}}$	$\text{Root}[-1347 + 64091 \#1^2 - 887164 \#1^4 + 3130964 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (4 -$
$2 \sqrt{\frac{146}{907}}$	$\text{Root}[-2276 + 79628 \#1^2 - 836247 \#1^4 + 2348223 \#1^6 \&, 6]$	0
$\sqrt{\frac{32138}{49885}}$	$\text{Root}[-1773 + 109859 \#1^2 - 1889970 \#1^4 + 9392892 \#1^6 \&, 6]$	$\sqrt{\frac{17}{220}} + \sqrt{\frac{1}{110}}$
$\sqrt{\frac{4090}{6349}}$	$\text{Root}[-336 + 94340 \#1^2 - 1835601 \#1^4 + 7044669 \#1^6 \&, 6]$	0
$2 \sqrt{\frac{8003}{49885}}$	$\text{Root}[-181 + 143597 \#1^2 - 2682204 \#1^4 + 9392892 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}} (4 -$
$\sqrt{\frac{582}{907}}$	$\text{Root}[-468 + 22658 \#1^2 - 280475 \#1^4 + 782741 \#1^6 \&, 6]$	0

Dimensions[angle3]

{80, 7}

orderedroots[minipoly[chi3]]

{-5, Root[-1068 + 327 #1 - 32 #1² + #1³ &, 1],
 10 - $\sqrt{5}$, 9, Root[-1068 + 327 #1 - 32 #1² + #1³ &, 2],
 10 + $\sqrt{5}$, Root[-1068 + 327 #1 - 32 #1² + #1³ &, 3]}

chi3

$(-9 + x)^{12} (5 + x)^{32} (95 - 20x + x^2) (-1068 + 327x - 32x^2 + x^3)$

coeff[chi3, (x + 5) (x - 9)] // FullSimplify

{Root[43536 - 936 #1 - 107 #1² + #1³ &, 1],
 20 - 16 $\sqrt{5}$, Root[43536 - 936 #1 - 107 #1² + #1³ &, 2],
 4 (5 + 4 $\sqrt{5}$), Root[43536 - 936 #1 - 107 #1² + #1³ &, 3]}

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combinationangle[{{Root[43 536 - 936 #1 - 107 #12 + #13 &, 1],
  20 - 16  $\sqrt{5}$ , Root[43 536 - 936 #1 - 107 #12 + #13 &, 2],
  4 (5 + 4  $\sqrt{5}$ ), Root[43 536 - 936 #1 - 107 #12 + #13 &, 3]}},
{11, 17}, {2, 3, 5, 6, 7}, angle3] // FullSimplify

{Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 4],
Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 2],
Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 4],
Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 2],
Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 3],
Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 1],
Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 3],
Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 1],
Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 4],
Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 2],
Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 4],
Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 2],
Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 3],
Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 1],
Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 3],
Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 1]}

compatible[{{Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 4],
  Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 2],
  Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 4],
  Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 2],
  Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 3],
  Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 1],
  Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 3],
  Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 1],
  Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 4],
  Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 2],
  Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 4],
  Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 2],
  Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 3],
  Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 1],
  Root[13 165 - 768 #1 - 12 618 #12 + 2589 #14 &, 3],
  Root[13 165 + 768 #1 - 12 618 #12 + 2589 #14 &, 1]}]}

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$$\text{chi4} = (-9 + x)^{12} (5 + x)^{32} (-100\,376 + 52\,193\,x - 10\,636\,x^2 + 1062\,x^3 - 52\,x^4 + x^5) \\ (-9 + x)^{12} (5 + x)^{32} (-100\,376 + 52\,193\,x - 10\,636\,x^2 + 1062\,x^3 - 52\,x^4 + x^5)$$

$$\text{list4} = \{420\,307 - 318\,416\,x + 96\,339\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-7 + x) (-60\,053 + 36\,909\,x - 8490\,x^2 + 930\,x^3 - 49\,x^4 + x^5), \\ 422\,115 - 318\,768\,x + 96\,355\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-7 + x) (-60\,261 + 36\,925\,x - 8490\,x^2 + 930\,x^3 - 49\,x^4 + x^5), \\ 423\,571 - 319\,088\,x + 96\,371\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ 423\,347 - 319\,056\,x + 96\,371\,x^2 - 15\,000\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-9 + x)^2 (5067 - 2770\,x + 508\,x^2 - 38\,x^3 + x^4), \\ (-9 + x) (-7 + x) (6549 - 3352\,x + 570\,x^2 - 40\,x^3 + x^4), \\ 412\,171 - 315\,928\,x + 96\,091\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ 412\,235 - 315\,928\,x + 96\,091\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-9 + x) (-45\,811 + 30\,013\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\ 411\,947 - 315\,896\,x + 96\,091\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ 414\,395 - 316\,312\,x + 96\,107\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ 413\,979 - 316\,280\,x + 96\,107\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-7 + x) (-59\,149 + 36\,733\,x - 8482\,x^2 + 930\,x^3 - 49\,x^4 + x^5), \\ 414\,107 - 316\,280\,x + 96\,107\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-9 + x) (-46\,019 + 30\,029\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\ 413\,691 - 316\,248\,x + 96\,107\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ 413\,755 - 316\,248\,x + 96\,107\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-7 + x) (-59\,117 + 36\,733\,x - 8482\,x^2 + 930\,x^3 - 49\,x^4 + x^5), \\ (-9 + x) (-45\,987 + 30\,029\,x - 7342\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\ (113 - 22\,x + x^2) (3659 - 2086\,x + 412\,x^2 - 34\,x^3 + x^4), \\ 415\,563 - 316\,600\,x + 96\,123\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ 415\,627 - 316\,600\,x + 96\,123\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ 415\,211 - 316\,568\,x + 96\,123\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-7 + x) (113 - 22\,x + x^2) (-525 + 223\,x - 27\,x^2 + x^3), \\ 415\,339 - 316\,568\,x + 96\,123\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ 416\,795 - 316\,888\,x + 96\,139\,x^2 - 14\,992\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-9 + x) (-44\,699 + 29\,821\,x - 7334\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\ 404\,387 - 313\,472\,x + 95\,843\,x^2 - 14\,984\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-9 + x) (-44\,939 + 29\,837\,x - 7334\,x^2 + 850\,x^3 - 47\,x^4 + x^5), \\ (95 - 20\,x + x^2) (4253 - 2404\,x + 458\,x^2 - 36\,x^3 + x^4), \\ 404\,099 - 313\,440\,x + 95\,843\,x^2 - 14\,984\,x^3 + 1273\,x^4 - 56\,x^5 + x^6, \\ (-9 + x) (-44\,907 + 29\,837\,x - 7334\,x^2 + 850\,x^3 - 47\,x^4 + x^5),$$

$$\begin{aligned}
& 403\,811 - 313\,408x + 95\,843x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-44\,875 + 29\,837x - 7334x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9+x) (-44\,843 + 29\,837x - 7334x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9+x) (-45\,179 + 29\,853x - 7334x^2 + 850x^3 - 47x^4 + x^5), \\
& (-7+x) (-58\,037 + 36\,541x - 8474x^2 + 930x^3 - 49x^4 + x^5), \\
& (-9+x) (-45\,147 + 29\,853x - 7334x^2 + 850x^3 - 47x^4 + x^5), \\
& 405\,907 - 313\,792x + 95\,859x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& 405\,971 - 313\,792x + 95\,859x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-7+x) (6445 - 3344x + 570x^2 - 40x^3 + x^4), \\
& 405\,619 - 313\,760x + 95\,859x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& 405\,683 - 313\,760x + 95\,859x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-45\,083 + 29\,853x - 7334x^2 + 850x^3 - 47x^4 + x^5), \\
& (113 - 22x + x^2) (3587 - 2078x + 412x^2 - 34x^3 + x^4), \\
& 405\,395 - 313\,728x + 95\,859x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-45\,051 + 29\,853x - 7334x^2 + 850x^3 - 47x^4 + x^5), \\
& 407\,843 - 314\,144x + 95\,875x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-45\,323 + 29\,869x - 7334x^2 + 850x^3 - 47x^4 + x^5), \\
& (-7+x) (-58\,213 + 36\,557x - 8474x^2 + 930x^3 - 49x^4 + x^5), \\
& 407\,555 - 314\,112x + 95\,875x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-45\,291 + 29\,869x - 7334x^2 + 850x^3 - 47x^4 + x^5), \\
& (113 - 22x + x^2) (3603 - 2078x + 412x^2 - 34x^3 + x^4), \\
& 407\,203 - 314\,080x + 95\,875x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-7+x) (-58\,181 + 36\,557x - 8474x^2 + 930x^3 - 49x^4 + x^5), \\
& (-9+x) (-45\,259 + 29\,869x - 7334x^2 + 850x^3 - 47x^4 + x^5), \\
& 406\,851 - 314\,048x + 95\,875x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& 406\,915 - 314\,048x + 95\,875x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& 409\,075 - 314\,432x + 95\,891x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& 408\,787 - 314\,400x + 95\,891x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-43\,827 + 29\,645x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9+x) (95 - 20x + x^2) (-461 + 215x - 27x^2 + x^3), \\
& 396\,251 - 310\,984x + 95\,595x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-44\,035 + 29\,661x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& 395\,963 - 310\,952x + 95\,595x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-44\,003 + 29\,661x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (95 - 20x + x^2) (4165 - 2396x + 458x^2 - 36x^3 + x^4), \\
& (-9+x) (-43\,971 + 29\,661x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9+x) (-43\,939 + 29\,661x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9+x) (-43\,907 + 29\,661x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9+x) (-44\,243 + 29\,677x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9+x) (-44\,211 + 29\,677x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& 397\,547 - 311\,272x + 95\,611x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-44\,179 + 29\,677x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (113 - 22x + x^2) (95 - 20x + x^2) (37 - 14x + x^2), \\
& 397\,259 - 311\,240x + 95\,611x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6,
\end{aligned}$$

```

(-9 + x) (-44 147 + 29 677 x - 7326 x^2 + 850 x^3 - 47 x^4 + x^5),
396 971 - 311 208 x + 95 611 x^2 - 14 976 x^3 + 1273 x^4 - 56 x^5 + x^6,
(-9 + x) (-44 115 + 29 677 x - 7326 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (-7 + x) (6341 - 3336 x + 570 x^2 - 40 x^3 + x^4),
399 131 - 311 592 x + 95 627 x^2 - 14 976 x^3 + 1273 x^4 - 56 x^5 + x^6,
(-9 + x) (-44 355 + 29 693 x - 7326 x^2 + 850 x^3 - 47 x^4 + x^5),
398 779 - 311 560 x + 95 627 x^2 - 14 976 x^3 + 1273 x^4 - 56 x^5 + x^6,
398 843 - 311 560 x + 95 627 x^2 - 14 976 x^3 + 1273 x^4 - 56 x^5 + x^6,
(-9 + x) (-44 323 + 29 693 x - 7326 x^2 + 850 x^3 - 47 x^4 + x^5),
398 491 - 311 528 x + 95 627 x^2 - 14 976 x^3 + 1273 x^4 - 56 x^5 + x^6,
(-1009 + 311 x - 31 x^2 + x^3) (-395 + 187 x - 25 x^2 + x^3),
(-9 + x) (-44 563 + 29 709 x - 7326 x^2 + 850 x^3 - 47 x^4 + x^5),
(-7 + x) (-57 245 + 36 381 x - 8466 x^2 + 930 x^3 - 49 x^4 + x^5),
(-9 + x) (-44 531 + 29 709 x - 7326 x^2 + 850 x^3 - 47 x^4 + x^5),
400 363 - 311 880 x + 95 643 x^2 - 14 976 x^3 + 1273 x^4 - 56 x^5 + x^6,
400 427 - 311 880 x + 95 643 x^2 - 14 976 x^3 + 1273 x^4 - 56 x^5 + x^6,
402 299 - 312 232 x + 95 659 x^2 - 14 976 x^3 + 1273 x^4 - 56 x^5 + x^6,
(-9 + x) (-42 923 + 29 469 x - 7318 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (-43 099 + 29 485 x - 7318 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (-43 067 + 29 485 x - 7318 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (95 - 20 x + x^2) (-453 + 215 x - 27 x^2 + x^3),
(-9 + x) (-43 275 + 29 501 x - 7318 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (-43 243 + 29 501 x - 7318 x^2 + 850 x^3 - 47 x^4 + x^5),
(95 - 20 x + x^2) (4093 - 2388 x + 458 x^2 - 36 x^3 + x^4),
(-9 + x) (-43 211 + 29 501 x - 7318 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (-43 179 + 29 501 x - 7318 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (-43 419 + 29 517 x - 7318 x^2 + 850 x^3 - 47 x^4 + x^5),
390 419 - 309 040 x + 95 379 x^2 - 14 968 x^3 + 1273 x^4 - 56 x^5 + x^6,
(-9 + x) (43 - 16 x + x^2) (-1009 + 311 x - 31 x^2 + x^3),
390 131 - 309 008 x + 95 379 x^2 - 14 968 x^3 + 1273 x^4 - 56 x^5 + x^6,
(-9 + x) (-43 595 + 29 533 x - 7318 x^2 + 850 x^3 - 47 x^4 + x^5),
392 003 - 309 360 x + 95 395 x^2 - 14 968 x^3 + 1273 x^4 - 56 x^5 + x^6,
(-9 + x) (-42 307 + 29 325 x - 7310 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (95 - 20 x + x^2) (-445 + 215 x - 27 x^2 + x^3),
(-9 + x) (-42 451 + 29 341 x - 7310 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (95 - 20 x + x^2) (-437 + 215 x - 27 x^2 + x^3) };

```

```
Length[list4]
```

```
114
```

```
A4 = CoefficientList[list4, x];
```

```
A4 // MatrixForm
```

```

( 420 307  -318 416  96 339  -15 000  1273  -56  1 )
( 420 371  -318 416  96 339  -15 000  1273  -56  1 )
( 422 115  -318 768  96 355  -15 000  1273  -56  1 )

```

421 827	-318 736	96 355	-15 000	1273	-56	1
423 571	-319 088	96 371	-15 000	1273	-56	1
423 347	-319 056	96 371	-15 000	1273	-56	1
410 427	-315 576	96 075	-14 992	1273	-56	1
412 587	-315 960	96 091	-14 992	1273	-56	1
412 171	-315 928	96 091	-14 992	1273	-56	1
412 235	-315 928	96 091	-14 992	1273	-56	1
412 299	-315 928	96 091	-14 992	1273	-56	1
411 947	-315 896	96 091	-14 992	1273	-56	1
414 395	-316 312	96 107	-14 992	1273	-56	1
413 979	-316 280	96 107	-14 992	1273	-56	1
414 043	-316 280	96 107	-14 992	1273	-56	1
414 107	-316 280	96 107	-14 992	1273	-56	1
414 171	-316 280	96 107	-14 992	1273	-56	1
413 691	-316 248	96 107	-14 992	1273	-56	1
413 755	-316 248	96 107	-14 992	1273	-56	1
413 819	-316 248	96 107	-14 992	1273	-56	1
413 883	-316 248	96 107	-14 992	1273	-56	1
413 467	-316 216	96 107	-14 992	1273	-56	1
415 563	-316 600	96 123	-14 992	1273	-56	1
415 627	-316 600	96 123	-14 992	1273	-56	1
415 211	-316 568	96 123	-14 992	1273	-56	1
415 275	-316 568	96 123	-14 992	1273	-56	1
415 339	-316 568	96 123	-14 992	1273	-56	1
416 795	-316 888	96 139	-14 992	1273	-56	1
402 291	-313 088	95 827	-14 984	1273	-56	1
404 387	-313 472	95 843	-14 984	1273	-56	1
404 451	-313 472	95 843	-14 984	1273	-56	1
404 035	-313 440	95 843	-14 984	1273	-56	1
404 099	-313 440	95 843	-14 984	1273	-56	1
404 163	-313 440	95 843	-14 984	1273	-56	1
403 811	-313 408	95 843	-14 984	1273	-56	1
403 875	-313 408	95 843	-14 984	1273	-56	1
403 587	-313 376	95 843	-14 984	1273	-56	1
406 611	-313 856	95 859	-14 984	1273	-56	1
406 259	-313 824	95 859	-14 984	1273	-56	1
406 323	-313 824	95 859	-14 984	1273	-56	1
405 907	-313 792	95 859	-14 984	1273	-56	1
405 971	-313 792	95 859	-14 984	1273	-56	1
406 035	-313 792	95 859	-14 984	1273	-56	1
405 619	-313 760	95 859	-14 984	1273	-56	1
405 683	-313 760	95 859	-14 984	1273	-56	1
405 747	-313 760	95 859	-14 984	1273	-56	1
405 331	-313 728	95 859	-14 984	1273	-56	1
405 395	-313 728	95 859	-14 984	1273	-56	1
405 459	-313 728	95 859	-14 984	1273	-56	1
407 843	-314 144	95 875	-14 984	1273	-56	1
407 907	-314 144	95 875	-14 984	1273	-56	1
407 491	-314 112	95 875	-14 984	1273	-56	1
407 555	-314 112	95 875	-14 984	1273	-56	1
407 619	-314 112	95 875	-14 984	1273	-56	1
407 139	-314 080	95 875	-14 984	1273	-56	1
407 203	-314 080	95 875	-14 984	1273	-56	1
407 267	-314 080	95 875	-14 984	1273	-56	1
407 331	-314 080	95 875	-14 984	1273	-56	1

406 851	-314 048	95 875	-14 984	1273	-56	1
406 915	-314 048	95 875	-14 984	1273	-56	1
409 075	-314 432	95 891	-14 984	1273	-56	1
408 787	-314 400	95 891	-14 984	1273	-56	1
394 443	-310 632	95 579	-14 976	1273	-56	1
394 155	-310 600	95 579	-14 976	1273	-56	1
396 251	-310 984	95 595	-14 976	1273	-56	1
396 315	-310 984	95 595	-14 976	1273	-56	1
395 963	-310 952	95 595	-14 976	1273	-56	1
396 027	-310 952	95 595	-14 976	1273	-56	1
395 675	-310 920	95 595	-14 976	1273	-56	1
395 739	-310 920	95 595	-14 976	1273	-56	1
395 451	-310 888	95 595	-14 976	1273	-56	1
395 163	-310 856	95 595	-14 976	1273	-56	1
398 187	-311 336	95 611	-14 976	1273	-56	1
397 899	-311 304	95 611	-14 976	1273	-56	1
397 547	-311 272	95 611	-14 976	1273	-56	1
397 611	-311 272	95 611	-14 976	1273	-56	1
397 195	-311 240	95 611	-14 976	1273	-56	1
397 259	-311 240	95 611	-14 976	1273	-56	1
397 323	-311 240	95 611	-14 976	1273	-56	1
396 971	-311 208	95 611	-14 976	1273	-56	1
397 035	-311 208	95 611	-14 976	1273	-56	1
399 483	-311 624	95 627	-14 976	1273	-56	1
399 131	-311 592	95 627	-14 976	1273	-56	1
399 195	-311 592	95 627	-14 976	1273	-56	1
398 779	-311 560	95 627	-14 976	1273	-56	1
398 843	-311 560	95 627	-14 976	1273	-56	1
398 907	-311 560	95 627	-14 976	1273	-56	1
398 491	-311 528	95 627	-14 976	1273	-56	1
398 555	-311 528	95 627	-14 976	1273	-56	1
401 067	-311 944	95 643	-14 976	1273	-56	1
400 715	-311 912	95 643	-14 976	1273	-56	1
400 779	-311 912	95 643	-14 976	1273	-56	1
400 363	-311 880	95 643	-14 976	1273	-56	1
400 427	-311 880	95 643	-14 976	1273	-56	1
402 299	-312 232	95 659	-14 976	1273	-56	1
386 307	-308 144	95 331	-14 968	1273	-56	1
387 891	-308 464	95 347	-14 968	1273	-56	1
387 603	-308 432	95 347	-14 968	1273	-56	1
387 315	-308 400	95 347	-14 968	1273	-56	1
389 475	-308 784	95 363	-14 968	1273	-56	1
389 187	-308 752	95 363	-14 968	1273	-56	1
388 835	-308 720	95 363	-14 968	1273	-56	1
388 899	-308 720	95 363	-14 968	1273	-56	1
388 611	-308 688	95 363	-14 968	1273	-56	1
390 771	-309 072	95 379	-14 968	1273	-56	1
390 419	-309 040	95 379	-14 968	1273	-56	1
390 483	-309 040	95 379	-14 968	1273	-56	1
390 131	-309 008	95 379	-14 968	1273	-56	1
392 355	-309 392	95 395	-14 968	1273	-56	1
392 003	-309 360	95 395	-14 968	1273	-56	1
380 763	-306 232	95 115	-14 960	1273	-56	1
380 475	-306 200	95 115	-14 960	1273	-56	1
382 059	-306 520	95 131	-14 960	1273	-56	1

```
( 373 635 -304 000 94 883 -14 952 1273 -56 1 )
```

```
Dimensions[A4]
```

```
{114, 7}
```

```
gpart[chi4]
```

```
{20 537 043, -15 568 080, 4 715 411, -734 776, 62 377, -2744, 49}
```

```
FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
  n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 &&
  n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 &&
  n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 &&
  n[42] ≥ 0 && n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 &&
  n[48] ≥ 0 && n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 &&
  n[54] ≥ 0 && n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 &&
  n[60] ≥ 0 && n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 &&
  n[66] ≥ 0 && n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 &&
  n[72] ≥ 0 && n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 &&
  n[78] ≥ 0 && n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 &&
  n[84] ≥ 0 && n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 &&
  n[90] ≥ 0 && n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 &&
  n[96] ≥ 0 && n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 &&
  n[102] ≥ 0 && n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 &&
  n[108] ≥ 0 && n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 &&
  n[114] ≥ 0 && Array[n, 114].A4 == gpart[chi4], Array[n, 114], Integers]
```

```
{ {n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 21, n[6] → 7, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 0, n[13] → 0, n[14] → 0, n[15] → 0, n[16] → 0,
  n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0, n[23] → 0,
  n[24] → 0, n[25] → 5, n[26] → 0, n[27] → 0, n[28] → 11, n[29] → 0, n[30] → 0,
  n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0, n[37] → 0,
  n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0, n[44] → 0,
  n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0,
  n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 1, n[56] → 0, n[57] → 0, n[58] → 0,
  n[59] → 2, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0, n[65] → 0,
  n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0, n[72] → 0,
  n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0, n[79] → 0,
  n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0, n[84] → 0, n[85] → 0, n[86] → 0,
  n[87] → 0, n[88] → 2, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0, n[93] → 0,
  n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0, n[100] → 0,
  n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0, n[107] → 0,
  n[108] → 0, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0, n[114] → 0 } }
```



```

Array[n, 114] /. {n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 21,
  n[6] → 7, n[7] → 0, n[8] → 0, n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 0,
  n[13] → 0, n[14] → 0, n[15] → 0, n[16] → 0, n[17] → 0, n[18] → 0, n[19] → 0,
  n[20] → 0, n[21] → 0, n[22] → 0, n[23] → 0, n[24] → 0, n[25] → 5, n[26] → 0,
  n[27] → 0, n[28] → 11, n[29] → 0, n[30] → 0, n[31] → 0, n[32] → 0, n[33] → 0,
  n[34] → 0, n[35] → 0, n[36] → 0, n[37] → 0, n[38] → 0, n[39] → 0, n[40] → 0,
  n[41] → 0, n[42] → 0, n[43] → 0, n[44] → 0, n[45] → 0, n[46] → 0, n[47] → 0,
  n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0, n[52] → 0, n[53] → 0, n[54] → 0,
  n[55] → 1, n[56] → 0, n[57] → 0, n[58] → 0, n[59] → 2, n[60] → 0, n[61] → 0,
  n[62] → 0, n[63] → 0, n[64] → 0, n[65] → 0, n[66] → 0, n[67] → 0, n[68] → 0,
  n[69] → 0, n[70] → 0, n[71] → 0, n[72] → 0, n[73] → 0, n[74] → 0, n[75] → 0,
  n[76] → 0, n[77] → 0, n[78] → 0, n[79] → 0, n[80] → 0, n[81] → 0, n[82] → 0,
  n[83] → 0, n[84] → 0, n[85] → 0, n[86] → 0, n[87] → 0, n[88] → 2, n[89] → 0,
  n[90] → 0, n[91] → 0, n[92] → 0, n[93] → 0, n[94] → 0, n[95] → 0, n[96] → 0,
  n[97] → 0, n[98] → 0, n[99] → 0, n[100] → 0, n[101] → 0, n[102] → 0,
  n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0, n[107] → 0, n[108] → 0,
  n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0, n[114] → 0}
{0, 0, 0, 0, 21, 7, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 5, 0, 0, 11, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0,
  2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0}

```

5, 6, 25, 28, 55, 59, 88

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] == 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
  n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 &&
  n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 &&
  n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 &&
  n[42] ≥ 0 && n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 &&
  n[48] ≥ 0 && n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 &&
  n[54] ≥ 0 && n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 &&
  n[60] ≥ 0 && n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 &&
  n[66] ≥ 0 && n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 &&
  n[72] ≥ 0 && n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 &&
  n[78] ≥ 0 && n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 &&
  n[84] ≥ 0 && n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 &&
  n[90] ≥ 0 && n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 &&
  n[96] ≥ 0 && n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 &&
  n[102] ≥ 0 && n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 &&
  n[108] ≥ 0 && n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 &&
  n[114] ≥ 0 && Array[n, 114].A4 == gpart[chi4], Array[n, 114], Integers]
{}

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] == 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
  n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 &&
  n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 &&
  n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 &&
  n[42] ≥ 0 && n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 &&
  n[48] ≥ 0 && n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 &&
  n[54] ≥ 0 && n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 &&
  n[60] ≥ 0 && n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 &&
  n[66] ≥ 0 && n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 &&
  n[72] ≥ 0 && n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 &&
  n[78] ≥ 0 && n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 &&
  n[84] ≥ 0 && n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 &&
  n[90] ≥ 0 && n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 &&
  n[96] ≥ 0 && n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 &&
  n[102] ≥ 0 && n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 &&
  n[108] ≥ 0 && n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 &&
  n[114] ≥ 0 && Array[n, 114].A4 == gpart[chi4], Array[n, 114], Integers]
{ }

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
  n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] == 0 && n[26] ≥ 0 &&
  n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 &&
  n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 &&
  n[41] ≥ 0 && n[42] ≥ 0 && n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 &&
  n[48] ≥ 0 && n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 &&
  n[54] ≥ 0 && n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 &&
  n[60] ≥ 0 && n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 &&
  n[66] ≥ 0 && n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 &&
  n[72] ≥ 0 && n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 &&
  n[78] ≥ 0 && n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 &&
  n[84] ≥ 0 && n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 &&
  n[90] ≥ 0 && n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 &&
  n[96] ≥ 0 && n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 &&
  n[102] ≥ 0 && n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 &&
  n[108] ≥ 0 && n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 &&
  n[114] ≥ 0 && Array[n, 114].A4 == gpart[chi4], Array[n, 114], Integers]

{{n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 26, n[6] → 7, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 0, n[13] → 0, n[14] → 0, n[15] → 0, n[16] → 0,
  n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0, n[23] → 0,
  n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 10, n[29] → 0, n[30] → 0,
  n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0, n[37] → 0,
  n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0, n[44] → 0,
  n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0,
  n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0, n[58] → 0,
  n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0, n[65] → 0,
  n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0, n[72] → 0,
  n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0, n[79] → 0,
  n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0, n[84] → 0, n[85] → 0, n[86] → 0,
  n[87] → 0, n[88] → 5, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0, n[93] → 1,
  n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0, n[100] → 0,
  n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0, n[107] → 0,
  n[108] → 0, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0, n[114] → 0}}

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
  n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 &&
  n[28] == 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 &&
  n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 &&
  n[41] ≥ 0 && n[42] ≥ 0 && n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 &&
  n[48] ≥ 0 && n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 &&
  n[54] ≥ 0 && n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 &&
  n[60] ≥ 0 && n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 &&
  n[66] ≥ 0 && n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 &&
  n[72] ≥ 0 && n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 &&
  n[78] ≥ 0 && n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 &&
  n[84] ≥ 0 && n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 &&
  n[90] ≥ 0 && n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 &&
  n[96] ≥ 0 && n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 &&
  n[102] ≥ 0 && n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 &&
  n[108] ≥ 0 && n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 &&
  n[114] ≥ 0 && Array[n, 114].A4 == gpart[chi4], Array[n, 114], Integers]
{ }

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
  n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 &&
  n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 &&
  n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 &&
  n[42] ≥ 0 && n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 &&
  n[48] ≥ 0 && n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 &&
  n[54] ≥ 0 && n[55] == 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 &&
  n[60] ≥ 0 && n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 &&
  n[66] ≥ 0 && n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 &&
  n[72] ≥ 0 && n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 &&
  n[78] ≥ 0 && n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 &&
  n[84] ≥ 0 && n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 &&
  n[90] ≥ 0 && n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 &&
  n[96] ≥ 0 && n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 &&
  n[102] ≥ 0 && n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 &&
  n[108] ≥ 0 && n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 &&
  n[114] ≥ 0 && Array[n, 114].A4 == gpart[chi4], Array[n, 114], Integers]
{ {n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 25, n[6] → 7, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 0, n[13] → 0, n[14] → 0, n[15] → 0, n[16] → 0,
  n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0, n[23] → 0,
  n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 11, n[29] → 0, n[30] → 0,
  n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0, n[37] → 0,
  n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0, n[44] → 0,
  n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0,
  n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0, n[58] → 0,
  n[59] → 3, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0, n[65] → 0,
  n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0, n[72] → 0,
  n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0, n[79] → 0,
  n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0, n[84] → 0, n[85] → 1, n[86] → 0,
  n[87] → 0, n[88] → 0, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0, n[93] → 0,
  n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0, n[100] → 0,
  n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0, n[107] → 0,
  n[108] → 2, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0, n[114] → 0} }

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
  n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 &&
  n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 &&
  n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 &&
  n[42] ≥ 0 && n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 &&
  n[48] ≥ 0 && n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 &&
  n[54] ≥ 0 && n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] == 0 &&
  n[60] ≥ 0 && n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 &&
  n[66] ≥ 0 && n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 &&
  n[72] ≥ 0 && n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 &&
  n[78] ≥ 0 && n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 &&
  n[84] ≥ 0 && n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 &&
  n[90] ≥ 0 && n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 &&
  n[96] ≥ 0 && n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 &&
  n[102] ≥ 0 && n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 &&
  n[108] ≥ 0 && n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 &&
  n[114] ≥ 0 && Array[n, 114].A4 == gpart[chi4], Array[n, 114], Integers]

{{n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 21, n[6] → 5, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 0, n[13] → 0, n[14] → 0, n[15] → 0, n[16] → 0,
  n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0, n[23] → 0,
  n[24] → 0, n[25] → 8, n[26] → 0, n[27] → 0, n[28] → 13, n[29] → 0, n[30] → 0,
  n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0, n[37] → 0,
  n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0, n[44] → 0,
  n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0,
  n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0, n[58] → 0,
  n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0, n[65] → 0,
  n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0, n[72] → 1,
  n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0, n[79] → 0,
  n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0, n[84] → 0, n[85] → 0, n[86] → 0,
  n[87] → 0, n[88] → 0, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0, n[93] → 0,
  n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0, n[100] → 0,
  n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0, n[107] → 0,
  n[108] → 1, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0, n[114] → 0}}

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
  n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 &&
  n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 &&
  n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 &&
  n[42] ≥ 0 && n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 &&
  n[48] ≥ 0 && n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 &&
  n[54] ≥ 0 && n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 &&
  n[60] ≥ 0 && n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 &&
  n[66] ≥ 0 && n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 &&
  n[72] ≥ 0 && n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 &&
  n[78] ≥ 0 && n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 &&
  n[84] ≥ 0 && n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] == 0 && n[89] ≥ 0 &&
  n[90] ≥ 0 && n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 &&
  n[96] ≥ 0 && n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 &&
  n[102] ≥ 0 && n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 &&
  n[108] ≥ 0 && n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 &&
  n[114] ≥ 0 && Array[n, 114].A4 == gpart[chi4], Array[n, 114], Integers]

{{n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 21, n[6] → 5, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 0, n[13] → 0, n[14] → 0, n[15] → 0, n[16] → 0,
  n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0, n[23] → 0,
  n[24] → 0, n[25] → 6, n[26] → 0, n[27] → 0, n[28] → 13, n[29] → 0, n[30] → 0,
  n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0, n[37] → 0,
  n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0, n[44] → 0,
  n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0,
  n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0, n[58] → 0,
  n[59] → 3, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0, n[65] → 0,
  n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0, n[72] → 1,
  n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0, n[79] → 0,
  n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0, n[84] → 0, n[85] → 0, n[86] → 0,
  n[87] → 0, n[88] → 0, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0, n[93] → 0,
  n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0, n[100] → 0,
  n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0, n[107] → 0,
  n[108] → 0, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0, n[114] → 0}}

```

```
list4[{{5, 6, 28}}] * mu[chi4] // Factor
```

$$\left\{ \begin{aligned} &(-9+x)^{11} (5+x)^{31} (423571 - 319088x + 96371x^2 - 15000x^3 + 1273x^4 - 56x^5 + x^6), \\ &(-9+x)^{11} (5+x)^{31} (423347 - 319056x + 96371x^2 - 15000x^3 + 1273x^4 - 56x^5 + x^6), \\ &(-9+x)^{11} (5+x)^{31} (416795 - 316888x + 96139x^2 - 14992x^3 + 1273x^4 - 56x^5 + x^6) \end{aligned} \right\}$$

```
Array[m, 7].Transpose[A4]
```

```

{420307 m[1] - 318416 m[2] + 96339 m[3] - 15000 m[4] + 1273 m[5] - 56 m[6] + m[7],
 420371 m[1] - 318416 m[2] + 96339 m[3] - 15000 m[4] + 1273 m[5] - 56 m[6] + m[7],
 422115 m[1] - 318768 m[2] + 96355 m[3] - 15000 m[4] + 1273 m[5] - 56 m[6] + m[7],
 421827 m[1] - 318736 m[2] + 96355 m[3] - 15000 m[4] + 1273 m[5] - 56 m[6] + m[7],

```

[illegible]

407 491 m[1] - 314 112 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 555 m[1] - 314 112 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 619 m[1] - 314 112 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 139 m[1] - 314 080 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 203 m[1] - 314 080 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 267 m[1] - 314 080 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 331 m[1] - 314 080 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 851 m[1] - 314 048 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 915 m[1] - 314 048 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 409 075 m[1] - 314 432 m[2] + 95 891 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 787 m[1] - 314 400 m[2] + 95 891 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 394 443 m[1] - 310 632 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 394 155 m[1] - 310 600 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 396 251 m[1] - 310 984 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 396 315 m[1] - 310 984 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 395 963 m[1] - 310 952 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 396 027 m[1] - 310 952 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 395 675 m[1] - 310 920 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 395 739 m[1] - 310 920 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 395 451 m[1] - 310 888 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 395 163 m[1] - 310 856 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 398 187 m[1] - 311 336 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 397 899 m[1] - 311 304 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 397 547 m[1] - 311 272 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 397 611 m[1] - 311 272 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 397 195 m[1] - 311 240 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 397 259 m[1] - 311 240 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 397 323 m[1] - 311 240 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 396 971 m[1] - 311 208 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 397 035 m[1] - 311 208 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 399 483 m[1] - 311 624 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 399 131 m[1] - 311 592 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 399 195 m[1] - 311 592 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 398 779 m[1] - 311 560 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 398 843 m[1] - 311 560 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 398 907 m[1] - 311 560 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 398 491 m[1] - 311 528 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 398 555 m[1] - 311 528 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 401 067 m[1] - 311 944 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 400 715 m[1] - 311 912 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 400 779 m[1] - 311 912 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 400 363 m[1] - 311 880 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 400 427 m[1] - 311 880 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 402 299 m[1] - 312 232 m[2] + 95 659 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 386 307 m[1] - 308 144 m[2] + 95 331 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 387 891 m[1] - 308 464 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 387 603 m[1] - 308 432 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,

```

387 315 m[1] - 308 400 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
389 475 m[1] - 308 784 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
389 187 m[1] - 308 752 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
388 835 m[1] - 308 720 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
388 899 m[1] - 308 720 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
388 611 m[1] - 308 688 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
390 771 m[1] - 309 072 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
390 419 m[1] - 309 040 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
390 483 m[1] - 309 040 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
390 131 m[1] - 309 008 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
392 355 m[1] - 309 392 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
392 003 m[1] - 309 360 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
380 763 m[1] - 306 232 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
380 475 m[1] - 306 200 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
382 059 m[1] - 306 520 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
373 635 m[1] - 304 000 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] }

```

Array[m, 7].gpart[chi4]

```

20 537 043 m[1] - 15 568 080 m[2] + 4 715 411 m[3] -
734 776 m[4] + 62 377 m[5] - 2744 m[6] + 49 m[7]

```

```

FindInstance[20 537 043 m[1] - 15 568 080 m[2] +
4 715 411 m[3] - 734 776 m[4] + 62 377 m[5] - 2744 m[6] + 49 m[7] < 0 &&
420 307 m[1] - 318 416 m[2] + 96 339 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
420 371 m[1] - 318 416 m[2] + 96 339 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
422 115 m[1] - 318 768 m[2] + 96 355 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
421 827 m[1] - 318 736 m[2] + 96 355 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
423 571 m[1] - 319 088 m[2] + 96 371 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
423 347 m[1] - 319 056 m[2] + 96 371 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
410 427 m[1] - 315 576 m[2] + 96 075 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
412 587 m[1] - 315 960 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
412 171 m[1] - 315 928 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
412 235 m[1] - 315 928 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
412 299 m[1] - 315 928 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
411 947 m[1] - 315 896 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 395 m[1] - 316 312 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
413 979 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 043 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 107 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 171 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
413 691 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
413 755 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
413 819 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
413 883 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
413 467 m[1] - 316 216 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 563 m[1] - 316 600 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 627 m[1] - 316 600 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&

```

[illegible]

```

395 163 m[1] - 310 856 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 187 m[1] - 311 336 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 899 m[1] - 311 304 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 547 m[1] - 311 272 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 611 m[1] - 311 272 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 195 m[1] - 311 240 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 259 m[1] - 311 240 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 323 m[1] - 311 240 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
396 971 m[1] - 311 208 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 035 m[1] - 311 208 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
399 483 m[1] - 311 624 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
399 131 m[1] - 311 592 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
399 195 m[1] - 311 592 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 779 m[1] - 311 560 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 843 m[1] - 311 560 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 907 m[1] - 311 560 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 491 m[1] - 311 528 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 555 m[1] - 311 528 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
401 067 m[1] - 311 944 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 715 m[1] - 311 912 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 779 m[1] - 311 912 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 363 m[1] - 311 880 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 427 m[1] - 311 880 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
402 299 m[1] - 312 232 m[2] + 95 659 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
386 307 m[1] - 308 144 m[2] + 95 331 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 891 m[1] - 308 464 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 603 m[1] - 308 432 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 315 m[1] - 308 400 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
389 475 m[1] - 308 784 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
389 187 m[1] - 308 752 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
388 835 m[1] - 308 720 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
388 899 m[1] - 308 720 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
388 611 m[1] - 308 688 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 771 m[1] - 309 072 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 419 m[1] - 309 040 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 483 m[1] - 309 040 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 131 m[1] - 309 008 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
392 355 m[1] - 309 392 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
392 003 m[1] - 309 360 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
380 763 m[1] - 306 232 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
380 475 m[1] - 306 200 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
382 059 m[1] - 306 520 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
373 635 m[1] - 304 000 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{}

```

```

FindInstance[20 537 043 m[1] - 15 568 080 m[2] +
  4 715 411 m[3] - 734 776 m[4] + 62 377 m[5] - 2744 m[6] + 49 m[7] < 0 &&
  420 307 m[1] - 318 416 m[2] + 96 339 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  420 371 m[1] - 318 416 m[2] + 96 339 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  422 115 m[1] - 318 768 m[2] + 96 355 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  421 827 m[1] - 318 736 m[2] + 96 355 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  423 571 m[1] - 319 088 m[2] + 96 371 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] < 0 &&
  423 347 m[1] - 319 056 m[2] + 96 371 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  410 427 m[1] - 315 576 m[2] + 96 075 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  412 587 m[1] - 315 960 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  412 171 m[1] - 315 928 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  412 235 m[1] - 315 928 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  412 299 m[1] - 315 928 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  411 947 m[1] - 315 896 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  414 395 m[1] - 316 312 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 979 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  414 043 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  414 107 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  414 171 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 691 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 755 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 819 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 883 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 467 m[1] - 316 216 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  415 563 m[1] - 316 600 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  415 627 m[1] - 316 600 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  415 211 m[1] - 316 568 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  415 275 m[1] - 316 568 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  415 339 m[1] - 316 568 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  416 795 m[1] - 316 888 m[2] + 96 139 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  402 291 m[1] - 313 088 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  404 387 m[1] - 313 472 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  404 451 m[1] - 313 472 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  404 035 m[1] - 313 440 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  404 099 m[1] - 313 440 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  404 163 m[1] - 313 440 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  403 811 m[1] - 313 408 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  403 875 m[1] - 313 408 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  403 587 m[1] - 313 376 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  406 611 m[1] - 313 856 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  406 259 m[1] - 313 824 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  406 323 m[1] - 313 824 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  405 907 m[1] - 313 792 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  405 971 m[1] - 313 792 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&

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[illegible]

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401 067 m[1] - 311 944 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 715 m[1] - 311 912 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 779 m[1] - 311 912 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 363 m[1] - 311 880 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 427 m[1] - 311 880 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
402 299 m[1] - 312 232 m[2] + 95 659 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
386 307 m[1] - 308 144 m[2] + 95 331 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 891 m[1] - 308 464 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 603 m[1] - 308 432 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 315 m[1] - 308 400 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
389 475 m[1] - 308 784 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
389 187 m[1] - 308 752 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
388 835 m[1] - 308 720 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
388 899 m[1] - 308 720 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
388 611 m[1] - 308 688 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 771 m[1] - 309 072 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 419 m[1] - 309 040 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 483 m[1] - 309 040 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 131 m[1] - 309 008 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
392 355 m[1] - 309 392 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
392 003 m[1] - 309 360 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
380 763 m[1] - 306 232 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
380 475 m[1] - 306 200 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
382 059 m[1] - 306 520 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
373 635 m[1] - 304 000 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{{m[1] → 3 614 120, m[2] → 25 867 427,
  m[3] → 159 550 736, m[4] → 576 862 162, m[5] → 0, m[6] → 0, m[7] → 0}}

Array[m, 7] /. {m[1] → 3 614 120, m[2] → 25 867 427,
  m[3] → 159 550 736, m[4] → 576 862 162, m[5] → 0, m[6] → 0, m[7] → 0}
{3 614 120, 25 867 427, 159 550 736, 576 862 162, 0, 0, 0}

GCD[3 614 120, 25 867 427, 159 550 736, 576 862 162, 0, 0, 0]
1

Reverse[{3 614 120, 25 867 427, 159 550 736, 576 862 162, 0, 0, 0}]
{0, 0, 0, 576 862 162, 159 550 736, 25 867 427, 3 614 120}

{3 614 120, 25 867 427, 159 550 736, 576 862 162, 0, 0, 0}.gpart[chi4]
-11 436 216

```

```
{3 614 120, 25 867 427, 159 550 736, 576 862 162, 0, 0, 0}.Transpose[A4]
{463 224 712, 694 528 392, 445 031 144, 231 922 248, -17 575 000, 619 784, 712 714 784,
 1 138 933 792, 463 217 536, 694 521 216, 925 824 896, 481 412 320, 1 120 740 224,
 445 023 968, 676 327 648, 907 631 328, 1 138 935 008, 231 915 072, 463 218 752,
 694 522 432, 925 826 112, 250 109 856, 445 025 184, 676 328 864, 612 608, 231 916 288,
 463 219 968, 613 824, 712 707 608, 907 622 936, 1 138 926 616, 463 210 360, 694 514 040,
 925 817 720, 481 405 144, 712 708 824, 499 599 928, 1 565 145 624, 1 120 733 048,
 1 352 036 728, 676 320 472, 907 624 152, 1 138 927 832, 463 211 576, 694 515 256,
 925 818 936, 250 102 680, 481 406 360, 712 710 040, 1 120 734 264, 1 352 037 944,
 676 321 688, 907 625 368, 1 138 929 048, 231 909 112, 463 212 792, 694 516 472,
 925 820 152, 18 800 216, 250 103 896, 676 322 904, 463 214 008, 925 809 328, 712 700 432,
 907 615 760, 1 138 919 440, 694 506 864, 925 810 544, 481 397 968, 712 701 648,
 499 592 752, 286 483 856, 1 352 029 552, 1 138 920 656, 694 508 080, 925 811 760,
 250 095 504, 481 399 184, 712 702 864, 268 290 288, 499 593 968, 1 138 921 872,
 694 509 296, 925 812 976, 250 096 720, 481 400 400, 712 704 080, 36 987 824, 268 291 504,
 1 138 923 088, 694 510 512, 925 814 192, 250 097 936, 481 401 616, 694 511 728,
 925 802 152, 925 803 368, 712 694 472, 499 585 576, 925 804 584, 712 695 688,
 268 283 112, 499 586 792, 286 477 896, 712 696 904, 268 284 328, 499 588 008,
 55 175 432, 712 698 120, 268 285 544, 499 579 616, 286 470 720, 286 471 936, 73 355 864}
```

```
FindInstance[20 537 043 m[1] - 15 568 080 m[2] +
  4 715 411 m[3] - 734 776 m[4] + 62 377 m[5] - 2744 m[6] + 49 m[7] < 0 &&
  420 307 m[1] - 318 416 m[2] + 96 339 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  420 371 m[1] - 318 416 m[2] + 96 339 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  422 115 m[1] - 318 768 m[2] + 96 355 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  421 827 m[1] - 318 736 m[2] + 96 355 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  423 571 m[1] - 319 088 m[2] + 96 371 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  423 347 m[1] - 319 056 m[2] + 96 371 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] < 0 &&
  410 427 m[1] - 315 576 m[2] + 96 075 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  412 587 m[1] - 315 960 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  412 171 m[1] - 315 928 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  412 235 m[1] - 315 928 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  412 299 m[1] - 315 928 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  411 947 m[1] - 315 896 m[2] + 96 091 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  414 395 m[1] - 316 312 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 979 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  414 043 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  414 107 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  414 171 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 691 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 755 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 819 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 883 m[1] - 316 248 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 467 m[1] - 316 216 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
```


[illegible]

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395 739 m[1] - 310 920 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
395 451 m[1] - 310 888 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
395 163 m[1] - 310 856 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 187 m[1] - 311 336 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 899 m[1] - 311 304 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 547 m[1] - 311 272 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 611 m[1] - 311 272 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 195 m[1] - 311 240 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 259 m[1] - 311 240 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 323 m[1] - 311 240 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
396 971 m[1] - 311 208 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
397 035 m[1] - 311 208 m[2] + 95 611 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
399 483 m[1] - 311 624 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
399 131 m[1] - 311 592 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
399 195 m[1] - 311 592 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 779 m[1] - 311 560 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 843 m[1] - 311 560 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 907 m[1] - 311 560 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 491 m[1] - 311 528 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
398 555 m[1] - 311 528 m[2] + 95 627 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
401 067 m[1] - 311 944 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 715 m[1] - 311 912 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 779 m[1] - 311 912 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 363 m[1] - 311 880 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
400 427 m[1] - 311 880 m[2] + 95 643 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
402 299 m[1] - 312 232 m[2] + 95 659 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
386 307 m[1] - 308 144 m[2] + 95 331 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 891 m[1] - 308 464 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 603 m[1] - 308 432 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
387 315 m[1] - 308 400 m[2] + 95 347 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
389 475 m[1] - 308 784 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
389 187 m[1] - 308 752 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
388 835 m[1] - 308 720 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
388 899 m[1] - 308 720 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
388 611 m[1] - 308 688 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 771 m[1] - 309 072 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 419 m[1] - 309 040 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 483 m[1] - 309 040 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
390 131 m[1] - 309 008 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
392 355 m[1] - 309 392 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
392 003 m[1] - 309 360 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
380 763 m[1] - 306 232 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
380 475 m[1] - 306 200 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
382 059 m[1] - 306 520 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
373 635 m[1] - 304 000 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]

```

```
{m[1] → 136 910, m[2] → 678 324, m[3] → 0,
 m[4] → -70 576 836, m[5] → 0, m[6] → 0, m[7] → -900 198 292 671}}
```

```
Array[m, 7] /. {m[1] → 136 910, m[2] → 678 324, m[3] → 0,
 m[4] → -70 576 836, m[5] → 0, m[6] → 0, m[7] → -900 198 292 671}
{136 910, 678 324, 0, -70 576 836, 0, 0, -900 198 292 671}
```

```
GCD[136 910, 678 324, 0, -70 576 836, 0, 0, -900 198 292 671]
```

```
1
```

```
Reverse[{136 910, 678 324, 0, -70 576 836, 0, 0, -900 198 292 671}]
```

```
{-900 198 292 671, 0, 0, -70 576 836, 0, 678 324, 136 910}
```

```
{136 910, 678 324, 0, -70 576 836, 0, 0, -900 198 292 671}.gpart[chi4]
-26 832 933
```

```
{136 910, 678 324, 0, -70 576 836, 0, 0, -900 198 292 671}.Transpose[A4]
{9 263 915, 18 026 155, 18 027 147, 303 435, 304 427, -8 657 045, 18 418 587, 53 667 771,
 18 419 579, 27 181 819, 35 944 059, 9 458 107, 62 431 003, 27 182 811, 35 945 051,
 44 707 291, 53 469 531, 9 459 099, 18 221 339, 26 983 579, 35 745 819, 497 627,
 26 984 571, 35 746 811, 498 619, 9 260 859, 18 023 099, 300 379, 27 574 251, 54 061 195,
 62 823 435, 27 575 243, 36 337 483, 45 099 723, 18 613 771, 27 376 011, 9 652 299,
 98 072 619, 71 586 667, 80 348 907, 45 100 715, 53 862 955, 62 625 195, 27 377 003,
 36 139 243, 44 901 483, 9 653 291, 18 415 531, 27 177 771, 71 388 427, 80 150 667,
 44 902 475, 53 664 715, 62 426 955, 18 416 523, 27 178 763, 35 941 003, 44 703 243,
 692 811, 9 455 051, 44 704 235, 26 980 523, 54 453 627, 36 729 915, 63 216 859,
 71 979 099, 45 493 147, 54 255 387, 27 769 435, 36 531 675, 18 807 963, 1 084 251,
 89 504 571, 71 780 859, 45 294 907, 54 057 147, 18 808 955, 27 571 195, 36 333 435,
 9 847 483, 18 609 723, 71 582 619, 45 096 667, 53 858 907, 18 610 715, 27 372 955,
 36 135 195, 887 003, 9 649 243, 71 384 379, 44 898 427, 53 660 667, 18 412 475,
 27 174 715, 44 700 187, 63 609 291, 63 411 051, 45 687 339, 27 963 627, 63 212 811,
 45 489 099, 19 003 147, 27 765 387, 10 041 675, 45 290 859, 18 804 907, 27 567 147,
 1 081 195, 45 092 619, 18 606 667, 36 921 051, 19 197 339, 18 999 099, 10 431 051}
```

$$\begin{array}{l}
 \frac{\sqrt{\frac{113783}{329}}}{23} \quad \text{Root}[-67 + 287115 \#1^2 - 34597480 \#1^4 + 1378864000 \#1^6 - 20783547 \dots] \\
 \frac{2\sqrt{\frac{28446}{329}}}{23} \quad \text{Root}[-179 + 91495 \#1^2 - 13404660 \#1^4 + 524070000 \#1^6 - 647584740 \dots] \\
 \frac{\sqrt{\frac{113845}{329}}}{23} \quad \text{Root}[-163 + 146115 \#1^2 - 20355440 \#1^4 + 910554400 \#1^6 - 15631268 \dots] \\
 \frac{\sqrt{\frac{113838}{329}}}{23} \quad \text{Root}[-269 + 81685 \#1^2 - 8805360 \#1^4 + 406147800 \#1^6 - 781743640 \dots] \\
 \frac{\sqrt{\frac{113899}{329}}}{23} \quad \text{Root}[-1 + 681 \#1^2 - 174280 \#1^4 + 20535680 \#1^6 - 1072550400 \#1 \dots] \\
 \frac{\sqrt{\frac{113893}{329}}}{23} \quad \text{Root}[-11 + 21715 \#1^2 - 5006120 \#1^4 + 371540000 \#1^6 - 1048619840 \dots] \\
 \frac{34\sqrt{\frac{14}{47}}}{23} \quad \text{Root}[-305 + 87421 \#1^2 - 6487780 \#1^4 + 168149120 \#1^6 - 156395580 \dots]
 \end{array}$$

$\frac{23}{\sqrt{\frac{16194}{47}}}$	$\text{Root}[-337 + 282553 \#1^2 - 17267960 \#1^4 + 371011560 \#1^6 - 31243076 \#1^8]$
$\frac{23}{\sqrt{\frac{113349}{329}}}$	$\text{Root}[-1423 + 617255 \#1^2 - 54825360 \#1^4 + 1698992000 \#1^6 - 21006995 \#1^8]$
$\frac{5}{23} \sqrt{\frac{4534}{329}}$	$\text{Root}[-1163 + 264115 \#1^2 - 14951220 \#1^4 + 336730500 \#1^6 - 3265854 \#1^8]$
$\frac{23}{\sqrt{\frac{16193}{47}}}$	$\text{Root}[-3179 + 595459 \#1^2 - 34249200 \#1^4 + 734655040 \#1^6 - 6249336 \#1^8]$
$\frac{23}{\sqrt{\frac{113343}{329}}}$	$\text{Root}[-221 + 48629 \#1^2 - 3500800 \#1^4 + 97504992 \#1^6 - 104521766 \#1^8]$
$\frac{2}{23} \sqrt{\frac{28355}{329}}$	$\text{Root}[-463 + 274015 \#1^2 - 36677040 \#1^4 + 1161843000 \#1^6 - 13045398 \#1^8]$
$\frac{23}{\sqrt{\frac{2413}{7}}}$	$\text{Root}[-1 + 337 \#1^2 - 26888 \#1^4 + 894912 \#1^6 - 13493376 \#1^8]$
$\frac{2}{23} \sqrt{\frac{28353}{329}}$	$\text{Root}[-1373 + 291025 \#1^2 - 17561980 \#1^4 + 452281200 \#1^6 - 5243639 \#1^8]$
$\frac{23}{\sqrt{\frac{4931}{7567}}}$	$\text{Root}[-377 + 70185 \#1^2 - 4344680 \#1^4 + 110926400 \#1^6 - 11345392 \#1^8]$
$\frac{23}{\sqrt{\frac{16282}{47}}}$	$\text{Root}[-277 + 66841 \#1^2 - 5358140 \#1^4 + 163903440 \#1^6 - 15607122 \#1^8]$
$\frac{2}{23} \sqrt{\frac{28351}{329}}$	$\text{Root}[-871 + 190055 \#1^2 - 14904640 \#1^4 + 513957400 \#1^6 - 79291604 \#1^8]$
$\frac{23}{\sqrt{\frac{113485}{329}}}$	$\text{Root}[-8273 + 1283425 \#1^2 - 71977160 \#1^4 + 1817367200 \#1^6 - 2097816 \#1^8]$
$\frac{23}{\sqrt{\frac{113486}{329}}}$	$\text{Root}[-4547 + 836635 \#1^2 - 51599560 \#1^4 + 1295699400 \#1^6 - 13049002 \#1^8]$
$\frac{23}{\sqrt{\frac{16281}{47}}}$	$\text{Root}[-61 + 225149 \#1^2 - 22001080 \#1^4 + 670001920 \#1^6 - 62435696 \#1^8]$
$\frac{31}{23} \sqrt{\frac{118}{329}}$	$\text{Root}[-173 + 143945 \#1^2 - 12801060 \#1^4 + 409520000 \#1^6 - 52454418 \#1^8]$
$\frac{23}{\sqrt{\frac{113467}{329}}}$	$\text{Root}[-1837 + 366965 \#1^2 - 27782160 \#1^4 + 981528800 \#1^6 - 15825884 \#1^8]$
$\frac{2}{23} \sqrt{\frac{28367}{329}}$	$\text{Root}[-601 + 233305 \#1^2 - 21498240 \#1^4 + 759155800 \#1^6 - 10472863 \#1^8]$
$\frac{23}{\sqrt{\frac{4933}{7567}}}$	$\text{Root}[-1 + 265 \#1^2 - 26320 \#1^4 + 1234400 \#1^6 - 27390400 \#1^8]$
$\frac{2}{23} \sqrt{\frac{28365}{329}}$	$\text{Root}[-361 + 64125 \#1^2 - 4258640 \#1^4 + 133337900 \#1^6 - 197868610 \#1^8]$
$\frac{23}{\sqrt{\frac{113461}{329}}}$	$\text{Root}[-1343 + 542615 \#1^2 - 49103440 \#1^4 + 1635335200 \#1^6 - 20949331 \#1^8]$
$\frac{23}{\sqrt{\frac{113515}{329}}}$	$\text{Root}[-169 + 60905 \#1^2 - 7820760 \#1^4 + 441852000 \#1^6 - 106808144 \#1^8]$
$\frac{23}{\sqrt{\frac{16122}{47}}}$	$\text{Root}[-187 + 37479 \#1^2 - 2133100 \#1^4 + 46571580 \#1^6 - 393782050 \#1^8]$
$\frac{3}{23} \sqrt{\frac{12547}{329}}$	$\text{Root}[-1789 + 2467365 \#1^2 - 137543320 \#1^4 + 2871464800 \#1^6 - 2634668 \#1^8]$
$\frac{2}{23} \sqrt{\frac{4833}{47}}$	$\text{Root}[-1879 + 547847 \#1^2 - 23775320 \#1^4 + 409648280 \#1^6 - 3146652 \#1^8]$
$\frac{23}{\sqrt{\frac{112915}{329}}}$	$\text{Root}[-523 + 293075 \#1^2 - 43430360 \#1^4 + 1605139200 \#1^6 - 21230443 \#1^8]$
$\frac{2}{23} \sqrt{\frac{28229}{329}}$	$\text{Root}[-4459 + 755335 \#1^2 - 35625660 \#1^4 + 719356800 \#1^6 - 65875714 \#1^8]$

angle4 =

$$\begin{aligned}
& \frac{\sqrt{\frac{16131}{47}}}{23} \quad \text{Root}[-9439 + 1250311 \#1^2 - 49228600 \#1^4 + 826858880 \#1^6 - 6294025 \\
& \frac{\sqrt{\frac{112989}{329}}}{23} \quad \text{Root}[-853 + 127165 \#1^2 - 6812440 \#1^4 + 158580000 \#1^6 - 155022880 \\
& \frac{\sqrt{\frac{16130}{47}}}{23} \quad \text{Root}[-4243 + 516443 \#1^2 - 22035680 \#1^4 + 398457640 \#1^6 - 3147373 \\
& \frac{127}{23 \sqrt{47}} \quad \text{Root}[-887 + 479599 \#1^2 - 31733800 \#1^4 + 729465760 \#1^6 - 62954672 \\
& \frac{\sqrt{\frac{16142}{47}}}{23} \quad \text{Root}[-1 + 9841 \#1^2 - 1101440 \#1^4 + 37269860 \#1^6 - 392881050 \# \\
& \frac{3 \sqrt{\frac{12554}{329}}}{23} \quad \text{Root}[-2333 + 664085 \#1^2 - 47951760 \#1^4 + 1265446200 \#1^6 - 13157122 \\
& \frac{\sqrt{\frac{16141}{47}}}{23} \quad \text{Root}[-3253 + 609861 \#1^2 - 32470960 \#1^4 + 700648160 \#1^6 - 62868170 \\
& \frac{\sqrt{\frac{112978}{329}}}{23} \quad \text{Root}[-263 + 57415 \#1^2 - 4129840 \#1^4 + 113346700 \#1^6 - 132487545 \\
& \frac{\sqrt{\frac{112979}{329}}}{23} \quad \text{Root}[-1307 + 180315 \#1^2 - 8207040 \#1^4 + 166656800 \#1^6 - 15481080 \\
& \frac{2 \sqrt{\frac{4835}{47}}}{23} \quad \text{Root}[-260 + 31388 \#1^2 - 1301460 \#1^4 + 23983520 \#1^6 - 19648557 \\
& \frac{\sqrt{\frac{112971}{329}}}{23} \quad \text{Root}[-12017 + 1610385 \#1^2 - 80424480 \#1^4 + 1896441600 \#1^6 - 2120161 \\
& \frac{2 \sqrt{\frac{28243}{329}}}{23} \quad \text{Root}[-17153 + 1906225 \#1^2 - 77787480 \#1^4 + 1473954600 \#1^6 - 1316070 \\
& \frac{\sqrt{\frac{16139}{47}}}{23} \quad \text{Root}[-397 + 44413 \#1^2 - 1792208 \#1^4 + 31871648 \#1^6 - 25153036 \\
& \frac{2 \sqrt{\frac{28241}{329}}}{23} \quad \text{Root}[-241 + 37045 \#1^2 - 2125330 \#1^4 + 55993950 \#1^6 - 662662975 \\
& \frac{\sqrt{\frac{112965}{329}}}{23} \quad \text{Root}[-22891 + 3087835 \#1^2 - 142343760 \#1^4 + 2875123200 \#1^6 - 263250 \\
& \frac{\sqrt{\frac{16138}{47}}}{23} \quad \text{Root}[-169 + 50361 \#1^2 - 2600080 \#1^4 + 49287740 \#1^6 - 393061250 \\
& \frac{\sqrt{\frac{113042}{329}}}{23} \quad \text{Root}[-859 + 191815 \#1^2 - 15383740 \#1^4 + 520851200 \#1^6 - 65713534 \\
& \frac{\sqrt{\frac{16149}{47}}}{23} \quad \text{Root}[-79 + 210279 \#1^2 - 19069000 \#1^4 + 566986560 \#1^6 - 628105120 \\
& \frac{\sqrt{\frac{113034}{329}}}{23} \quad \text{Root}[-1759 + 414215 \#1^2 - 29111360 \#1^4 + 847830600 \#1^6 - 10584587 \\
& \frac{\sqrt{\frac{2405}{7}}}{23} \quad \text{Root}[-347 + 45395 \#1^2 - 2268040 \#1^4 + 53073600 \#1^6 - 559340800 \\
& \frac{2 \sqrt{\frac{4837}{47}}}{23} \quad \text{Root}[-1639 + 254103 \#1^2 - 13897720 \#1^4 + 327783640 \#1^6 - 3140886 \\
& \frac{\sqrt{\frac{113026}{329}}}{23} \quad \text{Root}[-23 + 75435 \#1^2 - 7296660 \#1^4 + 260317200 \#1^6 - 4013234200 \\
& \frac{\sqrt{\frac{113027}{329}}}{23} \quad \text{Root}[-12883 + 1632155 \#1^2 - 80073880 \#1^4 + 1887336800 \#1^6 - 2117277 \\
& \frac{2 \sqrt{\frac{28257}{329}}}{23} \quad \text{Root}[-5039 + 666395 \#1^2 - 31615980 \#1^4 + 679496000 \#1^6 - 65731554 \\
& \frac{\sqrt{\frac{16147}{47}}}{23} \quad \text{Root}[-2215 + 521871 \#1^2 - 30977400 \#1^4 + 706642080 \#1^6 - 62824920 \\
& \frac{\sqrt{\frac{113019}{329}}}{23} \quad \text{Root}[-1973 + 390765 \#1^2 - 29180360 \#1^4 + 1013565600 \#1^6 - 16056540 \\
& \frac{\sqrt{\frac{28255}{329}}}{23}
\end{aligned}$$

$\frac{\sqrt[4]{\frac{329}{23}}}{23}$	Root[-3259 + 681 915 #1 ² - 38 764 040 #1 ⁴ + 945 741 400 #1 ⁶ - 10 588 191 #1 ⁸ + 3 259 329 #1 ¹⁰]
$\frac{\sqrt{\frac{113\,096}{329}}}{23}$	Root[-17 + 12 405 #1 ² - 1 753 780 #1 ⁴ + 79 835 500 #1 ⁶ - 1 321 271 450 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{113\,083}{329}}}{23}$	Root[-3217 + 691 025 #1 ² - 50 130 560 #1 ⁴ + 1 577 824 800 #1 ⁶ - 21 143 947 #1 ⁸ + 1 321 271 450 #1 ¹⁰]
$\frac{\sqrt{\frac{16\,061}{47}}}{23}$	Root[-1541 + 717 189 #1 ² - 38 916 040 #1 ⁴ + 771 667 360 #1 ⁶ - 6 344 481 600 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{2\sqrt{\frac{4015}{47}}}{23}$	Root[-601 + 125 581 #1 ² - 8 283 580 #1 ⁴ + 183 724 480 #1 ⁶ - 1 586 300 600 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{112\,489}{329}}}{23}$	Root[-13 + 19 365 #1 ² - 4 916 880 #1 ⁴ + 150 965 600 #1 ⁶ - 1 562 948 800 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{16\,076}{47}}}{23}$	Root[-2305 + 469 273 #1 ² - 22 415 960 #1 ⁴ + 406 886 920 #1 ⁶ - 3 168 997 200 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{3\sqrt{\frac{12\,498}{329}}}{23}$	Root[-1423 + 240 815 #1 ² - 13 711 860 #1 ⁴ + 330 878 700 #1 ⁶ - 3 321 716 700 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{16\,069}{47}}}{23}$	Root[-11 747 + 1 368 091 #1 ² - 50 772 800 #1 ⁴ + 836 266 560 #1 ⁶ - 6 338 715 200 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{5\sqrt{\frac{4499}{329}}}{23}$	Root[-7301 + 1 550 045 #1 ² - 99 893 520 #1 ⁴ + 2 540 114 400 #1 ⁶ - 26 577 337 600 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{2\sqrt{\frac{4017}{47}}}{23}$	Root[-6757 + 674 373 #1 ² - 24 513 360 #1 ⁴ + 410 626 680 #1 ⁶ - 3 169 718 400 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{16\,067}{47}}}{23}$	Root[-7451 + 890 531 #1 ² - 39 248 560 #1 ⁴ + 768 734 240 #1 ⁶ - 6 340 156 800 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{16\,066}{47}}}{23}$	Root[-1 + 2249 #1 ² - 421 864 #1 ⁴ + 13 574 184 #1 ⁶ - 126 817 552 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{16\,079}{47}}}{23}$	Root[-541 + 297 181 #1 ² - 29 248 520 #1 ⁴ + 714 780 480 #1 ⁶ - 6 331 507 200 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{16\,078}{47}}}{23}$	Root[-2213 + 263 841 #1 ² - 11 041 060 #1 ⁴ + 199 133 840 #1 ⁶ - 1 583 057 600 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{112\,538}{329}}}{23}$	Root[-12 323 + 1 559 995 #1 ² - 71 217 080 #1 ⁴ + 1 445 219 400 #1 ⁶ - 13 272 457 600 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{699}{1081}}}{23}$	Root[-715 + 65 963 #1 ² - 2 270 040 #1 ⁴ + 36 555 840 #1 ⁶ - 275 345 600 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{11\sqrt{\frac{936}{329}}}{23}$	Root[-13 + 4385 #1 ² - 422 668 #1 ⁴ + 15 315 520 #1 ⁶ - 214 286 632 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{112\,531}{329}}}{23}$	Root[-35 591 + 3 700 615 #1 ² - 149 219 160 #1 ⁴ + 2 892 304 800 #1 ⁶ - 26 548 504 000 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{2\sqrt{\frac{4019}{47}}}{23}$	Root[-4117 + 383 641 #1 ² - 13 260 860 #1 ⁴ + 211 881 840 #1 ⁶ - 1 583 417 600 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{2\sqrt{\frac{28\,131}{329}}}{23}$	Root[-8647 + 1 198 215 #1 ² - 60 366 640 #1 ⁴ + 1 353 320 600 #1 ⁶ - 13 276 054 400 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{5\sqrt{\frac{643}{47}}}{23}$	Root[-6029 + 1 068 621 #1 ² - 46 316 680 #1 ⁴ + 816 764 480 #1 ⁶ - 6 334 390 400 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{16\,086}{47}}}{23}$	Root[-3457 + 411 577 #1 ² - 18 042 680 #1 ⁴ + 359 607 720 #1 ⁶ - 3 163 230 400 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{112\,594}{329}}}{23}$	Root[-2647 + 361 175 #1 ² - 16 958 860 #1 ⁴ + 354 180 100 #1 ⁶ - 3 314 508 800 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{16\,085}{47}}}{23}$	Root[-12 227 + 1 199 739 #1 ² - 44 780 800 #1 ⁴ + 785 220 640 #1 ⁶ - 6 327 184 000 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{112\,586}{329}}}{23}$	Root[-157 + 32 085 #1 ² - 1 988 760 #1 ⁴ + 53 063 400 #1 ⁶ - 629 406 800 #1 ⁸ + 17 171 717 #1 ¹⁰]
$\frac{\sqrt{\frac{112\,587}{329}}}{23}$	Root[-31 621 + 3 618 365 #1 ² - 151 757 040 #1 ⁴ + 2 944 088 000 #1 ⁶ - 26 519 672 000 #1 ⁸ + 17 171 717 #1 ¹⁰]

$\frac{23}{2\sqrt{\frac{4621}{47}}}$	Root[-3725 + 565 133 #1 ² - 23 367 440 #1 ⁴ + 406 859 960 #1 ⁶ - 3 163 951
$\frac{\sqrt{\frac{112 579}{329}}}{23}$	Root[-4367 + 851 415 #1 ² - 57 667 280 #1 ⁴ + 1 695 424 000 #1 ⁶ - 21 403 435
$\frac{23}{2\sqrt{\frac{28 145}{329}}}$	Root[-13 + 292 865 #1 ² - 16 867 040 #1 ⁴ + 358 400 700 #1 ⁶ - 3 315 409 70
$\frac{\sqrt{\frac{16 094}{47}}}{23}$	Root[-569 + 92 981 #1 ² - 5 536 420 #1 ⁴ + 145 453 520 #1 ⁶ - 1 580 173 80
$\frac{5\sqrt{\frac{4586}{329}}}{23}$	Root[-4147 + 792 395 #1 ² - 48 578 520 #1 ⁴ + 1 238 017 800 #1 ⁶ - 13 243 618
$\frac{11\sqrt{\frac{133}{47}}}{23}$	Root[-3701 + 580 981 #1 ² - 30 032 840 #1 ⁴ + 669 575 520 #1 ⁶ - 6 321 416 0
$\frac{\sqrt{\frac{112 642}{329}}}{23}$	Root[-337 + 154 085 #1 ² - 14 692 940 #1 ⁴ + 444 088 000 #1 ⁶ - 5 342 749 8
$\frac{\sqrt{\frac{112 643}{329}}}{23}$	Root[-3359 + 1 828 895 #1 ² - 115 259 160 #1 ⁴ + 2 695 464 000 #1 ⁶ - 26 490 84
$\frac{\sqrt{\frac{2398}{7}}}{23}$	Root[-1 + 545 #1 ² - 92 140 #1 ⁴ + 4 835 700 #1 ⁶ - 70 368 100 #1 ⁸
$\frac{\sqrt{\frac{15 999}{47}}}{23}$	Root[-757 + 237 381 #1 ² - 21 142 400 #1 ⁴ + 663 693 440 #1 ⁶ - 6 389 171 20
$\frac{\sqrt{\frac{16 007}{47}}}{23}$	Root[-3095 + 615 871 #1 ² - 36 361 320 #1 ⁴ + 762 878 080 #1 ⁶ - 6 383 404 8
$\frac{\sqrt{\frac{16 006}{47}}}{23}$	Root[-4411 + 487 843 #1 ² - 20 162 320 #1 ⁴ + 381 397 640 #1 ⁶ - 3 192 062 8
$\frac{\sqrt{\frac{16 005}{47}}}{23}$	Root[-5231 + 747 239 #1 ² - 35 404 120 #1 ⁴ + 725 206 560 #1 ⁶ - 6 384 846 4
$\frac{\sqrt{\frac{16 015}{47}}}{23}$	Root[-2197 + 767 429 #1 ² - 41 697 760 #1 ⁴ + 801 981 280 #1 ⁶ - 6 377 638 4
$\frac{\sqrt{\frac{16 014}{47}}}{23}$	Root[-865 + 84 061 #1 ² - 3 054 060 #1 ⁴ + 51 478 420 #1 ⁶ - 398 647 450
$\frac{\sqrt{\frac{112 090}{329}}}{23}$	Root[-3533 + 685 605 #1 ² - 44 114 720 #1 ⁴ + 1 192 247 000 #1 ⁶ - 13 387 778
$\frac{\sqrt{\frac{16 013}{47}}}{23}$	Root[-14 293 + 1 332 709 #1 ² - 47 621 120 #1 ⁴ + 807 822 240 #1 ⁶ - 6 379 080
$\frac{2\sqrt{\frac{4003}{47}}}{23}$	Root[-158 + 24 202 #1 ² - 1 175 660 #1 ⁴ + 23 577 620 #1 ⁶ - 199 368 775
$\frac{\sqrt{\frac{16 022}{47}}}{23}$	Root[-5779 + 616 763 #1 ² - 23 808 080 #1 ⁴ + 412 216 360 #1 ⁶ - 3 186 296
$\frac{\sqrt{\frac{112 146}{329}}}{23}$	Root[-4131 + 594 135 #1 ² - 30 304 260 #1 ⁴ + 679 496 400 #1 ⁶ - 6 686 681 4
$\frac{\sqrt{\frac{16 021}{47}}}{23}$	Root[-9815 + 1 233 679 #1 ² - 48 591 960 #1 ⁴ + 830 356 480 #1 ⁶ - 6 373 313 0
$\frac{\sqrt{\frac{112 139}{329}}}{23}$	Root[-4069 + 1 369 165 #1 ² - 95 880 040 #1 ⁴ + 2 528 225 600 #1 ⁶ - 26 750 325
$\frac{\sqrt{\frac{16 030}{47}}}{23}$	Root[-311 + 46 871 #1 ² - 2 383 040 #1 ⁴ + 47 820 580 #1 ⁶ - 397 926 650
$\frac{\sqrt{\frac{112 202}{329}}}{23}$	Root[-2293 + 666 765 #1 ² - 55 282 240 #1 ⁴ + 1 375 535 000 #1 ⁶ - 13 358 946
$\frac{\sqrt{\frac{15 951}{47}}}{23}$	Root[-2125 + 597 229 #1 ² - 33 082 680 #1 ⁴ + 716 083 840 #1 ⁶ - 6 423 769 6
$\frac{5\sqrt{\frac{638}{47}}}{23}$	Root[-997 + 145 561 #1 ² - 7 503 020 #1 ⁴ + 169 418 960 #1 ⁶ - 1 606 122 60
$\frac{\sqrt{\frac{15 958}{47}}}{23}$	

$$\left(\begin{array}{l} \frac{\sqrt[47]{23}}{23} \\ \frac{17 \sqrt[55]{47}}{23} \end{array} \right) \quad \begin{array}{l} \text{Root}[-3065 + 407\,697 \#1^2 - 19\,011\,240 \#1^4 + 378\,275\,880 \#1^6 - 3\,209\,362 \#1^8 \\ \text{Root}[-55 + 143\,551 \#1^2 - 16\,500\,280 \#1^4 + 592\,305\,760 \#1^6 - 6\,464\,134\,40 \#1^8] \end{array}$$

Dimensions[angle4]

{114, 7}

orderedroots[minipoly[chi4]]

{-5, Root[-100 376 + 52 193 #1 - 10 636 #1² + 1062 #1³ - 52 #1⁴ + #1⁵ &, 1],
Root[-100 376 + 52 193 #1 - 10 636 #1² + 1062 #1³ - 52 #1⁴ + #1⁵ &, 2],
9, Root[-100 376 + 52 193 #1 - 10 636 #1² + 1062 #1³ - 52 #1⁴ + #1⁵ &, 3],
Root[-100 376 + 52 193 #1 - 10 636 #1² + 1062 #1³ - 52 #1⁴ + #1⁵ &, 4],
Root[-100 376 + 52 193 #1 - 10 636 #1² + 1062 #1³ - 52 #1⁴ + #1⁵ &, 5]}

chi4

$(-9 + x)^{12} (5 + x)^{32} (-100\,376 + 52\,193 x - 10\,636 x^2 + 1062 x^3 - 52 x^4 + x^5)$

coeff[chi4, (x + 5) (x - 9)] // FullSimplify

{Root[-63 649 280 - 2 436 864 #1 + 203 392 #1² + 3104 #1³ - 147 #1⁴ + #1⁵ &, 1],
Root[-63 649 280 - 2 436 864 #1 + 203 392 #1² + 3104 #1³ - 147 #1⁴ + #1⁵ &, 2],
Root[-63 649 280 - 2 436 864 #1 + 203 392 #1² + 3104 #1³ - 147 #1⁴ + #1⁵ &, 3],
Root[-63 649 280 - 2 436 864 #1 + 203 392 #1² + 3104 #1³ - 147 #1⁴ + #1⁵ &, 4],
Root[-63 649 280 - 2 436 864 #1 + 203 392 #1² + 3104 #1³ - 147 #1⁴ + #1⁵ &, 5]}

{Root[-63 649 280 - 2 436 864 #1 + 203 392 #1² + 3104 #1³ - 147 #1⁴ + #1⁵ &, 1],
Root[-63 649 280 - 2 436 864 #1 + 203 392 #1² + 3104 #1³ - 147 #1⁴ + #1⁵ &, 2],
Root[-63 649 280 - 2 436 864 #1 + 203 392 #1² + 3104 #1³ - 147 #1⁴ + #1⁵ &, 3],
Root[-63 649 280 - 2 436 864 #1 + 203 392 #1² + 3104 #1³ - 147 #1⁴ + #1⁵ &, 4],
Root[-63 649 280 - 2 436 864 #1 + 203 392 #1² + 3104 #1³ - 147 #1⁴ + #1⁵ &, 5]} *
angle4[[5, {2, 3, 5, 6, 7}]] * angle4[[6, {2, 3, 5, 6, 7}]] // FullSimplify

{Root[-14 080 + 1 345 536 #1² - 40 306 720 #1⁴ +
384 600 800 #1⁶ - 955 172 625 #1⁸ + 507 375 625 #1¹⁰ &, 4],
Root[-14 080 + 1 345 536 #1² - 40 306 720 #1⁴ + 384 600 800 #1⁶ -
955 172 625 #1⁸ + 507 375 625 #1¹⁰ &, 5],
Root[-14 080 + 1 345 536 #1² - 40 306 720 #1⁴ + 384 600 800 #1⁶ -
955 172 625 #1⁸ + 507 375 625 #1¹⁰ &, 9],
Root[-14 080 + 1 345 536 #1² - 40 306 720 #1⁴ + 384 600 800 #1⁶ -
955 172 625 #1⁸ + 507 375 625 #1¹⁰ &, 8],
Root[-14 080 + 1 345 536 #1² - 40 306 720 #1⁴ + 384 600 800 #1⁶ -
955 172 625 #1⁸ + 507 375 625 #1¹⁰ &, 10]}


```
sumsplitminpolydeg[
  {Root[-14 080 + 1 345 536 #12 - 40 306 720 #14 + 384 600 800 #16 - 955 172 625 #18 +
    507 375 625 #110 &, 4], Root[-14 080 + 1 345 536 #12 - 40 306 720 #14 +
    384 600 800 #16 - 955 172 625 #18 + 507 375 625 #110 &, 5],
  Root[-14 080 + 1 345 536 #12 - 40 306 720 #14 + 384 600 800 #16 - 955 172 625 #18 +
    507 375 625 #110 &, 9], Root[-14 080 + 1 345 536 #12 - 40 306 720 #14 +
    384 600 800 #16 - 955 172 625 #18 + 507 375 625 #110 &, 8],
  Root[-14 080 + 1 345 536 #12 - 40 306 720 #14 + 384 600 800 #16 -
    955 172 625 #18 + 507 375 625 #110 &, 10]}, 2]
{{40, 40}, {80, 80, 80, 80}}
```

```
chi5 = (-9 + x)12 (5 + x)32 (95 - 20 x + x2) (-1052 + 327 x - 32 x2 + x3)
(-9 + x)12 (5 + x)32 (95 - 20 x + x2) (-1052 + 327 x - 32 x2 + x3)
```

```
list5 = {(95 - 20 x + x2) (4461 - 2420 x + 458 x2 - 36 x3 + x4),
  414 683 - 316 344 x + 96 107 x2 - 14 992 x3 + 1273 x4 - 56 x5 + x6,
  (-7 + x) (-59 181 + 36 733 x - 8482 x2 + 930 x3 - 49 x4 + x5),
  (95 - 20 x + x2) (4357 - 2412 x + 458 x2 - 36 x3 + x4),
  (-11 + x) (-37 825 + 25 349 x - 6434 x2 + 778 x3 - 45 x4 + x5),
  416 139 - 316 664 x + 96 123 x2 - 14 992 x3 + 1273 x4 - 56 x5 + x6,
  (-11 + x) (-7 + x) (5399 - 2850 x + 512 x2 - 38 x3 + x4),
  415 787 - 316 632 x + 96 123 x2 - 14 992 x3 + 1273 x4 - 56 x5 + x6,
  (95 - 20 x + x2) (4373 - 2412 x + 458 x2 - 36 x3 + x4),
  417 243 - 316 952 x + 96 139 x2 - 14 992 x3 + 1273 x4 - 56 x5 + x6,
  (-11 + x) (-37 937 + 25 365 x - 6434 x2 + 778 x3 - 45 x4 + x5),
  (-11 + x) (-7 + x) (95 - 20 x + x2) (57 - 18 x + x2),
  (95 - 20 x + x2) (4405 - 2412 x + 458 x2 - 36 x3 + x4),
  (95 - 20 x + x2) (4237 - 2404 x + 458 x2 - 36 x3 + x4),
  (-9 + x) (-44 971 + 29 837 x - 7334 x2 + 850 x3 - 47 x4 + x5),
  404 323 - 313 472 x + 95 843 x2 - 14 984 x3 + 1273 x4 - 56 x5 + x6,
  404 387 - 313 472 x + 95 843 x2 - 14 984 x3 + 1273 x4 - 56 x5 + x6,
  (95 - 20 x + x2) (4253 - 2404 x + 458 x2 - 36 x3 + x4),
  (-11 + x) (-7 + x) (5279 - 2842 x + 512 x2 - 38 x3 + x4),
  406 547 - 313 856 x + 95 859 x2 - 14 984 x3 + 1273 x4 - 56 x5 + x6,
  (-9 + x) (-45 179 + 29 853 x - 7334 x2 + 850 x3 - 47 x4 + x5),
  (-11 + x) (31 - 12 x + x2) (-1191 + 351 x - 33 x2 + x3),
  406 195 - 313 824 x + 95 859 x2 - 14 984 x3 + 1273 x4 - 56 x5 + x6,
```

$$\begin{aligned}
& (-7+x) (-58\,037 + 36\,541x - 8474x^2 + 930x^3 - 49x^4 + x^5), \\
& (-9+x) (-45\,147 + 29\,853x - 7334x^2 + 850x^3 - 47x^4 + x^5), \\
& 405\,843 - 313\,792x + 95\,859x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& 405\,907 - 313\,792x + 95\,859x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (95 - 20x + x^2) (4269 - 2404x + 458x^2 - 36x^3 + x^4), \\
& (-11+x) (-37\,129 + 25\,189x - 6426x^2 + 778x^3 - 45x^4 + x^5), \\
& (-11+x) (-37\,097 + 25\,189x - 6426x^2 + 778x^3 - 45x^4 + x^5), \\
& 408\,131 - 314\,176x + 95\,875x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (47 - 16x + x^2) (-965 + 307x - 31x^2 + x^3), \\
& (-11+x) (-7+x) (5295 - 2842x + 512x^2 - 38x^3 + x^4), \\
& 407\,779 - 314\,144x + 95\,875x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& 407\,843 - 314\,144x + 95\,875x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-11+x) (-37\,033 + 25\,189x - 6426x^2 + 778x^3 - 45x^4 + x^5), \\
& 407\,427 - 314\,112x + 95\,875x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (95 - 20x + x^2) (4285 - 2404x + 458x^2 - 36x^3 + x^4), \\
& (-11+x) (-37\,241 + 25\,205x - 6426x^2 + 778x^3 - 45x^4 + x^5), \\
& (-11+x) (-37\,209 + 25\,205x - 6426x^2 + 778x^3 - 45x^4 + x^5), \\
& 409\,363 - 314\,464x + 95\,891x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-11+x) (-7+x) (113 - 22x + x^2) (47 - 16x + x^2), \\
& (-11+x) (95 - 20x + x^2) (-391 + 183x - 25x^2 + x^3), \\
& 410\,467 - 314\,752x + 95\,907x^2 - 14\,984x^3 + 1273x^4 - 56x^5 + x^6, \\
& (95 - 20x + x^2) (4317 - 2404x + 458x^2 - 36x^3 + x^4), \\
& (-9+x) (-43\,859 + 29\,645x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9+x) (-43\,827 + 29\,645x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9+x) (95 - 20x + x^2) (-461 + 215x - 27x^2 + x^3), \\
& (-11+x) (-36\,049 + 24\,997x - 6418x^2 + 778x^3 - 45x^4 + x^5), \\
& (-9+x) (37 - 14x + x^2) (-1191 + 351x - 33x^2 + x^3), \\
& (-11+x) (-36\,017 + 24\,997x - 6418x^2 + 778x^3 - 45x^4 + x^5), \\
& 396\,251 - 310\,984x + 95\,595x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-44\,035 + 29\,661x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& 395\,963 - 310\,952x + 95\,595x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-44\,003 + 29\,661x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (95 - 20x + x^2) (4165 - 2396x + 458x^2 - 36x^3 + x^4), \\
& (-11+x) (-9+x) (-7+x) (-575 + 251x - 29x^2 + x^3), \\
& (-11+x) (-36\,193 + 25\,013x - 6418x^2 + 778x^3 - 45x^4 + x^5), \\
& (-9+x) (-44\,243 + 29\,677x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (-11+x) (-36\,161 + 25\,013x - 6418x^2 + 778x^3 - 45x^4 + x^5), \\
& 397\,835 - 311\,304x + 95\,611x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9+x) (-44\,211 + 29\,677x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& 397\,483 - 311\,272x + 95\,611x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& 397\,547 - 311\,272x + 95\,611x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (113 - 22x + x^2) (95 - 20x + x^2) (37 - 14x + x^2), \\
& (-11+x) (-9+x) (4041 - 2332x + 454x^2 - 36x^3 + x^4), \\
& (-11+x) (-7+x) (5191 - 2834x + 512x^2 - 38x^3 + x^4),
\end{aligned}$$

$$\begin{aligned}
& (-9 + x) (-44\,419 + 29\,693x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (-11 + x) (-36\,305 + 25\,029x - 6418x^2 + 778x^3 - 45x^4 + x^5), \\
& 399\,419 - 311\,624x + 95\,627x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9 + x) (-7 + x) (6341 - 3336x + 570x^2 - 40x^3 + x^4), \\
& (-11 + x) (113 - 22x + x^2) (-321 + 159x - 23x^2 + x^3), \\
& 399\,067 - 311\,592x + 95\,627x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (95 - 20x + x^2) (4197 - 2396x + 458x^2 - 36x^3 + x^4), \\
& (-11 + x) (-9 + x) (4057 - 2332x + 454x^2 - 36x^3 + x^4), \\
& (-11 + x) (-36\,481 + 25\,045x - 6418x^2 + 778x^3 - 45x^4 + x^5), \\
& (-9 + x) (-44\,595 + 29\,709x - 7326x^2 + 850x^3 - 47x^4 + x^5), \\
& (-11 + x) (-7 + x) (5207 - 2834x + 512x^2 - 38x^3 + x^4), \\
& 401\,003 - 311\,944x + 95\,643x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-11 + x) (-36\,417 + 25\,045x - 6418x^2 + 778x^3 - 45x^4 + x^5), \\
& (-11 + x) (95 - 20x + x^2) (-383 + 183x - 25x^2 + x^3), \\
& (-11 + x) (-36\,625 + 25\,061x - 6418x^2 + 778x^3 - 45x^4 + x^5), \\
& (-11 + x) (-36\,593 + 25\,061x - 6418x^2 + 778x^3 - 45x^4 + x^5), \\
& 402\,107 - 312\,232x + 95\,659x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (95 - 20x + x^2) (4229 - 2396x + 458x^2 - 36x^3 + x^4), \\
& 404\,043 - 312\,584x + 95\,675x^2 - 14\,976x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9 + x) (-42\,923 + 29\,469x - 7318x^2 + 850x^3 - 47x^4 + x^5), \\
& (-11 + x) (-35\,257 + 24\,837x - 6410x^2 + 778x^3 - 45x^4 + x^5), \\
& (-9 + x) (-43\,099 + 29\,485x - 7318x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9 + x) (-43\,067 + 29\,485x - 7318x^2 + 850x^3 - 47x^4 + x^5), \\
& (-9 + x) (95 - 20x + x^2) (-453 + 215x - 27x^2 + x^3), \\
& (-11 + x) (-9 + x) (3937 - 2324x + 454x^2 - 36x^3 + x^4), \\
& (-11 + x) (-35\,401 + 24\,853x - 6410x^2 + 778x^3 - 45x^4 + x^5), \\
& (-9 + x) (-43\,275 + 29\,501x - 7318x^2 + 850x^3 - 47x^4 + x^5), \\
& 389\,123 - 308\,752x + 95\,363x^2 - 14\,968x^3 + 1273x^4 - 56x^5 + x^6, \\
& (-9 + x) (-43\,243 + 29\,501x - 7318x^2 + 850x^3 - 47x^4 + x^5), \\
& (95 - 20x + x^2) (4093 - 2388x + 458x^2 - 36x^3 + x^4), \\
& (-11 + x) (-9 + x) (3953 - 2324x + 454x^2 - 36x^3 + x^4), \\
& (-11 + x) (-35\,545 + 24\,869x - 6410x^2 + 778x^3 - 45x^4 + x^5), \\
& (-9 + x) (-43\,451 + 29\,517x - 7318x^2 + 850x^3 - 47x^4 + x^5), \\
& (-11 + x) (-35\,513 + 24\,869x - 6410x^2 + 778x^3 - 45x^4 + x^5), \\
& 390\,707 - 309\,072x + 95\,379x^2 - 14\,968x^3 + 1273x^4 - 56x^5 + x^6, \\
& (95 - 20x + x^2) (4109 - 2388x + 458x^2 - 36x^3 + x^4), \\
& (-11 + x) (-9 + x) (-7 + x) (-567 + 251x - 29x^2 + x^3), \\
& (-11 + x) (-35\,689 + 24\,885x - 6410x^2 + 778x^3 - 45x^4 + x^5), \\
& (-9 + x) (-43\,627 + 29\,533x - 7318x^2 + 850x^3 - 47x^4 + x^5), \\
& (-11 + x) (-35\,657 + 24\,885x - 6410x^2 + 778x^3 - 45x^4 + x^5), \\
& (-11 + x) (95 - 20x + x^2) (-375 + 183x - 25x^2 + x^3), \\
& (-11 + x) (-9 + x) (3985 - 2324x + 454x^2 - 36x^3 + x^4), \\
& (-11 + x) (-7 + x) (5119 - 2826x + 512x^2 - 38x^3 + x^4),
\end{aligned}$$

```

(95 - 20 x + x^2) (4141 - 2388 x + 458 x^2 - 36 x^3 + x^4),
(-11 + x) (-9 + x) (3849 - 2316 x + 454 x^2 - 36 x^3 + x^4),
(-9 + x) (-42 307 + 29 325 x - 7310 x^2 + 850 x^3 - 47 x^4 + x^5),
(-9 + x) (95 - 20 x + x^2) (-445 + 215 x - 27 x^2 + x^3),
(-11 + x) (-9 + x) (3865 - 2316 x + 454 x^2 - 36 x^3 + x^4),
(-11 + x) (-34 753 + 24 709 x - 6402 x^2 + 778 x^3 - 45 x^4 + x^5),
(-9 + x) (-42 483 + 29 341 x - 7310 x^2 + 850 x^3 - 47 x^4 + x^5),
(95 - 20 x + x^2) (4021 - 2380 x + 458 x^2 - 36 x^3 + x^4),
(-11 + x) (-9 + x) (3881 - 2316 x + 454 x^2 - 36 x^3 + x^4),
(-11 + x) (-34 897 + 24 725 x - 6402 x^2 + 778 x^3 - 45 x^4 + x^5),
(-11 + x) (95 - 20 x + x^2) (-367 + 183 x - 25 x^2 + x^3),
(-11 + x) (-9 + x) (3897 - 2316 x + 454 x^2 - 36 x^3 + x^4),
(-11 + x) (-9 + x) (3777 - 2308 x + 454 x^2 - 36 x^3 + x^4),
(-9 + x) (95 - 20 x + x^2) (-437 + 215 x - 27 x^2 + x^3),
(-11 + x) (-9 + x) (3793 - 2308 x + 454 x^2 - 36 x^3 + x^4),
(-11 + x) (95 - 20 x + x^2) (-359 + 183 x - 25 x^2 + x^3),
(-13 + x) (-11 + x) (-9 + x) (-3 + x) (95 - 20 x + x^2)};

```

```
Length[list5]
```

```
127
```

```
A5 = CoefficientList[list5, x];
```

```
A5 // MatrixForm
```

```

( 423 795 -319 120 96 371 -15 000 1273 -56 1 )
( 414 683 -316 344 96 107 -14 992 1273 -56 1 )
( 414 267 -316 312 96 107 -14 992 1273 -56 1 )
( 413 915 -316 280 96 107 -14 992 1273 -56 1 )
( 416 075 -316 664 96 123 -14 992 1273 -56 1 )
( 416 139 -316 664 96 123 -14 992 1273 -56 1 )
( 415 723 -316 632 96 123 -14 992 1273 -56 1 )
( 415 787 -316 632 96 123 -14 992 1273 -56 1 )
( 415 435 -316 600 96 123 -14 992 1273 -56 1 )
( 417 243 -316 952 96 139 -14 992 1273 -56 1 )
( 417 307 -316 952 96 139 -14 992 1273 -56 1 )
( 416 955 -316 920 96 139 -14 992 1273 -56 1 )
( 418 475 -317 240 96 155 -14 992 1273 -56 1 )
( 402 515 -313 120 95 827 -14 984 1273 -56 1 )
( 404 739 -313 504 95 843 -14 984 1273 -56 1 )
( 404 323 -313 472 95 843 -14 984 1273 -56 1 )
( 404 387 -313 472 95 843 -14 984 1273 -56 1 )
( 404 035 -313 440 95 843 -14 984 1273 -56 1 )
( 406 483 -313 856 95 859 -14 984 1273 -56 1 )
( 406 547 -313 856 95 859 -14 984 1273 -56 1 )
( 406 611 -313 856 95 859 -14 984 1273 -56 1 )
( 406 131 -313 824 95 859 -14 984 1273 -56 1 )
( 406 195 -313 824 95 859 -14 984 1273 -56 1 )
( 406 259 -313 824 95 859 -14 984 1273 -56 1 )
( 406 323 -313 824 95 859 -14 984 1273 -56 1 )
( 405 843 -313 792 95 859 -14 984 1273 -56 1 )

```

405 907	-313 792	95 859	-14 984	1273	-56	1
405 555	-313 760	95 859	-14 984	1273	-56	1
408 419	-314 208	95 875	-14 984	1273	-56	1
408 067	-314 176	95 875	-14 984	1273	-56	1
408 131	-314 176	95 875	-14 984	1273	-56	1
408 195	-314 176	95 875	-14 984	1273	-56	1
407 715	-314 144	95 875	-14 984	1273	-56	1
407 779	-314 144	95 875	-14 984	1273	-56	1
407 843	-314 144	95 875	-14 984	1273	-56	1
407 363	-314 112	95 875	-14 984	1273	-56	1
407 427	-314 112	95 875	-14 984	1273	-56	1
407 075	-314 080	95 875	-14 984	1273	-56	1
409 651	-314 496	95 891	-14 984	1273	-56	1
409 299	-314 464	95 891	-14 984	1273	-56	1
409 363	-314 464	95 891	-14 984	1273	-56	1
408 947	-314 432	95 891	-14 984	1273	-56	1
408 595	-314 400	95 891	-14 984	1273	-56	1
410 467	-314 752	95 907	-14 984	1273	-56	1
410 115	-314 720	95 907	-14 984	1273	-56	1
394 731	-310 664	95 579	-14 976	1273	-56	1
394 443	-310 632	95 579	-14 976	1273	-56	1
394 155	-310 600	95 579	-14 976	1273	-56	1
396 539	-311 016	95 595	-14 976	1273	-56	1
396 603	-311 016	95 595	-14 976	1273	-56	1
396 187	-310 984	95 595	-14 976	1273	-56	1
396 251	-310 984	95 595	-14 976	1273	-56	1
396 315	-310 984	95 595	-14 976	1273	-56	1
395 963	-310 952	95 595	-14 976	1273	-56	1
396 027	-310 952	95 595	-14 976	1273	-56	1
395 675	-310 920	95 595	-14 976	1273	-56	1
398 475	-311 368	95 611	-14 976	1273	-56	1
398 123	-311 336	95 611	-14 976	1273	-56	1
398 187	-311 336	95 611	-14 976	1273	-56	1
397 771	-311 304	95 611	-14 976	1273	-56	1
397 835	-311 304	95 611	-14 976	1273	-56	1
397 899	-311 304	95 611	-14 976	1273	-56	1
397 483	-311 272	95 611	-14 976	1273	-56	1
397 547	-311 272	95 611	-14 976	1273	-56	1
397 195	-311 240	95 611	-14 976	1273	-56	1
400 059	-311 688	95 627	-14 976	1273	-56	1
399 707	-311 656	95 627	-14 976	1273	-56	1
399 771	-311 656	95 627	-14 976	1273	-56	1
399 355	-311 624	95 627	-14 976	1273	-56	1
399 419	-311 624	95 627	-14 976	1273	-56	1
399 483	-311 624	95 627	-14 976	1273	-56	1
399 003	-311 592	95 627	-14 976	1273	-56	1
399 067	-311 592	95 627	-14 976	1273	-56	1
398 715	-311 560	95 627	-14 976	1273	-56	1
401 643	-312 008	95 643	-14 976	1273	-56	1
401 291	-311 976	95 643	-14 976	1273	-56	1
401 355	-311 976	95 643	-14 976	1273	-56	1
400 939	-311 944	95 643	-14 976	1273	-56	1
401 003	-311 944	95 643	-14 976	1273	-56	1
400 587	-311 912	95 643	-14 976	1273	-56	1
400 235	-311 880	95 643	-14 976	1273	-56	1

402 875	-312 296	95 659	-14 976	1273	-56	1
402 523	-312 264	95 659	-14 976	1273	-56	1
402 107	-312 232	95 659	-14 976	1273	-56	1
401 755	-312 200	95 659	-14 976	1273	-56	1
404 043	-312 584	95 675	-14 976	1273	-56	1
386 307	-308 144	95 331	-14 968	1273	-56	1
387 827	-308 464	95 347	-14 968	1273	-56	1
387 891	-308 464	95 347	-14 968	1273	-56	1
387 603	-308 432	95 347	-14 968	1273	-56	1
387 315	-308 400	95 347	-14 968	1273	-56	1
389 763	-308 816	95 363	-14 968	1273	-56	1
389 411	-308 784	95 363	-14 968	1273	-56	1
389 475	-308 784	95 363	-14 968	1273	-56	1
389 123	-308 752	95 363	-14 968	1273	-56	1
389 187	-308 752	95 363	-14 968	1273	-56	1
388 835	-308 720	95 363	-14 968	1273	-56	1
391 347	-309 136	95 379	-14 968	1273	-56	1
390 995	-309 104	95 379	-14 968	1273	-56	1
391 059	-309 104	95 379	-14 968	1273	-56	1
390 643	-309 072	95 379	-14 968	1273	-56	1
390 707	-309 072	95 379	-14 968	1273	-56	1
390 355	-309 040	95 379	-14 968	1273	-56	1
392 931	-309 456	95 395	-14 968	1273	-56	1
392 579	-309 424	95 395	-14 968	1273	-56	1
392 643	-309 424	95 395	-14 968	1273	-56	1
392 227	-309 392	95 395	-14 968	1273	-56	1
391 875	-309 360	95 395	-14 968	1273	-56	1
394 515	-309 776	95 411	-14 968	1273	-56	1
394 163	-309 744	95 411	-14 968	1273	-56	1
393 395	-309 680	95 411	-14 968	1273	-56	1
381 051	-306 264	95 115	-14 960	1273	-56	1
380 763	-306 232	95 115	-14 960	1273	-56	1
380 475	-306 200	95 115	-14 960	1273	-56	1
382 635	-306 584	95 131	-14 960	1273	-56	1
382 283	-306 552	95 131	-14 960	1273	-56	1
382 347	-306 552	95 131	-14 960	1273	-56	1
381 995	-306 520	95 131	-14 960	1273	-56	1
384 219	-306 904	95 147	-14 960	1273	-56	1
383 867	-306 872	95 147	-14 960	1273	-56	1
383 515	-306 840	95 147	-14 960	1273	-56	1
385 803	-307 224	95 163	-14 960	1273	-56	1
373 923	-304 032	94 883	-14 952	1273	-56	1
373 635	-304 000	94 883	-14 952	1273	-56	1
375 507	-304 352	94 899	-14 952	1273	-56	1
375 155	-304 320	94 899	-14 952	1273	-56	1
366 795	-301 800	94 651	-14 944	1273	-56	1

Dimensions[A5]

{127, 7}

gpart[chi5]

{20 441 595, -15 528 840, 4 710 507, -734 592, 62 377, -2744, 49}

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 &&
  n[13] ≥ 0 && n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 &&
  n[19] ≥ 0 && n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 &&
  n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 &&
  n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 &&
  n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 &&
  n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 &&
  n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 &&
  n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 &&
  n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 &&
  n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 &&
  n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 &&
  n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 && n[84] ≥ 0 &&
  n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 && n[90] ≥ 0 &&
  n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 && n[96] ≥ 0 &&
  n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 && n[102] ≥ 0 &&
  n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 && n[108] ≥ 0 &&
  n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 && n[114] ≥ 0 &&
  n[115] ≥ 0 && n[116] ≥ 0 && n[117] ≥ 0 && n[118] ≥ 0 && n[119] ≥ 0 && n[120] ≥ 0 &&
  n[121] ≥ 0 && n[122] ≥ 0 && n[123] ≥ 0 && n[124] ≥ 0 && n[125] ≥ 0 && n[126] ≥ 0 &&
  n[127] ≥ 0 && Array[n, 127].A5 == gpart[chi5], Array[n, 127], Integers]

{{n[1] → 4, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 7, n[6] → 0, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 10, n[11] → 0, n[12] → 0, n[13] → 24, n[14] → 0, n[15] → 0,
  n[16] → 0, n[17] → 0, n[18] → 0, n[19] → 1, n[20] → 0, n[21] → 0, n[22] → 0,
  n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 0, n[29] → 0,
  n[30] → 1, n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0,
  n[37] → 0, n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0,
  n[44] → 0, n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0,
  n[51] → 0, n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0,
  n[58] → 0, n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0,
  n[65] → 0, n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0,
  n[72] → 0, n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0,
  n[79] → 0, n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0, n[84] → 0, n[85] → 2,
  n[86] → 0, n[87] → 0, n[88] → 0, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0,
  n[93] → 0, n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0,
  n[100] → 0, n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0,
  n[107] → 0, n[108] → 0, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0,
  n[114] → 0, n[115] → 0, n[116] → 0, n[117] → 0, n[118] → 0, n[119] → 0, n[120] → 0,
  n[121] → 0, n[122] → 0, n[123] → 0, n[124] → 0, n[125] → 0, n[126] → 0, n[127] → 0}}

```

Array[n, 127] /.

```
{ {n[1] → 4, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 7, n[6] → 0, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 10, n[11] → 0, n[12] → 0, n[13] → 24, n[14] → 0, n[15] → 0,
  n[16] → 0, n[17] → 0, n[18] → 0, n[19] → 1, n[20] → 0, n[21] → 0,
  n[22] → 0, n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0,
  n[28] → 0, n[29] → 0, n[30] → 1, n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0,
  n[35] → 0, n[36] → 0, n[37] → 0, n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0,
  n[42] → 0, n[43] → 0, n[44] → 0, n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0,
  n[49] → 0, n[50] → 0, n[51] → 0, n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0,
  n[56] → 0, n[57] → 0, n[58] → 0, n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0,
  n[63] → 0, n[64] → 0, n[65] → 0, n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0,
  n[70] → 0, n[71] → 0, n[72] → 0, n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0,
  n[77] → 0, n[78] → 0, n[79] → 0, n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0,
  n[84] → 0, n[85] → 2, n[86] → 0, n[87] → 0, n[88] → 0, n[89] → 0, n[90] → 0,
  n[91] → 0, n[92] → 0, n[93] → 0, n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0,
  n[98] → 0, n[99] → 0, n[100] → 0, n[101] → 0, n[102] → 0, n[103] → 0,
  n[104] → 0, n[105] → 0, n[106] → 0, n[107] → 0, n[108] → 0, n[109] → 0,
  n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0, n[114] → 0, n[115] → 0,
  n[116] → 0, n[117] → 0, n[118] → 0, n[119] → 0, n[120] → 0, n[121] → 0,
  n[122] → 0, n[123] → 0, n[124] → 0, n[125] → 0, n[126] → 0, n[127] → 0} }
```

```
{ {4, 0, 0, 0, 0, 7, 0, 0, 0, 0, 10, 0, 0, 24, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0} }
```

1, 5, 10, 13, 19, 30, 85


```

FindInstance[n[1] == 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 &&
  n[13] ≥ 0 && n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 &&
  n[19] ≥ 0 && n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 &&
  n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 &&
  n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 &&
  n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 &&
  n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 &&
  n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 &&
  n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 &&
  n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 &&
  n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 &&
  n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 &&
  n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 && n[84] ≥ 0 &&
  n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 && n[90] ≥ 0 &&
  n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 && n[96] ≥ 0 &&
  n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 && n[102] ≥ 0 &&
  n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 && n[108] ≥ 0 &&
  n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 && n[114] ≥ 0 &&
  n[115] ≥ 0 && n[116] ≥ 0 && n[117] ≥ 0 && n[118] ≥ 0 && n[119] ≥ 0 && n[120] ≥ 0 &&
  n[121] ≥ 0 && n[122] ≥ 0 && n[123] ≥ 0 && n[124] ≥ 0 && n[125] ≥ 0 && n[126] ≥ 0 &&
  n[127] ≥ 0 && Array[n, 127].A5 == gpart[chi5], Array[n, 127], Integers]

{{n[1] → 0, n[2] → 2, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 2, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 22, n[11] → 0, n[12] → 0, n[13] → 22, n[14] → 0, n[15] → 0,
  n[16] → 0, n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0,
  n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 0, n[29] → 0,
  n[30] → 0, n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0,
  n[37] → 0, n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0,
  n[44] → 0, n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 1, n[49] → 0, n[50] → 0,
  n[51] → 0, n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0,
  n[58] → 0, n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0,
  n[65] → 0, n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0,
  n[72] → 0, n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0,
  n[79] → 0, n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0, n[84] → 0, n[85] → 0,
  n[86] → 0, n[87] → 0, n[88] → 0, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0,
  n[93] → 0, n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0,
  n[100] → 0, n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0,
  n[107] → 0, n[108] → 0, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0,
  n[114] → 0, n[115] → 0, n[116] → 0, n[117] → 0, n[118] → 0, n[119] → 0, n[120] → 0,
  n[121] → 0, n[122] → 0, n[123] → 0, n[124] → 0, n[125] → 0, n[126] → 0, n[127] → 0}}

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] == 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 &&
  n[13] ≥ 0 && n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 &&
  n[19] ≥ 0 && n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 &&
  n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 &&
  n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 &&
  n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 &&
  n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 &&
  n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 &&
  n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 &&
  n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 &&
  n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 &&
  n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 &&
  n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 && n[84] ≥ 0 &&
  n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 && n[90] ≥ 0 &&
  n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 && n[96] ≥ 0 &&
  n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 && n[102] ≥ 0 &&
  n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 && n[108] ≥ 0 &&
  n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 && n[114] ≥ 0 &&
  n[115] ≥ 0 && n[116] ≥ 0 && n[117] ≥ 0 && n[118] ≥ 0 && n[119] ≥ 0 && n[120] ≥ 0 &&
  n[121] ≥ 0 && n[122] ≥ 0 && n[123] ≥ 0 && n[124] ≥ 0 && n[125] ≥ 0 && n[126] ≥ 0 &&
  n[127] ≥ 0 && Array[n, 127].A5 == gpart[chi5], Array[n, 127], Integers]

{{n[1] → 0, n[2] → 2, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 22, n[11] → 2, n[12] → 7, n[13] → 14, n[14] → 0, n[15] → 0,
  n[16] → 0, n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0,
  n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 0, n[29] → 0,
  n[30] → 0, n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0,
  n[37] → 0, n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 0, n[43] → 0,
  n[44] → 2, n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0,
  n[51] → 0, n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0,
  n[58] → 0, n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0,
  n[65] → 0, n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0,
  n[72] → 0, n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0,
  n[79] → 0, n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0, n[84] → 0, n[85] → 0,
  n[86] → 0, n[87] → 0, n[88] → 0, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0,
  n[93] → 0, n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0,
  n[100] → 0, n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0,
  n[107] → 0, n[108] → 0, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0,
  n[114] → 0, n[115] → 0, n[116] → 0, n[117] → 0, n[118] → 0, n[119] → 0, n[120] → 0,
  n[121] → 0, n[122] → 0, n[123] → 0, n[124] → 0, n[125] → 0, n[126] → 0, n[127] → 0}}

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] == 0 && n[11] ≥ 0 && n[12] ≥ 0 &&
  n[13] ≥ 0 && n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 &&
  n[19] ≥ 0 && n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 &&
  n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 &&
  n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 &&
  n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 &&
  n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 &&
  n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 &&
  n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 &&
  n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 &&
  n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 &&
  n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 &&
  n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 && n[84] ≥ 0 &&
  n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 && n[90] ≥ 0 &&
  n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 && n[96] ≥ 0 &&
  n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 && n[102] ≥ 0 &&
  n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 && n[108] ≥ 0 &&
  n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 && n[114] ≥ 0 &&
  n[115] ≥ 0 && n[116] ≥ 0 && n[117] ≥ 0 && n[118] ≥ 0 && n[119] ≥ 0 && n[120] ≥ 0 &&
  n[121] ≥ 0 && n[122] ≥ 0 && n[123] ≥ 0 && n[124] ≥ 0 && n[125] ≥ 0 && n[126] ≥ 0 &&
  n[127] ≥ 0 && Array[n, 127].A5 == gpart[chi5], Array[n, 127], Integers]

{}

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 &&
  n[13] == 0 && n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 &&
  n[19] ≥ 0 && n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 &&
  n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 &&
  n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 &&
  n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 &&
  n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 &&
  n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 &&
  n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 &&
  n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 &&
  n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 &&
  n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 &&
  n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 && n[84] ≥ 0 &&
  n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 && n[90] ≥ 0 &&
  n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 && n[96] ≥ 0 &&
  n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 && n[102] ≥ 0 &&
  n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 && n[108] ≥ 0 &&
  n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 && n[114] ≥ 0 &&
  n[115] ≥ 0 && n[116] ≥ 0 && n[117] ≥ 0 && n[118] ≥ 0 && n[119] ≥ 0 && n[120] ≥ 0 &&
  n[121] ≥ 0 && n[122] ≥ 0 && n[123] ≥ 0 && n[124] ≥ 0 && n[125] ≥ 0 && n[126] ≥ 0 &&
  n[127] ≥ 0 && Array[n, 127].A5 == gpart[chi5], Array[n, 127], Integers]

{}

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 &&
  n[13] ≥ 0 && n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 &&
  n[19] == 0 && n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 &&
  n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 &&
  n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 &&
  n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 &&
  n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 &&
  n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 &&
  n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 &&
  n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 &&
  n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 &&
  n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 &&
  n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 && n[84] ≥ 0 &&
  n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 && n[90] ≥ 0 &&
  n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 && n[96] ≥ 0 &&
  n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 && n[102] ≥ 0 &&
  n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 && n[108] ≥ 0 &&
  n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 && n[114] ≥ 0 &&
  n[115] ≥ 0 && n[116] ≥ 0 && n[117] ≥ 0 && n[118] ≥ 0 && n[119] ≥ 0 && n[120] ≥ 0 &&
  n[121] ≥ 0 && n[122] ≥ 0 && n[123] ≥ 0 && n[124] ≥ 0 && n[125] ≥ 0 && n[126] ≥ 0 &&
  n[127] ≥ 0 && Array[n, 127].A5 == gpart[chi5], Array[n, 127], Integers]

{{n[1] → 4, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 19, n[11] → 0, n[12] → 5, n[13] → 15, n[14] → 0, n[15] → 0,
  n[16] → 0, n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0,
  n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 0, n[29] → 1,
  n[30] → 0, n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0,
  n[37] → 0, n[38] → 0, n[39] → 1, n[40] → 0, n[41] → 0, n[42] → 2, n[43] → 0,
  n[44] → 2, n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0,
  n[51] → 0, n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0,
  n[58] → 0, n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0,
  n[65] → 0, n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0,
  n[72] → 0, n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0,
  n[79] → 0, n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0, n[84] → 0, n[85] → 0,
  n[86] → 0, n[87] → 0, n[88] → 0, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0,
  n[93] → 0, n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0,
  n[100] → 0, n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0,
  n[107] → 0, n[108] → 0, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0,
  n[114] → 0, n[115] → 0, n[116] → 0, n[117] → 0, n[118] → 0, n[119] → 0, n[120] → 0,
  n[121] → 0, n[122] → 0, n[123] → 0, n[124] → 0, n[125] → 0, n[126] → 0, n[127] → 0}}

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 &&
  n[13] ≥ 0 && n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 &&
  n[19] ≥ 0 && n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 &&
  n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] == 0 &&
  n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 &&
  n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 &&
  n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 &&
  n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 &&
  n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 &&
  n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 &&
  n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 &&
  n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 &&
  n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 && n[84] ≥ 0 &&
  n[85] ≥ 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 && n[90] ≥ 0 &&
  n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 && n[96] ≥ 0 &&
  n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 && n[102] ≥ 0 &&
  n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 && n[108] ≥ 0 &&
  n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 && n[114] ≥ 0 &&
  n[115] ≥ 0 && n[116] ≥ 0 && n[117] ≥ 0 && n[118] ≥ 0 && n[119] ≥ 0 && n[120] ≥ 0 &&
  n[121] ≥ 0 && n[122] ≥ 0 && n[123] ≥ 0 && n[124] ≥ 0 && n[125] ≥ 0 && n[126] ≥ 0 &&
  n[127] ≥ 0 && Array[n, 127].A5 == gpart[chi5], Array[n, 127], Integers]

{{n[1] → 6, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 21, n[11] → 0, n[12] → 0, n[13] → 15, n[14] → 0, n[15] → 0,
  n[16] → 0, n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0,
  n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 0, n[29] → 0,
  n[30] → 0, n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0,
  n[37] → 0, n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 4, n[43] → 0,
  n[44] → 2, n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0,
  n[51] → 0, n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0,
  n[58] → 0, n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0,
  n[65] → 0, n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0,
  n[72] → 0, n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0,
  n[79] → 0, n[80] → 0, n[81] → 0, n[82] → 1, n[83] → 0, n[84] → 0, n[85] → 0,
  n[86] → 0, n[87] → 0, n[88] → 0, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0,
  n[93] → 0, n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0,
  n[100] → 0, n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0,
  n[107] → 0, n[108] → 0, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0,
  n[114] → 0, n[115] → 0, n[116] → 0, n[117] → 0, n[118] → 0, n[119] → 0, n[120] → 0,
  n[121] → 0, n[122] → 0, n[123] → 0, n[124] → 0, n[125] → 0, n[126] → 0, n[127] → 0}}

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 &&
  n[13] ≥ 0 && n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 &&
  n[19] ≥ 0 && n[20] ≥ 0 && n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 &&
  n[25] ≥ 0 && n[26] ≥ 0 && n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 &&
  n[31] ≥ 0 && n[32] ≥ 0 && n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 &&
  n[37] ≥ 0 && n[38] ≥ 0 && n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 &&
  n[43] ≥ 0 && n[44] ≥ 0 && n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 &&
  n[49] ≥ 0 && n[50] ≥ 0 && n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 &&
  n[55] ≥ 0 && n[56] ≥ 0 && n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 &&
  n[61] ≥ 0 && n[62] ≥ 0 && n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 &&
  n[67] ≥ 0 && n[68] ≥ 0 && n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 &&
  n[73] ≥ 0 && n[74] ≥ 0 && n[75] ≥ 0 && n[76] ≥ 0 && n[77] ≥ 0 && n[78] ≥ 0 &&
  n[79] ≥ 0 && n[80] ≥ 0 && n[81] ≥ 0 && n[82] ≥ 0 && n[83] ≥ 0 && n[84] ≥ 0 &&
  n[85] == 0 && n[86] ≥ 0 && n[87] ≥ 0 && n[88] ≥ 0 && n[89] ≥ 0 && n[90] ≥ 0 &&
  n[91] ≥ 0 && n[92] ≥ 0 && n[93] ≥ 0 && n[94] ≥ 0 && n[95] ≥ 0 && n[96] ≥ 0 &&
  n[97] ≥ 0 && n[98] ≥ 0 && n[99] ≥ 0 && n[100] ≥ 0 && n[101] ≥ 0 && n[102] ≥ 0 &&
  n[103] ≥ 0 && n[104] ≥ 0 && n[105] ≥ 0 && n[106] ≥ 0 && n[107] ≥ 0 && n[108] ≥ 0 &&
  n[109] ≥ 0 && n[110] ≥ 0 && n[111] ≥ 0 && n[112] ≥ 0 && n[113] ≥ 0 && n[114] ≥ 0 &&
  n[115] ≥ 0 && n[116] ≥ 0 && n[117] ≥ 0 && n[118] ≥ 0 && n[119] ≥ 0 && n[120] ≥ 0 &&
  n[121] ≥ 0 && n[122] ≥ 0 && n[123] ≥ 0 && n[124] ≥ 0 && n[125] ≥ 0 && n[126] ≥ 0 &&
  n[127] ≥ 0 && Array[n, 127].A5 == gpart[chi5], Array[n, 127], Integers]

{{n[1] → 6, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0, n[8] → 0,
  n[9] → 0, n[10] → 20, n[11] → 1, n[12] → 0, n[13] → 14, n[14] → 0, n[15] → 0,
  n[16] → 0, n[17] → 0, n[18] → 0, n[19] → 0, n[20] → 0, n[21] → 0, n[22] → 0,
  n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0, n[28] → 0, n[29] → 0,
  n[30] → 0, n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0, n[35] → 0, n[36] → 0,
  n[37] → 0, n[38] → 0, n[39] → 0, n[40] → 2, n[41] → 0, n[42] → 2, n[43] → 0,
  n[44] → 3, n[45] → 1, n[46] → 0, n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0,
  n[51] → 0, n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0, n[56] → 0, n[57] → 0,
  n[58] → 0, n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0, n[63] → 0, n[64] → 0,
  n[65] → 0, n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0, n[70] → 0, n[71] → 0,
  n[72] → 0, n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0,
  n[79] → 0, n[80] → 0, n[81] → 0, n[82] → 0, n[83] → 0, n[84] → 0, n[85] → 0,
  n[86] → 0, n[87] → 0, n[88] → 0, n[89] → 0, n[90] → 0, n[91] → 0, n[92] → 0,
  n[93] → 0, n[94] → 0, n[95] → 0, n[96] → 0, n[97] → 0, n[98] → 0, n[99] → 0,
  n[100] → 0, n[101] → 0, n[102] → 0, n[103] → 0, n[104] → 0, n[105] → 0, n[106] → 0,
  n[107] → 0, n[108] → 0, n[109] → 0, n[110] → 0, n[111] → 0, n[112] → 0, n[113] → 0,
  n[114] → 0, n[115] → 0, n[116] → 0, n[117] → 0, n[118] → 0, n[119] → 0, n[120] → 0,
  n[121] → 0, n[122] → 0, n[123] → 0, n[124] → 0, n[125] → 0, n[126] → 0, n[127] → 0}}

```

```
list5[{10, 13}] * mu[chi5] // Factor
```

$$\{(-9+x)^{11}(5+x)^{31}(417243-316952x+96139x^2-14992x^3+1273x^4-56x^5+x^6),$$

$$(-9+x)^{11}(5+x)^{31}(95-20x+x^2)(4405-2412x+458x^2-36x^3+x^4)\}$$

```
Array[m, 7].Transpose[A5]
```

```

{423795 m[1] - 319120 m[2] + 96371 m[3] - 15000 m[4] + 1273 m[5] - 56 m[6] + m[7],
 414683 m[1] - 316344 m[2] + 96107 m[3] - 14992 m[4] + 1273 m[5] - 56 m[6] + m[7],

```

414 267 m[1] - 316 312 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 413 915 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 416 075 m[1] - 316 664 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 416 139 m[1] - 316 664 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 415 723 m[1] - 316 632 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 415 787 m[1] - 316 632 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 415 435 m[1] - 316 600 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 417 243 m[1] - 316 952 m[2] + 96 139 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 417 307 m[1] - 316 952 m[2] + 96 139 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 416 955 m[1] - 316 920 m[2] + 96 139 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 418 475 m[1] - 317 240 m[2] + 96 155 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 402 515 m[1] - 313 120 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 404 739 m[1] - 313 504 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 404 323 m[1] - 313 472 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 404 387 m[1] - 313 472 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 404 035 m[1] - 313 440 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 483 m[1] - 313 856 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 547 m[1] - 313 856 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 611 m[1] - 313 856 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 131 m[1] - 313 824 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 195 m[1] - 313 824 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 259 m[1] - 313 824 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 406 323 m[1] - 313 824 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 405 843 m[1] - 313 792 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 405 907 m[1] - 313 792 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 405 555 m[1] - 313 760 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 419 m[1] - 314 208 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 067 m[1] - 314 176 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 131 m[1] - 314 176 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 195 m[1] - 314 176 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 715 m[1] - 314 144 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 779 m[1] - 314 144 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 843 m[1] - 314 144 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 363 m[1] - 314 112 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 427 m[1] - 314 112 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 407 075 m[1] - 314 080 m[2] + 95 875 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 409 651 m[1] - 314 496 m[2] + 95 891 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 409 299 m[1] - 314 464 m[2] + 95 891 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 409 363 m[1] - 314 464 m[2] + 95 891 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 947 m[1] - 314 432 m[2] + 95 891 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 408 595 m[1] - 314 400 m[2] + 95 891 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 410 467 m[1] - 314 752 m[2] + 95 907 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 410 115 m[1] - 314 720 m[2] + 95 907 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 394 731 m[1] - 310 664 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 394 443 m[1] - 310 632 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 394 155 m[1] - 310 600 m[2] + 95 579 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
 396 539 m[1] - 311 016 m[2] + 95 595 m[3] - 14 976 m[4] + 1273 m[5] - 56 m[6] + m[7] ,

[illegible]

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388 835 m[1] - 308 720 m[2] + 95 363 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
391 347 m[1] - 309 136 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
390 995 m[1] - 309 104 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
391 059 m[1] - 309 104 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
390 643 m[1] - 309 072 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
390 707 m[1] - 309 072 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
390 355 m[1] - 309 040 m[2] + 95 379 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
392 931 m[1] - 309 456 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
392 579 m[1] - 309 424 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
392 643 m[1] - 309 424 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
392 227 m[1] - 309 392 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
391 875 m[1] - 309 360 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
394 515 m[1] - 309 776 m[2] + 95 411 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
394 163 m[1] - 309 744 m[2] + 95 411 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
393 395 m[1] - 309 680 m[2] + 95 411 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
381 051 m[1] - 306 264 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
380 763 m[1] - 306 232 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
380 475 m[1] - 306 200 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
382 635 m[1] - 306 584 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
382 283 m[1] - 306 552 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
382 347 m[1] - 306 552 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
381 995 m[1] - 306 520 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
384 219 m[1] - 306 904 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
383 867 m[1] - 306 872 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
383 515 m[1] - 306 840 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
385 803 m[1] - 307 224 m[2] + 95 163 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
373 923 m[1] - 304 032 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
373 635 m[1] - 304 000 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
375 507 m[1] - 304 352 m[2] + 94 899 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
375 155 m[1] - 304 320 m[2] + 94 899 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ,
366 795 m[1] - 301 800 m[2] + 94 651 m[3] - 14 944 m[4] + 1273 m[5] - 56 m[6] + m[7] }

```

Array[m, 7].gpart[chi5]

```

20 441 595 m[1] - 15 528 840 m[2] + 4 710 507 m[3] -
734 592 m[4] + 62 377 m[5] - 2744 m[6] + 49 m[7]

```

FindInstance[20 441 595 m[1] - 15 528 840 m[2] +

```

4 710 507 m[3] - 734 592 m[4] + 62 377 m[5] - 2744 m[6] + 49 m[7] < 0 &&
423 795 m[1] - 319 120 m[2] + 96 371 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 683 m[1] - 316 344 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 267 m[1] - 316 312 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
413 915 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
416 075 m[1] - 316 664 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
416 139 m[1] - 316 664 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 723 m[1] - 316 632 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 787 m[1] - 316 632 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 435 m[1] - 316 600 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&

```

[illegible]

[illegible]

```

392 931 m[1] - 309 456 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
392 579 m[1] - 309 424 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
392 643 m[1] - 309 424 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
392 227 m[1] - 309 392 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
391 875 m[1] - 309 360 m[2] + 95 395 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
394 515 m[1] - 309 776 m[2] + 95 411 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
394 163 m[1] - 309 744 m[2] + 95 411 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
393 395 m[1] - 309 680 m[2] + 95 411 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
381 051 m[1] - 306 264 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
380 763 m[1] - 306 232 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
380 475 m[1] - 306 200 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
382 635 m[1] - 306 584 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
382 283 m[1] - 306 552 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
382 347 m[1] - 306 552 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
381 995 m[1] - 306 520 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
384 219 m[1] - 306 904 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
383 867 m[1] - 306 872 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
383 515 m[1] - 306 840 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
385 803 m[1] - 307 224 m[2] + 95 163 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
373 923 m[1] - 304 032 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
373 635 m[1] - 304 000 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
375 507 m[1] - 304 352 m[2] + 94 899 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
375 155 m[1] - 304 320 m[2] + 94 899 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
366 795 m[1] - 301 800 m[2] + 94 651 m[3] - 14 944 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{}

```

```

FindInstance[20 441 595 m[1] - 15 528 840 m[2] +
  4 710 507 m[3] - 734 592 m[4] + 62 377 m[5] - 2744 m[6] + 49 m[7] < 0 &&
  423 795 m[1] - 319 120 m[2] + 96 371 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  414 683 m[1] - 316 344 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  414 267 m[1] - 316 312 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  413 915 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  416 075 m[1] - 316 664 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  416 139 m[1] - 316 664 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  415 723 m[1] - 316 632 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  415 787 m[1] - 316 632 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  415 435 m[1] - 316 600 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  417 243 m[1] - 316 952 m[2] + 96 139 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] < 0 &&
  417 307 m[1] - 316 952 m[2] + 96 139 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  416 955 m[1] - 316 920 m[2] + 96 139 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  418 475 m[1] - 317 240 m[2] + 96 155 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  402 515 m[1] - 313 120 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  404 739 m[1] - 313 504 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
  404 323 m[1] - 313 472 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&

```

[illegible]

397 547 m[1]	- 311 272 m[2]	+ 95 611 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
397 195 m[1]	- 311 240 m[2]	+ 95 611 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
400 059 m[1]	- 311 688 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
399 707 m[1]	- 311 656 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
399 771 m[1]	- 311 656 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
399 355 m[1]	- 311 624 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
399 419 m[1]	- 311 624 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
399 483 m[1]	- 311 624 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
399 003 m[1]	- 311 592 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
399 067 m[1]	- 311 592 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
398 715 m[1]	- 311 560 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
401 643 m[1]	- 312 008 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
401 291 m[1]	- 311 976 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
401 355 m[1]	- 311 976 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
400 939 m[1]	- 311 944 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
401 003 m[1]	- 311 944 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
400 587 m[1]	- 311 912 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
400 235 m[1]	- 311 880 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
402 875 m[1]	- 312 296 m[2]	+ 95 659 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
402 523 m[1]	- 312 264 m[2]	+ 95 659 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
402 107 m[1]	- 312 232 m[2]	+ 95 659 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
401 755 m[1]	- 312 200 m[2]	+ 95 659 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
404 043 m[1]	- 312 584 m[2]	+ 95 675 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
386 307 m[1]	- 308 144 m[2]	+ 95 331 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
387 827 m[1]	- 308 464 m[2]	+ 95 347 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
387 891 m[1]	- 308 464 m[2]	+ 95 347 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
387 603 m[1]	- 308 432 m[2]	+ 95 347 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
387 315 m[1]	- 308 400 m[2]	+ 95 347 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
389 763 m[1]	- 308 816 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
389 411 m[1]	- 308 784 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
389 475 m[1]	- 308 784 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
389 123 m[1]	- 308 752 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
389 187 m[1]	- 308 752 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
388 835 m[1]	- 308 720 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
391 347 m[1]	- 309 136 m[2]	+ 95 379 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
390 995 m[1]	- 309 104 m[2]	+ 95 379 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
391 059 m[1]	- 309 104 m[2]	+ 95 379 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7]	≥ 0 &&
390 643 m[1]	- 309 072 m[2]	+ 95 379 m[3]	- 14 968 m[4]</				

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393 395 m[1] - 309 680 m[2] + 95 411 m[3] - 14 968 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
381 051 m[1] - 306 264 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
380 763 m[1] - 306 232 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
380 475 m[1] - 306 200 m[2] + 95 115 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
382 635 m[1] - 306 584 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
382 283 m[1] - 306 552 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
382 347 m[1] - 306 552 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
381 995 m[1] - 306 520 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
384 219 m[1] - 306 904 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
383 867 m[1] - 306 872 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
383 515 m[1] - 306 840 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
385 803 m[1] - 307 224 m[2] + 95 163 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
373 923 m[1] - 304 032 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
373 635 m[1] - 304 000 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
375 507 m[1] - 304 352 m[2] + 94 899 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
375 155 m[1] - 304 320 m[2] + 94 899 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
366 795 m[1] - 301 800 m[2] + 94 651 m[3] - 14 944 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{{m[1] → 1 296 273, m[2] → 14 258 992, m[3] → 159 441 460,
  m[4] → 1 810 892 027, m[5] → 0, m[6] → 0, m[7] → 15 798 865 000 678}}

Array[m, 7] /. {m[1] → 1 296 273, m[2] → 14 258 992, m[3] → 159 441 460,
  m[4] → 1 810 892 027, m[5] → 0, m[6] → 0, m[7] → 15 798 865 000 678}
{1 296 273, 14 258 992, 159 441 460, 1 810 892 027, 0, 0, 15 798 865 000 678}

GCD[1 296 273, 14 258 992, 159 441 460, 1 810 892 027, 0, 0, 15 798 865 000 678]
1

Reverse[{1 296 273, 14 258 992, 159 441 460, 1 810 892 027, 0, 0, 15 798 865 000 678}]
{15 798 865 000 678, 0, 0, 1 810 892 027, 159 441 460, 14 258 992, 1 296 273}

{1 296 273, 14 258 992, 159 441 460, 1 810 892 027, 0, 0, 15 798 865 000 678}.gpart[chi5]
-15 098 387

```



```
{1 296 273, 14 258 992, 159 441 460, 1 810 892 027, 0, 0, 15 798 865 000 678}.Transpose[A5]
{42 026 333, 207 939 325, 124 977 501, 124 977 149, 537 261, 83 498 733, 536 909,
83 498 381, 83 498 029, -40 942 211, 42 019 261, 42 018 909, 539 789, 249 407 085,
207 928 669, 124 966 845, 207 928 317, 207 927 965, 526 957, 83 488 429, 166 449 901,
526 605, 83 488 077, 166 449 549, 249 411 021, 83 487 725, 166 449 197, 166 448 845,
42 009 661, 42 009 309, 124 970 781, 207 932 253, 42 008 957, 124 970 429, 207 931 901,
42 008 605, 124 970 077, 124 969 725, 83 491 661, 83 491 309, 166 452 781, 83 490 957,
83 490 605, 42 011 837, 42 011 485, 124 956 541, 207 917 661, 290 878 781, 516 301,
83 477 773, 515 949, 83 477 421, 166 438 893, 166 438 541, 249 400 013, 249 399 661,
41 999 005, 41 998 653, 124 960 125, 41 998 301, 124 959 773, 207 921 245, 124 959 421,
207 920 893, 207 920 541, 83 481 357, 83 481 005, 166 442 477, 83 480 653, 166 442 125,
249 403 597, 83 480 301, 166 441 773, 166 441 421, 124 963 709, 124 963 357,
207 924 829, 124 963 005, 207 924 477, 124 962 653, 124 962 301, 166 445 709,
166 445 357, 83 483 533, 83 483 181, 124 966 237, 83 466 765, 41 987 645, 124 949 117,
207 910 237, 290 871 357, 83 470 349, 83 469 997, 166 431 469, 166 431 117, 249 392 589,
249 392 237, 124 952 701, 124 952 349, 207 913 821, 124 951 997, 207 913 469,
207 913 117, 166 435 053, 166 434 701, 249 396 173, 166 434 349, 166 433 997,
207 917 405, 207 917 053, 124 954 877, 124 941 693, 207 902 813, 290 863 933, 166 424 045,
166 423 693, 249 385 165, 249 384 813, 207 906 397, 207 906 045, 207 905 693,
249 388 749, 207 895 389, 290 856 509, 249 377 741, 249 377 389, 290 849 085}
```

```
FindInstance[20 441 595 m[1] - 15 528 840 m[2] +
4 710 507 m[3] - 734 592 m[4] + 62 377 m[5] - 2744 m[6] + 49 m[7] < 0 &&
423 795 m[1] - 319 120 m[2] + 96 371 m[3] - 15 000 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 683 m[1] - 316 344 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
414 267 m[1] - 316 312 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
413 915 m[1] - 316 280 m[2] + 96 107 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
416 075 m[1] - 316 664 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
416 139 m[1] - 316 664 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 723 m[1] - 316 632 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 787 m[1] - 316 632 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
415 435 m[1] - 316 600 m[2] + 96 123 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
417 243 m[1] - 316 952 m[2] + 96 139 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
417 307 m[1] - 316 952 m[2] + 96 139 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
416 955 m[1] - 316 920 m[2] + 96 139 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
418 475 m[1] - 317 240 m[2] + 96 155 m[3] - 14 992 m[4] + 1273 m[5] - 56 m[6] + m[7] < 0 &&
402 515 m[1] - 313 120 m[2] + 95 827 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
404 739 m[1] - 313 504 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
404 323 m[1] - 313 472 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
404 387 m[1] - 313 472 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
404 035 m[1] - 313 440 m[2] + 95 843 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
406 483 m[1] - 313 856 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
406 547 m[1] - 313 856 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
406 611 m[1] - 313 856 m[2] + 95 859 m[3] - 14 984 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
```

[illegible]

399 355 m[1]	- 311 624 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
399 419 m[1]	- 311 624 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
399 483 m[1]	- 311 624 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
399 003 m[1]	- 311 592 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
399 067 m[1]	- 311 592 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
398 715 m[1]	- 311 560 m[2]	+ 95 627 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
401 643 m[1]	- 312 008 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
401 291 m[1]	- 311 976 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
401 355 m[1]	- 311 976 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
400 939 m[1]	- 311 944 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
401 003 m[1]	- 311 944 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
400 587 m[1]	- 311 912 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
400 235 m[1]	- 311 880 m[2]	+ 95 643 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
402 875 m[1]	- 312 296 m[2]	+ 95 659 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
402 523 m[1]	- 312 264 m[2]	+ 95 659 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
402 107 m[1]	- 312 232 m[2]	+ 95 659 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
401 755 m[1]	- 312 200 m[2]	+ 95 659 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
404 043 m[1]	- 312 584 m[2]	+ 95 675 m[3]	- 14 976 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
386 307 m[1]	- 308 144 m[2]	+ 95 331 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
387 827 m[1]	- 308 464 m[2]	+ 95 347 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
387 891 m[1]	- 308 464 m[2]	+ 95 347 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
387 603 m[1]	- 308 432 m[2]	+ 95 347 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
387 315 m[1]	- 308 400 m[2]	+ 95 347 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
389 763 m[1]	- 308 816 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
389 411 m[1]	- 308 784 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
389 475 m[1]	- 308 784 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
389 123 m[1]	- 308 752 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
389 187 m[1]	- 308 752 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
388 835 m[1]	- 308 720 m[2]	+ 95 363 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
391 347 m[1]	- 309 136 m[2]	+ 95 379 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
390 995 m[1]	- 309 104 m[2]	+ 95 379 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
391 059 m[1]	- 309 104 m[2]	+ 95 379 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
390 643 m[1]	- 309 072 m[2]	+ 95 379 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
390 707 m[1]	- 309 072 m[2]	+ 95 379 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
390 355 m[1]	- 309 040 m[2]	+ 95 379 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
392 931 m[1]	- 309 456 m[2]	+ 95 395 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
392 579 m[1]	- 309 424 m[2]	+ 95 395 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
392 643 m[1]	- 309 424 m[2]	+ 95 395 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
392 227 m[1]	- 309 392 m[2]	+ 95 395 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
391 875 m[1]	- 309 360 m[2]	+ 95 395 m[3]	- 14 968 m[4]	+ 1273 m[5]	- 56 m[6]	+ m[7] ≥ 0
394 515 m[1]	- 309 776 m[2]	+ 95 411 m[3]	- 14			

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382 283 m[1] - 306 552 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
382 347 m[1] - 306 552 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
381 995 m[1] - 306 520 m[2] + 95 131 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
384 219 m[1] - 306 904 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
383 867 m[1] - 306 872 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
383 515 m[1] - 306 840 m[2] + 95 147 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
385 803 m[1] - 307 224 m[2] + 95 163 m[3] - 14 960 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
373 923 m[1] - 304 032 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
373 635 m[1] - 304 000 m[2] + 94 883 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
375 507 m[1] - 304 352 m[2] + 94 899 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
375 155 m[1] - 304 320 m[2] + 94 899 m[3] - 14 952 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0 &&
366 795 m[1] - 301 800 m[2] + 94 651 m[3] - 14 944 m[4] + 1273 m[5] - 56 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{{m[1] → -42 311, m[2] → 0, m[3] → 1 467 053,
  m[4] → 8 229 987, m[5] → 0, m[6] → 0, m[7] → 0}}

Array[m, 7] /. {m[1] → -42 311, m[2] → 0,
  m[3] → 1 467 053, m[4] → 8 229 987, m[5] → 0, m[6] → 0, m[7] → 0}
{-42 311, 0, 1 467 053, 8 229 987, 0, 0, 0}

GCD[-42 311, 0, 1 467 053, 8 229 987, 0, 0, 0]
1

Reverse[{-42 311, 0, 1 467 053, 8 229 987, 0, 0, 0}]
{0, 0, 0, 8 229 987, 1 467 053, 0, -42 311}

{-42 311, 0, 1 467 053, 8 229 987, 0, 0, 0}.gpart[chi5]
-23 510 478

```

```
{-42 311, 0, 1 467 053, 8 229 987, 0, 0, 0}.Transpose[A5]
{369 418, 64 445 154, 82 046 530, 96 940 002, 29 021 090, 26 313 186, 43 914 562,
41 206 658, 56 100 130, 3 074 690, 366 786, 15 260 258, -25 579 614, 234 350 458,
163 723 642, 181 325 018, 178 617 114, 193 510 586, 113 406 106, 110 698 202,
107 990 298, 128 299 578, 125 591 674, 122 883 770, 120 175 866, 140 485 146,
137 777 242, 152 670 714, 54 964 858, 69 858 330, 67 150 426, 64 442 522, 84 751 802,
82 043 898, 79 335 994, 99 645 274, 96 937 370, 111 830 842, 26 310 554, 41 204 026,
38 496 122, 56 097 498, 70 990 970, 15 257 626, 30 151 098, 265 710 034, 277 895 602,
290 081 170, 212 684 594, 209 976 690, 227 578 066, 224 870 162, 222 162 258,
237 055 730, 234 347 826, 249 241 298, 154 243 346, 169 136 818, 166 428 914,
184 030 290, 181 322 386, 178 614 482, 196 215 858, 193 507 954, 208 401 426,
110 695 570, 125 589 042, 122 881 138, 140 482 514, 137 774 610, 135 066 706,
155 375 986, 152 668 082, 167 561 554, 67 147 794, 82 041 266, 79 333 362, 96 934 738,
94 226 834, 111 828 210, 126 721 682, 38 493 490, 53 386 962, 70 988 338, 85 881 810,
12 547 090, 324 148 650, 283 308 778, 280 600 874, 292 786 442, 304 972 010,
224 867 530, 239 761 002, 237 053 098, 251 946 570, 249 238 666, 264 132 138,
181 319 754, 196 213 226, 193 505 322, 211 106 698, 208 398 794, 223 292 266,
137 771 978, 152 665 450, 149 957 546, 167 558 922, 182 452 394, 94 224 202,
109 117 674, 141 612 522, 295 491 714, 307 677 282, 319 862 850, 251 943 938,
266 837 410, 264 129 506, 279 022 978, 208 396 162, 223 289 634, 238 183 106,
164 848 386, 322 568 122, 334 753 690, 279 020 346, 293 913 818, 349 644 530}
```

```
anglesq5 = anglesquaredmat[chi5, list5] // FullSimplify;
```

```
Dimensions[anglesq5]
```

```
{127, 7}
```

```
angle5 = Sqrt[anglesq5] // FullSimplify;
```

```
angle5 // MatrixForm
```

$$\begin{pmatrix} \frac{\sqrt{\frac{4142}{129}}}{7} & \text{Root}\left[-4 + 2750 \#1^2 - 218957 \#1^4 + 2193387 \#1^6 \&, 5\right] & \\ \frac{3\sqrt{\frac{8402}{2365}}}{7} & \text{Root}\left[-13 + 32683 \#1^2 - 3113978 \#1^4 + 20471612 \#1^6 \&, 5\right] & \sqrt{\frac{17}{226}} \\ \frac{2\sqrt{\frac{18903}{2365}}}{7} & \text{Root}\left[-177 + 100457 \#1^2 - 3118836 \#1^4 + 20471612 \#1^6 \&, 5\right] & \sqrt{\frac{1}{110}} \\ \frac{2\sqrt{\frac{1031}{129}}}{7} & \text{Root}\left[-676 + 129584 \#1^2 - 2829785 \#1^4 + 15353709 \#1^6 \&, 5\right] & \\ \frac{4\sqrt{\frac{2837}{1419}}}{7} & \text{Root}\left[-79 + 34965 \#1^2 - 2919658 \#1^4 + 61414836 \#1^6 \&, 5\right] & \frac{1}{2} \sqrt{\frac{1}{55}} \\ \frac{9\sqrt{\frac{934}{2365}}}{7} & \text{Root}\left[-9 + 3717 \#1^2 - 405643 \#1^4 + 5117903 \#1^6 \&, 4\right] & \sqrt{\frac{1}{55}} \\ \frac{8\sqrt{\frac{1182}{2365}}}{7} & \text{Root}\left[-27 + 5329 \#1^2 - 232490 \#1^4 + 2924516 \#1^6 \&, 6\right] & \text{Root}\left[1 - 70 \#1\right] \\ \frac{\sqrt{\frac{226946}{7095}}}{7} & \text{Root}\left[-1187 + 182987 \#1^2 - 6830348 \#1^4 + 61414836 \#1^6 \&, 5\right] & \sqrt{\frac{1}{110}} \\ \frac{\sqrt{\frac{4126}{129}}}{7} & \text{Root}\left[-832 + 87752 \#1^2 - 2198245 \#1^4 + 15353709 \#1^6 \&, 5\right] & \end{pmatrix}$$

$\frac{\sqrt{\frac{227054}{7095}}}{7}$	$\text{Root}[-59 + 25417 \#1^2 - 2356130 \#1^4 + 61414836 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1$
$\frac{4\sqrt{\frac{14191}{7095}}}{7}$	$\text{Root}[-467 + 83195 \#1^2 - 4304188 \#1^4 + 61414836 \#1^6 \&, 4]$	$\sqrt{\frac{1}{110}}$
$\frac{4\sqrt{2}}{7}$	$\text{Root}[-4 + 392 \#1^2 - 12145 \#1^4 + 119021 \#1^6 \&, 5]$	
$\sqrt{\frac{590}{903}}$	$\text{Root}[-16 + 2576 \#1^2 - 133595 \#1^4 + 2193387 \#1^6 \&, 5]$	
$\frac{6\sqrt{\frac{38}{43}}}{7}$	$\text{Root}[-292 + 122822 \#1^2 - 1586137 \#1^4 + 5117903 \#1^6 \&, 5]$	
$\sqrt{\frac{32266}{49665}}$	$\text{Root}[-43 + 21749 \#1^2 - 449365 \#1^4 + 2193387 \#1^6 \&, 5]$	$\sqrt{\frac{1}{55}}$
$\frac{2\sqrt{\frac{56461}{7095}}}{7}$	$\text{Root}[-313 + 95163 \#1^2 - 1799542 \#1^4 + 8773548 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1$
$\frac{\sqrt{\frac{75282}{2365}}}{7}$	$\text{Root}[-1629 + 293349 \#1^2 - 4848284 \#1^4 + 20471612 \#1^6 \&, 5]$	$\sqrt{\frac{1}{110}}$
$\frac{\sqrt{\frac{4106}{129}}}{7}$	$\text{Root}[-2612 + 295190 \#1^2 - 4126871 \#1^4 + 15353709 \#1^6 \&, 5]$	
$\frac{8\sqrt{\frac{107}{215}}}{7}$	$\text{Root}[-1 + 2165 \#1^2 - 199872 \#1^4 + 2924516 \#1^6 \&, 6]$	
$\frac{19\sqrt{\frac{626}{7095}}}{7}$	$\text{Root}[-449 + 162127 \#1^2 - 6145370 \#1^4 + 61414836 \#1^6 \&, 5]$	$\sqrt{\frac{23}{226}}$
$2\sqrt{\frac{1153}{7095}}$	$\text{Root}[-23 + 4895 \#1^2 - 165172 \#1^4 + 1253364 \#1^6 \&, 5]$	$\sqrt{\frac{3}{110}}$
$\frac{4\sqrt{\frac{14123}{7095}}}{7}$	$\text{Root}[-101 + 28770 \#1^2 - 1539986 \#1^4 + 15353709 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\frac{\sqrt{\frac{45194}{1419}}}{7}$	$\text{Root}[-1719 + 293181 \#1^2 - 8108002 \#1^4 + 61414836 \#1^6 \&, 6]$	$\frac{1}{2}\sqrt{\frac{1}{55}}$
$\frac{2\sqrt{\frac{18831}{2365}}}{7}$	$\text{Root}[-279 + 36029 \#1^2 - 838005 \#1^4 + 5117903 \#1^6 \&, 5]$	$\sqrt{\frac{1}{55}}$
$\sqrt{\frac{32282}{49665}}$	$\text{Root}[-701 + 76083 \#1^2 - 1714874 \#1^4 + 8773548 \#1^6 \&, 5]$	$\sqrt{\frac{17}{226}}$
$\frac{\sqrt{\frac{75318}{2365}}}{7}$	$\text{Root}[-1313 + 151291 \#1^2 - 3356878 \#1^4 + 20471612 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1$
$\frac{2\sqrt{\frac{56489}{7095}}}{7}$	$\text{Root}[-6967 + 654479 \#1^2 - 12018692 \#1^4 + 61414836 \#1^6 \&, 5]$	$\sqrt{\frac{1}{110}}$
$\frac{2\sqrt{\frac{1027}{129}}}{7}$	$\text{Root}[-3044 + 226562 \#1^2 - 3495331 \#1^4 + 15353709 \#1^6 \&, 5]$	
$\frac{8\sqrt{\frac{3533}{7095}}}{7}$	$\text{Root}[-37 + 13867 \#1^2 - 1656578 \#1^4 + 61414836 \#1^6 \&, 4]$	$\sqrt{\frac{3}{22}}$
$\frac{4\sqrt{\frac{14131}{7095}}}{7}$	$\text{Root}[-373 + 66339 \#1^2 - 3619210 \#1^4 + 61414836 \#1^6 \&, 6]$	$\sqrt{\frac{23}{226}}$
$\frac{3\sqrt{\frac{8374}{2365}}}{7}$	$\text{Root}[-43 + 6227 \#1^2 - 265108 \#1^4 + 2924516 \#1^6 \&, 5]$	$\sqrt{\frac{3}{110}}$
$2\sqrt{\frac{1615}{9933}}$	$\text{Root}[-117 + 22323 \#1^2 - 1073618 \#1^4 + 8773548 \#1^6 \&, 4]$	$\sqrt{\frac{5}{44}}$
$\frac{4\sqrt{\frac{942}{473}}}{7}$	$\text{Root}[-393 + 49483 \#1^2 - 1860614 \#1^4 + 20471612 \#1^6 \&, 6]$	$\frac{1}{2}\sqrt{\frac{1}{55}}$
$\frac{\sqrt{\frac{226082}{7095}}}{7}$	$\text{Root}[-709 + 68579 \#1^2 - 1882475 \#1^4 + 15353709 \#1^6 \&, 5]$	$\sqrt{\frac{1}{55}}$
$\frac{2\sqrt{\frac{56521}{7095}}}{7}$	$\text{Root}[-3943 + 361249 \#1^2 - 9477958 \#1^4 + 61414836 \#1^6 \&, 5]$	$\sqrt{\frac{17}{226}}$
$\frac{4\sqrt{\frac{14129}{7095}}}{7}$	$\text{Root}[-3647 + 360107 \#1^2 - 7544474 \#1^4 + 61414836 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1$

$\frac{7}{\sqrt{\frac{226066}{7095}}}$	$\text{Root}[-2647 + 260197 \#1^2 - 7544474 \#1^4 + 61414836 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1]$
$\frac{\sqrt{\frac{1370}{43}}}{7}$	$\text{Root}[-5879 + 447503 \#1^2 - 9492532 \#1^4 + 61414836 \#1^6 \&, 5]$	$\sqrt{\frac{1}{110}}$
$4 \sqrt{\frac{14138}{7095}}$	$\text{Root}[-852 + 54194 \#1^2 - 954597 \#1^4 + 5117903 \#1^6 \&, 6]$	
$4 \sqrt{\frac{14137}{7095}}$	$\text{Root}[-71 + 40271 \#1^2 - 3041108 \#1^4 + 61414836 \#1^6 \&, 4]$	$\sqrt{\frac{3}{110}}$
$\frac{\sqrt{75398}}{2365}$	$\text{Root}[-43 + 4817 \#1^2 - 178705 \#1^4 + 2193387 \#1^6 \&, 4]$	$\sqrt{\frac{1}{55}}$
$8 \sqrt{\frac{1178}{2365}}$	$\text{Root}[-577 + 69503 \#1^2 - 2317266 \#1^4 + 20471612 \#1^6 \&, 4]$	$\sqrt{\frac{17}{226}}$
$4 \sqrt{\frac{257}{129}}$	$\text{Root}[-1053 + 86373 \#1^2 - 2322124 \#1^4 + 20471612 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\frac{\sqrt{226286}}{7095}$	$\text{Root}[-1532 + 103250 \#1^2 - 2232251 \#1^4 + 15353709 \#1^6 \&, 6]$	
$11 \sqrt{\frac{34}{129}}$	$\text{Root}[-49 + 12761 \#1^2 - 634316 \#1^4 + 8773548 \#1^6 \&, 5]$	$\sqrt{\frac{1}{110}}$
$2 \sqrt{\frac{2677}{16555}}$	$\text{Root}[-356 + 48566 \#1^2 - 1600711 \#1^4 + 15353709 \#1^6 \&, 6]$	
$\sqrt{\frac{32122}{49665}}$	$\text{Root}[-9 + 8596 \#1^2 - 165172 \#1^4 + 731129 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$2 \sqrt{\frac{146}{903}}$	$\text{Root}[-1341 + 190911 \#1^2 - 2540734 \#1^4 + 8773548 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1]$
$4 \sqrt{\frac{14062}{7095}}$	$\text{Root}[-916 + 73724 \#1^2 - 774851 \#1^4 + 2193387 \#1^6 \&, 6]$	
$\sqrt{\frac{974}{1505}}$	$\text{Root}[-23 + 26369 \#1^2 - 7437598 \#1^4 + 61414836 \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{3}{55}}$
$4 \sqrt{\frac{109}{55}}$	$\text{Root}[-61 + 14833 \#1^2 - 446936 \#1^4 + 2924516 \#1^6 \&, 6]$	
$\sqrt{\frac{224978}{7095}}$	$\text{Root}[-3 + 917 \#1^2 - 72870 \#1^4 + 476084 \#1^6 \&, 6]$	$\text{Root}[1 - 130 \#1]$
$2 \sqrt{\frac{1607}{9933}}$	$\text{Root}[-117 + 16602 \#1^2 - 405296 \#1^4 + 2193387 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$6 \sqrt{\frac{2883}{2365}}$	$\text{Root}[-1033 + 110355 \#1^2 - 1899478 \#1^4 + 8773548 \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{1}{55}}$
$\sqrt{\frac{32138}{49665}}$	$\text{Root}[-4133 + 338975 \#1^2 - 5086326 \#1^4 + 20471612 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1]$
$\frac{\sqrt{4090}}{129}$	$\text{Root}[-2749 + 192437 \#1^2 - 2458148 \#1^4 + 8773548 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$4 \sqrt{\frac{134}{3311}}$	$\text{Root}[-7184 + 420644 \#1^2 - 4792417 \#1^4 + 15353709 \#1^6 \&, 6]$	
$4 \sqrt{\frac{1279}{645}}$	$\text{Root}[-1 + 560 \#1^2 - 58296 \#1^4 + 731129 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\sqrt{\frac{4594}{7095}}$	$\text{Root}[-569 + 121821 \#1^2 - 6859496 \#1^4 + 61414836 \#1^6 \&, 6]$	
$8 \sqrt{\frac{3517}{7095}}$	$\text{Root}[-73 + 7239 \#1^2 - 179746 \#1^4 + 1253364 \#1^6 \&, 6]$	$\sqrt{\frac{23}{226}}$
$\frac{\sqrt{15006}}{473}$	$\text{Root}[-401 + 56560 \#1^2 - 2205532 \#1^4 + 15353709 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$2 \sqrt{\frac{8039}{49665}}$	$\text{Root}[-2161 + 173523 \#1^2 - 3590062 \#1^4 + 20471612 \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{1}{55}}$
$\frac{\sqrt{225074}}{7095}$	$\text{Root}[-59 + 3959 \#1^2 - 64889 \#1^4 + 313341 \#1^6 \&, 6]$	$\sqrt{\frac{1}{55}}$
	$\text{Root}[-10579 + 716065 \#1^2 - 12732818 \#1^4 + 61414836 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1]$

$\frac{2}{7} \sqrt{\frac{56269}{7095}}$	$\text{Root}[-18043 + 1032899 \#1^2 - 14680876 \#1^4 + 61414836 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\frac{2}{7} \sqrt{\frac{341}{43}}$	$\text{Root}[-2196 + 109956 \#1^2 - 1386959 \#1^4 + 5117903 \#1^6 \&, 6]$	
$4 \sqrt{\frac{2011}{49665}}$	$\text{Root}[-9 + 1695 \#1^2 - 88138 \#1^4 + 1253364 \#1^6 \&, 6]$	$\sqrt{\frac{3}{22}}$
$\frac{8}{7} \sqrt{\frac{1173}{2365}}$	$\text{Root}[-447 + 56777 \#1^2 - 2093798 \#1^4 + 20471612 \#1^6 \&, 6]$	$\sqrt{\frac{23}{226}}$
$\sqrt{\frac{32174}{49665}}$	$\text{Root}[-661 + 50141 \#1^2 - 1175636 \#1^4 + 8773548 \#1^6 \&, 6]$	$\sqrt{\frac{3}{110}}$
$\frac{4}{7} \sqrt{\frac{2815}{1419}}$	$\text{Root}[-2951 + 287245 \#1^2 - 8244026 \#1^4 + 61414836 \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{1}{55}}$
$\frac{1}{7} \sqrt{\frac{225202}{7095}}$	$\text{Root}[-2087 + 132335 \#1^2 - 2548021 \#1^4 + 15353709 \#1^6 \&, 6]$	$\sqrt{\frac{1}{55}}$
$2 \sqrt{\frac{383}{2365}}$	$\text{Root}[-89 + 4983 \#1^2 - 82586 \#1^4 + 417788 \#1^6 \&, 5]$	$\sqrt{\frac{17}{226}}$
$\frac{4}{7} \sqrt{\frac{14074}{7095}}$	$\text{Root}[-5463 + 433797 \#1^2 - 10206658 \#1^4 + 61414836 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1]$
$\frac{1}{7} \sqrt{\frac{75062}{2365}}$	$\text{Root}[-639 + 35111 \#1^2 - 578796 \#1^4 + 2924516 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\frac{1}{7} \sqrt{\frac{4094}{129}}$	$\text{Root}[-5008 + 243740 \#1^2 - 3529337 \#1^4 + 15353709 \#1^6 \&, 6]$	
$8 \sqrt{\frac{503}{49665}}$	$\text{Root}[-16 + 2576 \#1^2 - 133595 \#1^4 + 2193387 \#1^6 \&, 5]$	$\sqrt{\frac{2}{55}}$
$\frac{4}{7} \sqrt{\frac{14083}{7095}}$	$\text{Root}[-1667 + 171899 \#1^2 - 5703292 \#1^4 + 61414836 \#1^6 \&, 6]$	$\sqrt{\frac{3}{110}}$
$\sqrt{\frac{2146}{3311}}$	$\text{Root}[-179 + 14301 \#1^2 - 364350 \#1^4 + 2924516 \#1^6 \&, 4]$	$\sqrt{\frac{5}{44}}$
$\frac{4}{7} \sqrt{\frac{4694}{2365}}$	$\text{Root}[-313 + 25109 \#1^2 - 638827 \#1^4 + 5117903 \#1^6 \&, 6]$	$\sqrt{\frac{1}{55}}$
$\frac{1}{7} \sqrt{\frac{225314}{7095}}$	$\text{Root}[-8199 + 491169 \#1^2 - 9613982 \#1^4 + 61414836 \#1^6 \&, 5]$	$\sqrt{\frac{17}{226}}$
$\frac{4}{7} \sqrt{\frac{14081}{7095}}$	$\text{Root}[-6907 + 460355 \#1^2 - 9628556 \#1^4 + 61414836 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\frac{64}{7 \sqrt{129}}$	$\text{Root}[-404 + 23180 \#1^2 - 413971 \#1^4 + 2193387 \#1^6 \&, 6]$	
$\frac{4}{7} \sqrt{\frac{2818}{1419}}$	$\text{Root}[-125 + 18075 \#1^2 - 732170 \#1^4 + 8773548 \#1^6 \&, 4]$	$\sqrt{\frac{5}{44}}$
$\frac{4}{7} \sqrt{\frac{14089}{7095}}$	$\text{Root}[-3347 + 268429 \#1^2 - 7087822 \#1^4 + 61414836 \#1^6 \&, 5]$	$\sqrt{\frac{17}{226}}$
$\frac{1}{7} \sqrt{\frac{5242}{165}}$	$\text{Root}[-1 + 4697 \#1^2 - 165172 \#1^4 + 1428252 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\frac{1}{7} \sqrt{\frac{1366}{43}}$	$\text{Root}[-144 + 28476 \#1^2 - 755419 \#1^4 + 5117903 \#1^6 \&, 6]$	
$\frac{1}{7} \sqrt{\frac{75178}{2365}}$	$\text{Root}[-3 + 3061 \#1^2 - 217222 \#1^4 + 2924516 \#1^6 \&, 5]$	$\sqrt{\frac{17}{226}}$
$\sqrt{\frac{10666}{16555}}$	$\text{Root}[-207 + 26649 \#1^2 - 694694 \#1^4 + 2924516 \#1^6 \&, 6]$	$\text{Root}[1 - 130 \#1]$
$\frac{4}{7} \sqrt{\frac{14006}{7095}}$	$\text{Root}[-487 + 227129 \#1^2 - 12062414 \#1^4 + 61414836 \#1^6 \&, 6]$	$\text{Root}[1 - 130 \#1]$
$\sqrt{\frac{32014}{49665}}$	$\text{Root}[-317 + 24640 \#1^2 - 500374 \#1^4 + 2193387 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$

$2 \sqrt{\frac{8003}{49665}}$	$\text{Root}[-3737 + 199\,003 \#1^2 - 2\,560\,166 \#1^4 + 8\,773\,548 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1$
$\sqrt{\frac{194}{301}}$	$\text{Root}[-628 + 26\,306 \#1^2 - 259\,903 \#1^4 + 731\,129 \#1^6 \&, 6]$	
$4 \sqrt{\frac{26}{645}}$	$\text{Root}[-13 + 4561 \#1^2 - 194\,320 \#1^4 + 1\,253\,364 \#1^6 \&, 6]$	
$\frac{12 \sqrt{\frac{519}{2365}}}{7}$	$\text{Root}[-199 + 30\,226 \#1^2 - 957\,026 \#1^4 + 5\,117\,903 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\sqrt{\frac{6406}{9933}}$	$\text{Root}[-1849 + 110\,467 \#1^2 - 1\,918\,910 \#1^4 + 8\,773\,548 \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{1}{55}}$
$\frac{\sqrt{\frac{224194}{7095}}}{7}$	$\text{Root}[-18\,979 + 1\,003\,569 \#1^2 - 15\,395\,002 \#1^4 + 61\,414\,836 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1$
$2 \sqrt{\frac{2669}{16555}}$	$\text{Root}[-1571 + 68\,411 \#1^2 - 825\,860 \#1^4 + 2\,924\,516 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\frac{2 \sqrt{\frac{1019}{129}}}{7}$	$\text{Root}[-1588 + 62\,786 \#1^2 - 689\,489 \#1^4 + 2\,193\,387 \#1^6 \&, 6]$	
$4 \sqrt{\frac{2003}{49665}}$	$\text{Root}[-307 + 42\,805 \#1^2 - 1\,277\,654 \#1^4 + 8\,773\,548 \#1^6 \&, 6]$	$\sqrt{\frac{23}{226}}$
$\frac{8 \sqrt{\frac{701}{1419}}}{7}$	$\text{Root}[-661 + 64\,479 \#1^2 - 1\,558\,030 \#1^4 + 8\,773\,548 \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{1}{55}}$
$\sqrt{\frac{1526}{2365}}$	$\text{Root}[-27 + 1377 \#1^2 - 21\,861 \#1^4 + 104\,447 \#1^6 \&, 6]$	$\sqrt{\frac{1}{55}}$
$\frac{4 \sqrt{\frac{4673}{2365}}}{7}$	$\text{Root}[-2749 + 210\,903 \#1^2 - 4\,289\,614 \#1^4 + 20\,471\,612 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1$
$\frac{\sqrt{\frac{224306}{7095}}}{7}$	$\text{Root}[-23\,039 + 1\,052\,471 \#1^2 - 14\,816\,900 \#1^4 + 61\,414\,836 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\frac{\sqrt{\frac{4078}{129}}}{7}$	$\text{Root}[-7996 + 331\,226 \#1^2 - 4\,194\,883 \#1^4 + 15\,353\,709 \#1^6 \&, 6]$	
$8 \sqrt{\frac{167}{16555}}$	$\text{Root}[-163 + 15\,659 \#1^2 - 398\,356 \#1^4 + 2\,924\,516 \#1^6 \&, 6]$	$\sqrt{\frac{3}{110}}$
$\frac{52 \sqrt{\frac{83}{7095}}}{7}$	$\text{Root}[-1633 + 123\,263 \#1^2 - 2\,582\,027 \#1^4 + 15\,353\,709 \#1^6 \&, 6]$	$\sqrt{\frac{1}{55}}$
$\sqrt{\frac{32\,062}{49665}}$	$\text{Root}[-1 + 47 \#1^2 - 722 \#1^4 + 3612 \#1^6 \&, 6]$	$\sqrt{\frac{17}{226}}$
$\frac{4 \sqrt{\frac{14\,026}{7095}}}{7}$	$\text{Root}[-10\,943 + 686\,903 \#1^2 - 12\,290\,740 \#1^4 + 61\,414\,836 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\frac{4 \sqrt{\frac{85}{43}}}{7}$	$\text{Root}[-1404 + 75\,866 \#1^2 - 1\,187\,781 \#1^4 + 5\,117\,903 \#1^6 \&, 6]$	
$4 \sqrt{\frac{401}{9933}}$	$\text{Root}[-541 + 44\,443 \#1^2 - 1\,112\,482 \#1^4 + 8\,773\,548 \#1^6 \&, 5]$	$\sqrt{\frac{5}{44}}$
$\frac{4 \sqrt{\frac{4678}{2365}}}{7}$	$\text{Root}[-2477 + 162\,603 \#1^2 - 3\,250\,002 \#1^4 + 20\,471\,612 \#1^6 \&, 6]$	$\sqrt{\frac{17}{226}}$
$\frac{\sqrt{\frac{4082}{129}}}{7}$	$\text{Root}[-148 + 128\,618 \#1^2 - 2\,931\,803 \#1^4 + 15\,353\,709 \#1^6 \&, 6]$	
$4 \sqrt{\frac{1994}{49665}}$	$\text{Root}[-71 + 18\,732 \#1^2 - 505\,232 \#1^4 + 2\,193\,387 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$
$\sqrt{\frac{10\,634}{16555}}$	$\text{Root}[-193 + 8955 \#1^2 - 122\,838 \#1^4 + 417\,788 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1$
$2 \sqrt{\frac{145}{903}}$	$\text{Root}[-2348 + 79\,352 \#1^2 - 784\,567 \#1^4 + 2\,193\,387 \#1^6 \&, 6]$	
$4 \sqrt{\frac{19}{473}}$	$\text{Root}[-37 + 4359 \#1^2 - 92\,302 \#1^4 + 417\,788 \#1^6 \&, 6]$	$\frac{1}{2} \sqrt{\frac{1}{55}}$
$\frac{8 \sqrt{\frac{3491}{7095}}}{7}$	$\text{Root}[-10\,231 + 856\,933 \#1^2 - 15\,531\,026 \#1^4 + 61\,414\,836 \#1^6 \&, 6]$	$\text{Root}[1 - 70 \#1$
$\sqrt{\frac{31\,918}{49665}}$	$\text{Root}[-4853 + 198\,989 \#1^2 - 2\,497\,012 \#1^4 + 8\,773\,548 \#1^6 \&, 6]$	$\sqrt{\frac{1}{110}}$

$$\begin{array}{lcl}
\sqrt[4]{\frac{49665}{7}} \sqrt{\frac{1354}{43}} & \text{Root}[-3776 + 141680 \#1^2 - 1620143 \#1^4 + 5117903 \#1^6 \&, 6] & \\
8 \sqrt{\frac{499}{49665}} & \text{Root}[-313 + 25361 \#1^2 - 463939 \#1^4 + 2193387 \#1^6 \&, 6] & \sqrt{\frac{1}{55}} \\
\frac{4}{7} \sqrt{\frac{4657}{2365}} & \text{Root}[-4833 + 312921 \#1^2 - 4984308 \#1^4 + 20471612 \#1^6 \&, 6] & \sqrt{\frac{1}{110}} \\
\frac{4}{7} \sqrt{\frac{254}{129}} & \text{Root}[-5492 + 299264 \#1^2 - 4228889 \#1^4 + 15353709 \#1^6 \&, 6] & \\
4 \sqrt{\frac{1997}{49665}} & \text{Root}[-1613 + 104643 \#1^2 - 1773170 \#1^4 + 8773548 \#1^6 \&, 6] & \sqrt{\frac{17}{226}} \\
4 \sqrt{\frac{1987}{49665}} & \text{Root}[-1521 + 158067 \#1^2 - 2599030 \#1^4 + 8773548 \#1^6 \&, 6] & \text{Root}[1 - 70 \#1 \\
17 \sqrt{\frac{2}{903}} & \text{Root}[-2116 + 75026 \#1^2 - 789425 \#1^4 + 2193387 \#1^6 \&, 6] & \\
8 \sqrt{\frac{71}{7095}} & \text{Root}[-49 + 3545 \#1^2 - 51356 \#1^4 + 179052 \#1^6 \&, 6] & \sqrt{\frac{1}{110}} \\
\frac{4}{7} \sqrt{\frac{253}{129}} & \text{Root}[-6476 + 377258 \#1^2 - 4894435 \#1^4 + 15353709 \#1^6 \&, 6] & \\
8 \sqrt{\frac{3}{301}} & \text{Root}[-332 + 21980 \#1^2 - 264761 \#1^4 + 731129 \#1^6 \&, 6] &
\end{array}$$

Dimensions[angle5]

{127, 7}

orderedroots[minipoly[chi5]]

{-5, Root[-1052 + 327 #1 - 32 #1² + #1³ &, 1],
10 - $\sqrt{5}$, 9, Root[-1052 + 327 #1 - 32 #1² + #1³ &, 2],
10 + $\sqrt{5}$, Root[-1052 + 327 #1 - 32 #1² + #1³ &, 3]}

chi5

$(-9 + x)^{12} (5 + x)^{32} (95 - 20x + x^2) (-1052 + 327x - 32x^2 + x^3)$

coeff[chi5, (x + 5) (x - 9)] // FullSimplify

{Root[101136 - 104 #1 - 107 #1² + #1³ &, 1],
20 - 16 $\sqrt{5}$, Root[101136 - 104 #1 - 107 #1² + #1³ &, 2],
4 (5 + 4 $\sqrt{5}$), Root[101136 - 104 #1 - 107 #1² + #1³ &, 3]}

```

combinationangle[ {Root[101 136 - 104 #1 - 107 #1^2 + #1^3 &, 1],
  20 - 16  $\sqrt{5}$ , Root[101 136 - 104 #1 - 107 #1^2 + #1^3 &, 2],
  4 (5 + 4  $\sqrt{5}$ ), Root[101 136 - 104 #1 - 107 #1^2 + #1^3 &, 3] },
{10, 13}, {2, 3, 5, 6, 7}, angle5] // FullSimplify
{Root[1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &,
  6], Root[
  1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &, 2],
Root[1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &,
  6], Root[
  1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &, 2],
Root[1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &,
  5], Root[
  1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &, 1],
Root[1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &,
  5], Root[
  1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &, 1],
Root[1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &,
  6], Root[
  1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &, 2],
Root[1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &,
  6], Root[
  1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &, 2],
Root[1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &,
  5], Root[
  1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &, 1],
Root[1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &,
  5], Root[
  1 246 725 481 - 1 557 640 900 #1^2 + 641 293 398 #1^4 - 105 292 292 #1^6 + 5 900 041 #1^8 &, 1]}

```

```

compatible[{Root[
  1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 6],
  Root[1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &,
    2], Root[1 246 725 481 - 1 557 640 900 #12 +
      641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 6], Root[
        1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 2],
      Root[1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &,
        5], Root[1 246 725 481 - 1 557 640 900 #12 +
          641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 1], Root[
            1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 5],
          Root[1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &,
            1], Root[1 246 725 481 - 1 557 640 900 #12 +
              641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 6], Root[
                1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 2],
              Root[1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &,
                6], Root[1 246 725 481 - 1 557 640 900 #12 +
                  641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 2], Root[
                    1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 5],
                  Root[1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &,
                    1], Root[1 246 725 481 - 1 557 640 900 #12 +
                      641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 5], Root[
                        1 246 725 481 - 1 557 640 900 #12 + 641 293 398 #14 - 105 292 292 #16 + 5 900 041 #18 &, 1]]]
0

```

$$\text{chi6} = (-11 + x)^2 (-9 + x)^{12} (5 + x)^{32} (-812 + 281x - 30x^2 + x^3) \\ (-11 + x)^2 (-9 + x)^{12} (5 + x)^{32} (-812 + 281x - 30x^2 + x^3)$$

```

list6 =
{(-11 + x) (-9 + x) (-379 + 179x - 25x2 + x3), (41 - 14x + x2) (-921 + 303x - 31x2 + x3),
-37 729 + 25 317x - 6434x2 + 778x3 - 45x4 + x5, (-11 + x)
(3427 - 1990x + 404x2 - 34x3 + x4), -37 905 + 25 333x - 6434x2 + 778x3 - 45x4 + x5,
(-11 + x) (3443 - 1990x + 404x2 - 34x3 + x4), (-9 + x)
(4049 - 2340x + 454x2 - 36x3 + x4), (-7 + x) (5231 - 2842x + 512x2 - 38x3 + x4),
(-9 + x) (4065 - 2340x + 454x2 - 36x3 + x4), -36 793 + 25 141x - 6426x2 +
778x3 - 45x4 + x5, -36 761 + 25 141x - 6426x2 + 778x3 - 45x4 + x5,
(-11 + x) (-9 + x) (-7 + x) (53 - 18x + x2), -36 937 + 25 157x - 6426x2 + 778x3 -

```

$$\begin{aligned}
& 45x^4 + x^5, (-11+x)(3355-1982x+404x^2-34x^3+x^4), (139-24x+x^2) \\
& (-267+135x-21x^2+x^3), (-11+x)(3371-1982x+404x^2-34x^3+x^4), \\
& (-11+x)(3387-1982x+404x^2-34x^3+x^4), (-11+x)(83-20x+x^2)(41-14x+x^2), \\
& (-9+x)(3945-2332x+454x^2-36x^3+x^4), \\
& -35681+24949x-6418x^2+778x^3-45x^4+x^5, \\
& (-9+x)(3961-2332x+454x^2-36x^3+x^4), \\
& -35825+24965x-6418x^2+778x^3-45x^4+x^5, \\
& (-9+x)(3977-2332x+454x^2-36x^3+x^4), (-7+x)(139-24x+x^2)(37-14x+x^2), \\
& -35969+24981x-6418x^2+778x^3-45x^4+x^5, \\
& (-11+x)(-9+x)(-363+179x-25x^2+x^3), \\
& -36145+24997x-6418x^2+778x^3-45x^4+x^5, \\
& (-11+x)(-7+x)(-469+215x-27x^2+x^3), -36321+25013x-6418x^2+ \\
& 778x^3-45x^4+x^5, (-11+x)(3299-1974x+404x^2-34x^3+x^4), (-11+x) \\
& (3315-1974x+404x^2-34x^3+x^4), (-9+x)(3841-2324x+454x^2-36x^3+x^4), \\
& (-9+x)(3857-2324x+454x^2-36x^3+x^4), (139-24x+x^2)(-251+135x-21x^2+x^3), \\
& (-9+x)(3873-2324x+454x^2-36x^3+x^4), -35033+24805x- \\
& 6410x^2+778x^3-45x^4+x^5, (-9+x)(3889-2324x+454x^2-36x^3+x^4), \\
& -35177+24821x-6410x^2+778x^3-45x^4+x^5, (-11+x)(-9+x) \\
& (-355+179x-25x^2+x^3), -35353+24837x-6410x^2+778x^3-45x^4+x^5, \\
& (-11+x)(3211-1966x+404x^2-34x^3+x^4), (-11+x)(-7+x) \\
& (-461+215x-27x^2+x^3), (-11+x)(3243-1966x+404x^2-34x^3+x^4), \\
& (-9+x)(3769-2316x+454x^2-36x^3+x^4), (-9+x) \\
& (3785-2316x+454x^2-36x^3+x^4), -34241+24645x-6402x^2+778x^3-45x^4+x^5, \\
& (-9+x)(3801-2316x+454x^2-36x^3+x^4), -34385+24661x-6402x^2+ \\
& 778x^3-45x^4+x^5, (-11+x)(-9+x)(-347+179x-25x^2+x^3), \\
& -34561+24677x-6402x^2+778x^3-45x^4+x^5, (-11+x) \\
& (3139-1958x+404x^2-34x^3+x^4), (-11+x)(3155-1958x+404x^2-34x^3+x^4), \\
& (-11+x)(-7+x)(-453+215x-27x^2+x^3), (-9+x)^2(-409+211x-27x^2+x^3), \\
& (-9+x)(3697-2308x+454x^2-36x^3+x^4), \\
& (-9+x)(3713-2308x+454x^2-36x^3+x^4), \\
& -33593+24501x-6394x^2+778x^3-45x^4+x^5, (-11+x)(-9+x) \\
& (-3+x)(113-22x+x^2), (-11+x)(3067-1950x+404x^2-34x^3+x^4), \\
& (-11+x)(3083-1950x+404x^2-34x^3+x^4), (-9+x)^2(-401+211x-27x^2+x^3), \\
& (-9+x)(3625-2300x+454x^2-36x^3+x^4), \\
& -32801+24341x-6386x^2+778x^3-45x^4+x^5, \\
& (-11+x)(-9+x)(-331+179x-25x^2+x^3), (-11+x) \\
& (2995-1942x+404x^2-34x^3+x^4), (-11+x)(3011-1942x+404x^2-34x^3+x^4), \\
& (-9+x)(3521-2292x+454x^2-36x^3+x^4), (-9+x)^2(-393+211x-27x^2+x^3), \\
& (-11+x)(-9+x)(-323+179x-25x^2+x^3), \\
& (-11+x)(2923-1934x+404x^2-34x^3+x^4), \\
& (-9+x)(3449-2284x+454x^2-36x^3+x^4), (-11+x)(-9+x)^2(35-16x+x^2), \\
& (-11+x)(2851-1926x+404x^2-34x^3+x^4), \\
& (-9+x)(3361-2276x+454x^2-36x^3+x^4), (-11+x)(-9+x) \\
& (-307+179x-25x^2+x^3), (-11+x), (-11+x), (-9+x), (33-17x+x^2), 1.
\end{aligned}$$

Length[list6]

76

A6 = CoefficientList[list6, x];

A6 // MatrixForm

-37521	25301	-6434	778	-45	1
-37761	25317	-6434	778	-45	1
-37729	25317	-6434	778	-45	1
-37697	25317	-6434	778	-45	1
-37905	25333	-6434	778	-45	1
-37873	25333	-6434	778	-45	1
-36441	25109	-6426	778	-45	1
-36617	25125	-6426	778	-45	1
-36585	25125	-6426	778	-45	1
-36793	25141	-6426	778	-45	1
-36761	25141	-6426	778	-45	1
-36729	25141	-6426	778	-45	1
-36937	25157	-6426	778	-45	1
-36905	25157	-6426	778	-45	1
-37113	25173	-6426	778	-45	1
-37081	25173	-6426	778	-45	1
-37257	25189	-6426	778	-45	1
-37433	25205	-6426	778	-45	1
-35505	24933	-6418	778	-45	1
-35681	24949	-6418	778	-45	1
-35649	24949	-6418	778	-45	1
-35825	24965	-6418	778	-45	1
-35793	24965	-6418	778	-45	1
-36001	24981	-6418	778	-45	1
-35969	24981	-6418	778	-45	1
-35937	24981	-6418	778	-45	1
-36145	24997	-6418	778	-45	1
-36113	24997	-6418	778	-45	1
-36321	25013	-6418	778	-45	1
-36289	25013	-6418	778	-45	1
-36465	25029	-6418	778	-45	1
-34569	24757	-6410	778	-45	1
-34713	24773	-6410	778	-45	1
-34889	24789	-6410	778	-45	1
-34857	24789	-6410	778	-45	1
-35033	24805	-6410	778	-45	1
-35001	24805	-6410	778	-45	1
-35177	24821	-6410	778	-45	1
-35145	24821	-6410	778	-45	1
-35353	24837	-6410	778	-45	1
-35321	24837	-6410	778	-45	1
-35497	24853	-6410	778	-45	1
-35673	24869	-6410	778	-45	1
-33921	24613	-6402	778	-45	1
-34065	24629	-6402	778	-45	1
-34241	24645	-6402	778	-45	1
-34209	24645	-6402	778	-45	1
-34385	24661	-6402	778	-45	1

-34 353	24 661	-6402	778	-45	1
-34 561	24 677	-6402	778	-45	1
-34 529	24 677	-6402	778	-45	1
-34 705	24 693	-6402	778	-45	1
-34 881	24 709	-6402	778	-45	1
-33 129	24 453	-6394	778	-45	1
-33 273	24 469	-6394	778	-45	1
-33 417	24 485	-6394	778	-45	1
-33 593	24 501	-6394	778	-45	1
-33 561	24 501	-6394	778	-45	1
-33 737	24 517	-6394	778	-45	1
-33 913	24 533	-6394	778	-45	1
-32 481	24 309	-6386	778	-45	1
-32 625	24 325	-6386	778	-45	1
-32 801	24 341	-6386	778	-45	1
-32 769	24 341	-6386	778	-45	1
-32 945	24 357	-6386	778	-45	1
-33 121	24 373	-6386	778	-45	1
-31 689	24 149	-6378	778	-45	1
-31 833	24 165	-6378	778	-45	1
-31 977	24 181	-6378	778	-45	1
-32 153	24 197	-6378	778	-45	1
-31 041	24 005	-6370	778	-45	1
-31 185	24 021	-6370	778	-45	1
-31 361	24 037	-6370	778	-45	1
-30 249	23 845	-6362	778	-45	1
-30 393	23 861	-6362	778	-45	1
-29 601	23 701	-6354	778	-45	1

Dimensions[A6]

{76, 6}

gpart[chi6]

{-1 824 321, 1 234 117, -314 882, 38 122, -2205, 49}


```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
  n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 &&
  n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 &&
  n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 && n[38] ≥ 0 &&
  n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 && n[43] ≥ 0 && n[44] ≥ 0 &&
  n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 && n[49] ≥ 0 && n[50] ≥ 0 &&
  n[51] ≥ 0 && n[52] ≥ 0 && n[53] == 0 && n[54] ≥ 0 && n[55] ≥ 0 && n[56] ≥ 0 &&
  n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 && n[61] ≥ 0 && n[62] ≥ 0 &&
  n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 && n[67] ≥ 0 && n[68] ≥ 0 &&
  n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] ≥ 0 && n[73] ≥ 0 && n[74] ≥ 0 &&
  n[75] ≥ 0 && n[76] ≥ 0 && Array[n, 76].A6 == gpart[chi6], Array[n, 76], Integers]
{{n[1] → 0, n[2] → 18, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
  n[8] → 0, n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 0, n[13] → 0, n[14] → 0,
  n[15] → 0, n[16] → 0, n[17] → 0, n[18] → 27, n[19] → 0, n[20] → 0,
  n[21] → 0, n[22] → 0, n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0,
  n[28] → 0, n[29] → 0, n[30] → 0, n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 0,
  n[35] → 0, n[36] → 0, n[37] → 0, n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0,
  n[42] → 0, n[43] → 0, n[44] → 0, n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0,
  n[49] → 0, n[50] → 3, n[51] → 0, n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0,
  n[56] → 0, n[57] → 0, n[58] → 0, n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0,
  n[63] → 0, n[64] → 0, n[65] → 0, n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0,
  n[70] → 0, n[71] → 0, n[72] → 0, n[73] → 0, n[74] → 1, n[75] → 0, n[76] → 0}}

```

```

FindInstance[n[1] ≥ 0 && n[2] ≥ 0 && n[3] ≥ 0 && n[4] ≥ 0 && n[5] ≥ 0 && n[6] ≥ 0 &&
  n[7] ≥ 0 && n[8] ≥ 0 && n[9] ≥ 0 && n[10] ≥ 0 && n[11] ≥ 0 && n[12] ≥ 0 && n[13] ≥ 0 &&
  n[14] ≥ 0 && n[15] ≥ 0 && n[16] ≥ 0 && n[17] ≥ 0 && n[18] ≥ 0 && n[19] ≥ 0 && n[20] ≥ 0 &&
  n[21] ≥ 0 && n[22] ≥ 0 && n[23] ≥ 0 && n[24] ≥ 0 && n[25] ≥ 0 && n[26] ≥ 0 &&
  n[27] ≥ 0 && n[28] ≥ 0 && n[29] ≥ 0 && n[30] ≥ 0 && n[31] ≥ 0 && n[32] ≥ 0 &&
  n[33] ≥ 0 && n[34] ≥ 0 && n[35] ≥ 0 && n[36] ≥ 0 && n[37] ≥ 0 && n[38] ≥ 0 &&
  n[39] ≥ 0 && n[40] ≥ 0 && n[41] ≥ 0 && n[42] ≥ 0 && n[43] ≥ 0 && n[44] ≥ 0 &&
  n[45] ≥ 0 && n[46] ≥ 0 && n[47] ≥ 0 && n[48] ≥ 0 && n[49] ≥ 0 && n[50] ≥ 0 &&
  n[51] ≥ 0 && n[52] ≥ 0 && n[53] ≥ 0 && n[54] ≥ 0 && n[55] ≥ 0 && n[56] ≥ 0 &&
  n[57] ≥ 0 && n[58] ≥ 0 && n[59] ≥ 0 && n[60] ≥ 0 && n[61] ≥ 0 && n[62] ≥ 0 &&
  n[63] ≥ 0 && n[64] ≥ 0 && n[65] ≥ 0 && n[66] ≥ 0 && n[67] ≥ 0 && n[68] ≥ 0 &&
  n[69] ≥ 0 && n[70] ≥ 0 && n[71] ≥ 0 && n[72] == 0 && n[73] ≥ 0 && n[74] ≥ 0 &&
  n[75] ≥ 0 && n[76] ≥ 0 && Array[n, 76].A6 == gpart[chi6], Array[n, 76], Integers]
{ {n[1] → 0, n[2] → 14, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
  n[8] → 0, n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 0, n[13] → 0, n[14] → 0,
  n[15] → 0, n[16] → 0, n[17] → 0, n[18] → 29, n[19] → 0, n[20] → 0,
  n[21] → 0, n[22] → 0, n[23] → 0, n[24] → 0, n[25] → 0, n[26] → 0, n[27] → 0,
  n[28] → 0, n[29] → 1, n[30] → 0, n[31] → 0, n[32] → 0, n[33] → 0, n[34] → 3,
  n[35] → 0, n[36] → 0, n[37] → 0, n[38] → 0, n[39] → 0, n[40] → 0, n[41] → 0,
  n[42] → 0, n[43] → 0, n[44] → 0, n[45] → 0, n[46] → 0, n[47] → 0, n[48] → 0,
  n[49] → 0, n[50] → 2, n[51] → 0, n[52] → 0, n[53] → 0, n[54] → 0, n[55] → 0,
  n[56] → 0, n[57] → 0, n[58] → 0, n[59] → 0, n[60] → 0, n[61] → 0, n[62] → 0,
  n[63] → 0, n[64] → 0, n[65] → 0, n[66] → 0, n[67] → 0, n[68] → 0, n[69] → 0,
  n[70] → 0, n[71] → 0, n[72] → 0, n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0} }

```

```
list6[{2, 18}] * mu[chi6] // Factor
```

```

{ (-11 + x) (-9 + x)11 (5 + x)31 (41 - 14 x + x2) (-921 + 303 x - 31 x2 + x3),
  (-11 + x)2 (-9 + x)11 (5 + x)31 (83 - 20 x + x2) (41 - 14 x + x2) }

```

```
Array[m, 6].Transpose[A6]
```

```

{-37521 m[1] + 25301 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6],
 -37761 m[1] + 25317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6],
 -37729 m[1] + 25317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6],
 -37697 m[1] + 25317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6],
 -37905 m[1] + 25333 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6],
 -37873 m[1] + 25333 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6],
 -36441 m[1] + 25109 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
 -36617 m[1] + 25125 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
 -36585 m[1] + 25125 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
 -36793 m[1] + 25141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
 -36761 m[1] + 25141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
 -36729 m[1] + 25141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
 -36937 m[1] + 25157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
 -36905 m[1] + 25157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
 -37113 m[1] + 25173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
 -37081 m[1] + 25173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
 -37257 m[1] + 25189 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],

```

$-37\,433\,m[1] + 25\,205\,m[2] - 6426\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,505\,m[1] + 24\,933\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,681\,m[1] + 24\,949\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,649\,m[1] + 24\,949\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,825\,m[1] + 24\,965\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,793\,m[1] + 24\,965\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-36\,001\,m[1] + 24\,981\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,969\,m[1] + 24\,981\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,937\,m[1] + 24\,981\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-36\,145\,m[1] + 24\,997\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-36\,113\,m[1] + 24\,997\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-36\,321\,m[1] + 25\,013\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-36\,289\,m[1] + 25\,013\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-36\,465\,m[1] + 25\,029\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,569\,m[1] + 24\,757\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,713\,m[1] + 24\,773\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,889\,m[1] + 24\,789\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,857\,m[1] + 24\,789\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,033\,m[1] + 24\,805\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,001\,m[1] + 24\,805\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,177\,m[1] + 24\,821\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,145\,m[1] + 24\,821\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,353\,m[1] + 24\,837\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,321\,m[1] + 24\,837\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,497\,m[1] + 24\,853\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-35\,673\,m[1] + 24\,869\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-33\,921\,m[1] + 24\,613\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,065\,m[1] + 24\,629\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,241\,m[1] + 24\,645\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,209\,m[1] + 24\,645\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,385\,m[1] + 24\,661\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,353\,m[1] + 24\,661\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,561\,m[1] + 24\,677\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,529\,m[1] + 24\,677\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,705\,m[1] + 24\,693\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-34\,881\,m[1] + 24\,709\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-33\,129\,m[1] + 24\,453\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-33\,273\,m[1] + 24\,469\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-33\,417\,m[1] + 24\,485\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-33\,593\,m[1] + 24\,501\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-33\,561\,m[1] + 24\,501\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-33\,737\,m[1] + 24\,517\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-33\,913\,m[1] + 24\,533\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-32\,481\,m[1] + 24\,309\,m[2] - 6386\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-32\,625\,m[1] + 24\,325\,m[2] - 6386\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-32\,801\,m[1] + 24\,341\,m[2] - 6386\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$
 $-32\,769\,m[1] + 24\,341\,m[2] - 6386\,m[3] + 778\,m[4] - 45\,m[5] + m[6],$

```

- 32 945 m[1] + 24 357 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 33 121 m[1] + 24 373 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 31 689 m[1] + 24 149 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 31 833 m[1] + 24 165 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 31 977 m[1] + 24 181 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 32 153 m[1] + 24 197 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 31 041 m[1] + 24 005 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 31 185 m[1] + 24 021 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 31 361 m[1] + 24 037 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 30 249 m[1] + 23 845 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 30 393 m[1] + 23 861 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 29 601 m[1] + 23 701 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] }

```

Array[m, 6].gpart[chi6]

```
- 1 824 321 m[1] + 1 234 117 m[2] - 314 882 m[3] + 38 122 m[4] - 2205 m[5] + 49 m[6]
```

FindInstance[

```

- 1 824 321 m[1] + 1 234 117 m[2] - 314 882 m[3] + 38 122 m[4] - 2205 m[5] + 49 m[6] < 0 &&
- 37 521 m[1] + 25 301 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37 761 m[1] + 25 317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37 729 m[1] + 25 317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37 697 m[1] + 25 317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37 905 m[1] + 25 333 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37 873 m[1] + 25 333 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 441 m[1] + 25 109 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 617 m[1] + 25 125 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 585 m[1] + 25 125 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 793 m[1] + 25 141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 761 m[1] + 25 141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 729 m[1] + 25 141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 937 m[1] + 25 157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 905 m[1] + 25 157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37 113 m[1] + 25 173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37 081 m[1] + 25 173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37 257 m[1] + 25 189 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37 433 m[1] + 25 205 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 505 m[1] + 24 933 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 681 m[1] + 24 949 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 649 m[1] + 24 949 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 825 m[1] + 24 965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 793 m[1] + 24 965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 001 m[1] + 24 981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 969 m[1] + 24 981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 937 m[1] + 24 981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 145 m[1] + 24 997 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 113 m[1] + 24 997 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 321 m[1] + 25 013 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&

```

$-36\,289\,m[1] + 25\,013\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-36\,465\,m[1] + 25\,029\,m[2] - 6418\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,569\,m[1] + 24\,757\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,713\,m[1] + 24\,773\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,889\,m[1] + 24\,789\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,857\,m[1] + 24\,789\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-35\,033\,m[1] + 24\,805\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-35\,001\,m[1] + 24\,805\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-35\,177\,m[1] + 24\,821\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-35\,145\,m[1] + 24\,821\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-35\,353\,m[1] + 24\,837\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-35\,321\,m[1] + 24\,837\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-35\,497\,m[1] + 24\,853\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-35\,673\,m[1] + 24\,869\,m[2] - 6410\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-33\,921\,m[1] + 24\,613\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,065\,m[1] + 24\,629\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,241\,m[1] + 24\,645\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,209\,m[1] + 24\,645\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,385\,m[1] + 24\,661\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,353\,m[1] + 24\,661\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,561\,m[1] + 24\,677\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,529\,m[1] + 24\,677\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,705\,m[1] + 24\,693\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-34\,881\,m[1] + 24\,709\,m[2] - 6402\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-33\,129\,m[1] + 24\,453\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-33\,273\,m[1] + 24\,469\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-33\,417\,m[1] + 24\,485\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-33\,593\,m[1] + 24\,501\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-33\,561\,m[1] + 24\,501\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-33\,737\,m[1] + 24\,517\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-33\,913\,m[1] + 24\,533\,m[2] - 6394\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-32\,481\,m[1] + 24\,309\,m[2] - 6386\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-32\,625\,m[1] + 24\,325\,m[2] - 6386\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-32\,801\,m[1] + 24\,341\,m[2] - 6386\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-32\,769\,m[1] + 24\,341\,m[2] - 6386\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-32\,945\,m[1] + 24\,357\,m[2] - 6386\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-33\,121\,m[1] + 24\,373\,m[2] - 6386\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-31\,689\,m[1] + 24\,149\,m[2] - 6378\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-31\,833\,m[1] + 24\,165\,m[2] - 6378\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-31\,977\,m[1] + 24\,181\,m[2] - 6378\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-32\,153\,m[1] + 24\,197\,m[2] - 6378\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-31\,041\,m[1] + 24\,005\,m[2] - 6370\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-31\,185\,m[1] + 24\,021\,m[2] - 6370\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-31\,361\,m[1] + 24\,037\,m[2] - 6370\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-30\,249\,m[1] + 23\,845\,m[2] - 6362\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-30\,393\,m[1] + 23\,861\,m[2] - 6362\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0 \&\&$
 $-29\,601\,m[1] + 23\,701\,m[2] - 6354\,m[3] + 778\,m[4] - 45\,m[5] + m[6] \geq 0,$

Appendix 61. Integers

{}

FindInstance[

```
-1 824 321 m[1] + 1 234 117 m[2] - 314 882 m[3] + 38 122 m[4] - 2205 m[5] + 49 m[6] < 0 &&
-37 521 m[1] + 25 301 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 761 m[1] + 25 317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] < 0 &&
-37 729 m[1] + 25 317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 697 m[1] + 25 317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 905 m[1] + 25 333 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 873 m[1] + 25 333 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 441 m[1] + 25 109 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 617 m[1] + 25 125 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 585 m[1] + 25 125 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 793 m[1] + 25 141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 761 m[1] + 25 141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 729 m[1] + 25 141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 937 m[1] + 25 157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 905 m[1] + 25 157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 113 m[1] + 25 173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 081 m[1] + 25 173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 257 m[1] + 25 189 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 433 m[1] + 25 205 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 505 m[1] + 24 933 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 681 m[1] + 24 949 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 649 m[1] + 24 949 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 825 m[1] + 24 965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 793 m[1] + 24 965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 001 m[1] + 24 981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 969 m[1] + 24 981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 937 m[1] + 24 981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 145 m[1] + 24 997 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 113 m[1] + 24 997 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 321 m[1] + 25 013 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 289 m[1] + 25 013 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 465 m[1] + 25 029 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 569 m[1] + 24 757 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 713 m[1] + 24 773 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 889 m[1] + 24 789 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 857 m[1] + 24 789 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 033 m[1] + 24 805 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 001 m[1] + 24 805 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 177 m[1] + 24 821 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 145 m[1] + 24 821 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 353 m[1] + 24 837 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 321 m[1] + 24 837 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
```

```

-35 497 m[1] + 24 853 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 673 m[1] + 24 869 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-33 921 m[1] + 24 613 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 065 m[1] + 24 629 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 241 m[1] + 24 645 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 209 m[1] + 24 645 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 385 m[1] + 24 661 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 353 m[1] + 24 661 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 561 m[1] + 24 677 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 529 m[1] + 24 677 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 705 m[1] + 24 693 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34 881 m[1] + 24 709 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-33 129 m[1] + 24 453 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-33 273 m[1] + 24 469 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-33 417 m[1] + 24 485 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-33 593 m[1] + 24 501 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-33 561 m[1] + 24 501 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-33 737 m[1] + 24 517 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-33 913 m[1] + 24 533 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-32 481 m[1] + 24 309 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-32 625 m[1] + 24 325 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-32 801 m[1] + 24 341 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-32 769 m[1] + 24 341 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-32 945 m[1] + 24 357 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-33 121 m[1] + 24 373 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-31 689 m[1] + 24 149 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-31 833 m[1] + 24 165 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-31 977 m[1] + 24 181 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-32 153 m[1] + 24 197 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-31 041 m[1] + 24 005 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-31 185 m[1] + 24 021 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-31 361 m[1] + 24 037 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-30 249 m[1] + 23 845 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-30 393 m[1] + 23 861 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-29 601 m[1] + 23 701 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0,

```

Array[m, 6], Integers]

```

{{m[1] → 17 779, m[2] → 177 797,
  m[3] → 1 795 746, m[4] → 0, m[5] → 0, m[6] → 7 723 650 238}}

```

```

Array[m, 6] /. {m[1] → 17 779, m[2] → 177 797,
  m[3] → 1 795 746, m[4] → 0, m[5] → 0, m[6] → 7 723 650 238}
{17 779, 177 797, 1 795 746, 0, 0, 7 723 650 238}

```

```
GCD[17 779, 177 797, 1 795 746, 0, 0, 7 723 650 238]
```


Reverse[{17 779, 177 797, 1 795 746, 0, 0, 7 723 650 238}]

{7 723 650 238, 0, 0, 1 795 746, 177 797, 17 779}

{17 779, 177 797, 1 795 746, 0, 0, 7 723 650 238}.gpart[chi6]

-1 533 120

{17 779, 177 797, 1 795 746, 0, 0, 7 723 650 238}.Transpose[A6]

{1 176 512, -245 696, 323 232, 892 160, 38 880, 607 808, 606 776, 322 424, 891 352,
38 072, 607 000, 1 175 928, 322 648, 891 576, 38 296, 607 224, 322 872, 38 520,
321 616, 37 264, 606 192, 321 840, 890 768, 37 488, 606 416, 1 175 344, 322 064,
890 992, 37 712, 606 640, 322 288, 36 456, 321 032, 36 680, 605 608, 321 256,
890 184, 605 832, 1 174 760, 321 480, 890 408, 606 056, 321 704, 320 448,
605 024, 320 672, 889 600, 605 248, 1 174 176, 320 896, 889 824, 605 472,
321 120, 319 864, 604 440, 889 016, 604 664, 1 173 592, 889 240, 604 888,
603 856, 888 432, 604 080, 1 173 008, 888 656, 604 304, 603 272, 887 848,
1 172 424, 888 072, 887 264, 1 171 840, 887 488, 886 680, 1 171 256, 1 170 672}

FindInstance[

-1 824 321 m[1] + 1 234 117 m[2] - 314 882 m[3] + 38 122 m[4] - 2205 m[5] + 49 m[6] < 0 &&
-37 521 m[1] + 25 301 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 761 m[1] + 25 317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 729 m[1] + 25 317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 697 m[1] + 25 317 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 905 m[1] + 25 333 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 873 m[1] + 25 333 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 441 m[1] + 25 109 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 617 m[1] + 25 125 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 585 m[1] + 25 125 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 793 m[1] + 25 141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 761 m[1] + 25 141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 729 m[1] + 25 141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 937 m[1] + 25 157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 905 m[1] + 25 157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 113 m[1] + 25 173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 081 m[1] + 25 173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 257 m[1] + 25 189 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37 433 m[1] + 25 205 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] < 0 &&
-35 505 m[1] + 24 933 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 681 m[1] + 24 949 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 649 m[1] + 24 949 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 825 m[1] + 24 965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 793 m[1] + 24 965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36 001 m[1] + 24 981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 969 m[1] + 24 981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35 937 m[1] + 24 981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&

[illegible]

```

-30 249 m[1] + 23 845 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-30 393 m[1] + 23 861 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-29 601 m[1] + 23 701 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0,
Array[m, 6], Integers]
{{m[1] → 5079, m[2] → 45 720, m[3] → 411 472, m[4] → 0, m[5] → 0, m[6] → 1 681 764 478}}

Array[m, 6] /.
{m[1] → 5079, m[2] → 45 720, m[3] → 411 472, m[4] → 0, m[5] → 0, m[6] → 1 681 764 478}
{5079, 45 720, 411 472, 0, 0, 1 681 764 478}

GCD[5079, 45 720, 411 472, 0, 0, 1 681 764 478]
1

Reverse[{5079, 45 720, 411 472, 0, 0, 1 681 764 478}]
{1 681 764 478, 0, 0, 411 472, 45 720, 5079}

{5079, 45 720, 411 472, 0, 0, 1 681 764 478}.gpart[chi6]
-564 001

```

```

{5079, 45 720, 411 472, 0, 0, 1 681 764 478}.Transpose[A6]
{546 191, 58 751, 221 279, 383 807, 58 895, 221 423, 545 047, 382 663, 545 191, 220 279,
382 807, 545 335, 220 423, 382 951, 58 039, 220 567, 58 183, -104 201, 544 047,
381 663, 544 191, 381 807, 544 335, 219 423, 381 951, 544 479, 219 567, 382 095,
57 183, 219 711, 57 327, 543 047, 543 191, 380 807, 543 335, 380 951, 543 479, 381 095,
543 623, 218 711, 381 239, 218 855, 56 471, 542 335, 542 479, 380 095, 542 623, 380 239,
542 767, 217 855, 380 383, 217 999, 55 615, 541 479, 541 623, 541 767, 379 383, 541 911,
379 527, 217 143, 540 767, 540 911, 378 527, 541 055, 378 671, 216 287, 539 911,
540 055, 540 199, 377 815, 539 199, 539 343, 376 959, 538 343, 538 487, 537 631}

```

```
anglesq6 = anglesquaredmat[chi6, list6] // FullSimplify;
```

```
Dimensions[anglesq6]
```

```
{76, 6}
```

```
angle6 = Sqrt[anglesq6] // FullSimplify;
```

```
angle6 // MatrixForm
```

$$\begin{pmatrix}
\sqrt{\frac{506}{773}} & \text{Root}\left[-1 + 559 \#1^2 - 16287 \#1^4 + 47153 \#1^6 \&, 5\right] & 0 & \text{Root}\left[
\sqrt{\frac{7089}{10822}} & \text{Root}\left[-1 + 953 \#1^2 - 115656 \#1^4 + 3772240 \#1^6 \&, 6\right] & \sqrt{\frac{3}{14}} & \text{Root}\left[
\frac{\sqrt{\frac{14177}{5411}}}{2} & \text{Root}\left[-29 + 10015 \#1^2 - 502152 \#1^4 + 3300710 \#1^6 \&, 5\right] & \frac{1}{\sqrt{7}} & \text{Root}\left[-29
2\sqrt{\frac{886}{5411}} & \text{Root}\left[-179 + 39211 \#1^2 - 1444968 \#1^4 + 5281136 \#1^6 \&, 5\right] & \frac{1}{\sqrt{14}} & \text{Root}\left[-179
\frac{\sqrt{\frac{14185}{5411}}}{2} & \text{Root}\left[-91 + 26547 \#1^2 - 2121336 \#1^4 + 26405680 \#1^6 \&, 4\right] & \sqrt{\frac{3}{14}} & \text{Root}\left[-91 +
3\sqrt{\frac{394}{5411}} & \text{Root}\left[-27 + 5247 \#1^2 - 266448 \#1^4 + 1320284 \#1^6 \&, 5\right] & \frac{1}{\sqrt{7}} & \text{Root}\left[-2
\end{pmatrix}$$

$\sqrt{\frac{1007}{1546}}$	$\text{Root}[-1 + 12\,041 \#1^2 - 234\,484 \#1^4 + 943\,060 \#1^6 \&, 5]$	0	$\text{Root}[-1$
$\sqrt{\frac{7053}{10\,822}}$	$\text{Root}[-707 + 196\,867 \#1^2 - 4\,669\,672 \#1^4 + 26\,405\,680 \#1^6 \&, 5]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-707 +$
$\frac{\sqrt{\frac{2015}{773}}}{2}$	$\text{Root}[-151 + 27\,263 \#1^2 - 492\,331 \#1^4 + 1\,650\,355 \#1^6 \&, 5]$	0	$\text{Root}[-15$
$\sqrt{\frac{7057}{10\,822}}$	$\text{Root}[-61 + 10\,307 \#1^2 - 346\,724 \#1^4 + 3\,300\,710 \#1^6 \&, 5]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-61$
$\frac{\sqrt{\frac{14\,113}{5411}}}{2}$	$\text{Root}[-2287 + 284\,255 \#1^2 - 5\,981\,416 \#1^4 + 26\,405\,680 \#1^6 \&, 5]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-2287$
$6 \sqrt{\frac{14}{773}}$	$\text{Root}[-259 + 26\,427 \#1^2 - 459\,452 \#1^4 + 1\,320\,284 \#1^6 \&, 5]$	0	$\text{Root}[-25$
$\frac{3 \sqrt{\frac{1569}{5411}}}{2}$	$\text{Root}[-53 + 5649 \#1^2 - 145\,912 \#1^4 + 943\,060 \#1^6 \&, 5]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-$
$\sqrt{\frac{3530}{5411}}$	$\text{Root}[-823 + 72\,983 \#1^2 - 1\,458\,632 \#1^4 + 5\,281\,136 \#1^6 \&, 5]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-823$
$\frac{\sqrt{\frac{14\,129}{5411}}}{2}$	$\text{Root}[-487 + 57\,959 \#1^2 - 2\,189\,656 \#1^4 + 26\,405\,680 \#1^6 \&, 5]$	$\sqrt{\frac{3}{14}}$	$\text{Root}[-487$
$2 \sqrt{\frac{883}{5411}}$	$\text{Root}[-65 + 5679 \#1^2 - 134\,932 \#1^4 + 660\,142 \#1^6 \&, 5]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-$
$\sqrt{\frac{3534}{5411}}$	$\text{Root}[-223 + 23\,055 \#1^2 - 700\,280 \#1^4 + 5\,281\,136 \#1^6 \&, 4]$	$\sqrt{\frac{3}{14}}$	$\text{Root}[-22$
$4 \sqrt{\frac{221}{5411}}$	$\text{Root}[-1 + 209 \#1^2 - 11\,468 \#1^4 + 188\,612 \#1^6 \&, 4]$	$\sqrt{\frac{2}{7}}$	$\text{Root}[$
$\frac{\sqrt{\frac{2005}{773}}}{2}$	$\text{Root}[-283 + 69\,859 \#1^2 - 1\,330\,532 \#1^4 + 6\,601\,420 \#1^6 \&, 6]$	0	$\text{Root}[-283$
$\frac{\sqrt{\frac{14\,043}{5411}}}{2}$	$\text{Root}[-643 + 104\,187 \#1^2 - 3\,426\,248 \#1^4 + 26\,405\,680 \#1^6 \&, 6]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-643 +$
$\sqrt{\frac{1003}{1546}}$	$\text{Root}[-239 + 26\,837 \#1^2 - 414\,617 \#1^4 + 1\,650\,355 \#1^6 \&, 5]$	0	$\text{Root}[-23$
$5 \sqrt{\frac{281}{10\,822}}$	$\text{Root}[-2591 + 242\,471 \#1^2 - 4\,737\,992 \#1^4 + 26\,405\,680 \#1^6 \&, 5]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-2591$
$\frac{3 \sqrt{\frac{223}{773}}}{2}$	$\text{Root}[-1867 + 143\,155 \#1^2 - 1\,986\,404 \#1^4 + 6\,601\,420 \#1^6 \&, 5]$	0	$\text{Root}[-1867$
$3 \sqrt{\frac{781}{10\,822}}$	$\text{Root}[-175 + 20\,355 \#1^2 - 710\,528 \#1^4 + 6\,601\,420 \#1^6 \&, 6]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-17$
$\frac{\sqrt{\frac{14\,057}{5411}}}{2}$	$\text{Root}[-5363 + 374\,027 \#1^2 - 6\,049\,736 \#1^4 + 26\,405\,680 \#1^6 \&, 5]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-5363$
$\sqrt{\frac{502}{773}}$	$\text{Root}[-146 + 8864 \#1^2 - 115\,717 \#1^4 + 330\,071 \#1^6 \&, 5]$	0	$\text{Root}[-1$
$\frac{\sqrt{\frac{14\,065}{5411}}}{2}$	$\text{Root}[-353 + 25\,163 \#1^2 - 519\,232 \#1^4 + 3\,300\,710 \#1^6 \&, 5]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-35$
$2 \sqrt{\frac{879}{5411}}$	$\text{Root}[-245 + 14\,253 \#1^2 - 210\,328 \#1^4 + 754\,448 \#1^6 \&, 5]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-24$
$\frac{\sqrt{\frac{14\,073}{5411}}}{2}$	$\text{Root}[-331 + 54\,451 \#1^2 - 2\,257\,976 \#1^4 + 26\,405\,680 \#1^6 \&, 6]$	$\sqrt{\frac{3}{14}}$	$\text{Root}[-331$
$\sqrt{\frac{3518}{5411}}$	$\text{Root}[-263 + 15\,723 \#1^2 - 273\,280 \#1^4 + 1\,320\,284 \#1^6 \&, 5]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-26$
$8 \sqrt{\frac{55}{5411}}$	$\text{Root}[-443 + 31\,187 \#1^2 - 713\,944 \#1^4 + 5\,281\,136 \#1^6 \&, 5]$	$\sqrt{\frac{3}{14}}$	$\text{Root}[-44$
$\sqrt{\frac{499}{773}}$	$\text{Root}[-127 + 22\,935 \#1^2 - 1\,019\,676 \#1^4 + 6\,601\,420 \#1^6 \&, 6]$	0	$\text{Root}[-127$
$\frac{\sqrt{\frac{1997}{773}}}{2}$	$\text{Root}[-203 + 18\,287 \#1^2 - 336\,903 \#1^4 + 1\,650\,355 \#1^6 \&, 6]$	0	$\text{Root}[-20$
$\sqrt{\frac{13\,987}{5411}}$	$\text{Root}[-371 + 70\,703 \#1^2 - 3\,404\,500 \#1^4 - 26\,405\,680 \#1^6 \&, 6]$	1	$\text{Root}[-371$

$\frac{1}{2}$	$\text{Root}[-271 + 70703 \#1^2 - 3494568 \#1^4 + 26405680 \#1^6 \&, 6]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-271$
$3 \sqrt{\frac{111}{1546}}$	$\text{Root}[-1879 + 121679 \#1^2 - 1675548 \#1^4 + 6601420 \#1^6 \&, 5]$	0	$\text{Root}[-1879$
$\sqrt{\frac{6997}{10822}}$	$\text{Root}[-533 + 36165 \#1^2 - 686616 \#1^4 + 3772240 \#1^6 \&, 6]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-533$
$\frac{\sqrt{\frac{1999}{773}}}{2}$	$\text{Root}[-808 + 42132 \#1^2 - 500871 \#1^4 + 1650355 \#1^6 \&, 5]$	0	$\text{Root}[-808$
$\frac{\sqrt{\frac{14001}{5411}}}{2}$	$\text{Root}[-8207 + 428879 \#1^2 - 6118056 \#1^4 + 26405680 \#1^6 \&, 5]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-8207$
$10 \sqrt{\frac{5}{773}}$	$\text{Root}[-955 + 42739 \#1^2 - 466284 \#1^4 + 1320284 \#1^6 \&, 5]$	0	$\text{Root}[-955$
$\frac{\sqrt{\frac{14009}{5411}}}{2}$	$\text{Root}[-823 + 52379 \#1^2 - 1055544 \#1^4 + 6601420 \#1^6 \&, 6]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-823$
$\sqrt{\frac{3502}{5411}}$	$\text{Root}[-2663 + 119575 \#1^2 - 1485960 \#1^4 + 5281136 \#1^6 \&, 5]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-2663$
$4 \sqrt{\frac{219}{5411}}$	$\text{Root}[-189 + 9171 \#1^2 - 138348 \#1^4 + 660142 \#1^6 \&, 5]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-1$
$\sqrt{\frac{3506}{5411}}$	$\text{Root}[-463 + 32335 \#1^2 - 727608 \#1^4 + 5281136 \#1^6 \&, 6]$	$\sqrt{\frac{3}{14}}$	$\text{Root}[-463$
$\frac{3 \sqrt{\frac{221}{773}}}{2}$	$\text{Root}[-947 + 67707 \#1^2 - 1364692 \#1^4 + 6601420 \#1^6 \&, 6]$	0	$\text{Root}[-947$
$\sqrt{\frac{995}{1546}}$	$\text{Root}[-634 + 31820 \#1^2 - 423157 \#1^4 + 1650355 \#1^6 \&, 6]$	0	$\text{Root}[-634$
$\sqrt{\frac{6969}{10822}}$	$\text{Root}[-3167 + 228919 \#1^2 - 4874632 \#1^4 + 26405680 \#1^6 \&, 6]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-3167$
$\frac{\sqrt{\frac{1991}{773}}}{2}$	$\text{Root}[-637 + 26453 \#1^2 - 288652 \#1^4 + 943060 \#1^6 \&, 5]$	0	$\text{Root}[-637$
$\frac{\sqrt{\frac{13945}{5411}}}{2}$	$\text{Root}[-9859 + 448811 \#1^2 - 6186376 \#1^4 + 26405680 \#1^6 \&, 6]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-9859$
$\sqrt{\frac{498}{773}}$	$\text{Root}[-331 + 12069 \#1^2 - 117425 \#1^4 + 330071 \#1^6 \&, 5]$	0	$\text{Root}[-331$
$\frac{\sqrt{\frac{13953}{5411}}}{2}$	$\text{Root}[-241 + 22851 \#1^2 - 536312 \#1^4 + 3300710 \#1^6 \&, 6]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-241$
$4 \sqrt{\frac{218}{5411}}$	$\text{Root}[-3475 + 132395 \#1^2 - 1499624 \#1^4 + 5281136 \#1^6 \&, 5]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-3475$
$\sqrt{\frac{3490}{5411}}$	$\text{Root}[-1 + 45 \#1^2 - 656 \#1^4 + 3092 \#1^6 \&, 6]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-1$
$6 \sqrt{\frac{97}{5411}}$	$\text{Root}[-91 + 26499 \#1^2 - 741272 \#1^4 + 5281136 \#1^6 \&, 6]$	$\sqrt{\frac{3}{14}}$	$\text{Root}[-91$
$\frac{\sqrt{\frac{1981}{773}}}{2}$	$\text{Root}[-16 + 1912 \#1^2 - 49349 \#1^4 + 235765 \#1^6 \&, 6]$	0	$\text{Root}[-16$
$\sqrt{\frac{991}{1546}}$	$\text{Root}[-2687 + 124151 \#1^2 - 1709708 \#1^4 + 6601420 \#1^6 \&, 6]$	0	$\text{Root}[-2687$
$\frac{\sqrt{\frac{1983}{773}}}{2}$	$\text{Root}[-1327 + 48271 \#1^2 - 509411 \#1^4 + 1650355 \#1^6 \&, 6]$	0	$\text{Root}[-1327$
$\frac{\sqrt{\frac{13889}{5411}}}{2}$	$\text{Root}[-9359 + 433823 \#1^2 - 6254696 \#1^4 + 26405680 \#1^6 \&, 6]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-9359$
$4 \sqrt{\frac{31}{773}}$	$\text{Root}[-1643 + 52067 \#1^2 - 473116 \#1^4 + 1320284 \#1^6 \&, 5]$	0	$\text{Root}[-1643$
$3 \sqrt{\frac{386}{5411}}$	$\text{Root}[-3959 + 138231 \#1^2 - 1513288 \#1^4 + 5281136 \#1^6 \&, 6]$	$\frac{1}{\sqrt{14}}$	$\text{Root}[-3959$
$2 \sqrt{\frac{869}{5411}}$	$\text{Root}[-181 + 9171 \#1^2 - 141764 \#1^4 + 660142 \#1^6 \&, 6]$	$\frac{1}{\sqrt{7}}$	$\text{Root}[-181$
$\sqrt{\frac{987}{1546}}$	$\text{Root}[-523 + 28073 \#1^2 - 431697 \#1^4 + 1650355 \#1^6 \&, 6]$	0	$\text{Root}[-523$

$\frac{5\sqrt{\frac{19}{773}}}{2}$	$\text{Root}\left[-5539 + 192\,267 \#1^2 - 2\,054\,724 \#1^4 + 6\,601\,420 \#1^6 \&, 6\right]$	0	$\text{Root}\left[-5539\right]$
$\frac{3\sqrt{\frac{1537}{5411}}}{2}$	$\text{Root}\left[-821 + 54\,845 \#1^2 - 903\,288 \#1^4 + 3\,772\,240 \#1^6 \&, 6\right]$	$\frac{1}{\sqrt{14}}$	$\text{Root}\left[-82\right]$
$\sqrt{\frac{494}{773}}$	$\text{Root}\left[-466 + 13\,528 \#1^2 - 119\,133 \#1^4 + 330\,071 \#1^6 \&, 6\right]$	0	$\text{Root}\left[-46\right]$
$2\sqrt{\frac{865}{5411}}$	$\text{Root}\left[-3923 + 137\,083 \#1^2 - 1\,526\,952 \#1^4 + 5\,281\,136 \#1^6 \&, 6\right]$	$\frac{1}{\sqrt{14}}$	$\text{Root}\left[-3923\right]$
$\sqrt{\frac{3462}{5411}}$	$\text{Root}\left[-135 + 15\,723 \#1^2 - 286\,944 \#1^4 + 1\,320\,284 \#1^6 \&, 6\right]$	$\frac{1}{\sqrt{7}}$	$\text{Root}\left[-13\right]$
$\sqrt{\frac{983}{1546}}$	$\text{Root}\left[-511 + 91\,703 \#1^2 - 1\,743\,868 \#1^4 + 6\,601\,420 \#1^6 \&, 6\right]$	0	$\text{Root}\left[-511\right]$
$\frac{\sqrt{\frac{1967}{773}}}{2}$	$\text{Root}\left[-1228 + 45\,680 \#1^2 - 517\,951 \#1^4 + 1\,650\,355 \#1^6 \&, 6\right]$	0	$\text{Root}\left[-122\right]$
$2\sqrt{\frac{123}{773}}$	$\text{Root}\left[-277 + 7773 \#1^2 - 68\,564 \#1^4 + 188\,612 \#1^6 \&, 6\right]$	0	$\text{Root}\left[-2\right]$
$\sqrt{\frac{3446}{5411}}$	$\text{Root}\left[-3175 + 128\,951 \#1^2 - 1\,540\,616 \#1^4 + 5\,281\,136 \#1^6 \&, 6\right]$	$\frac{1}{\sqrt{14}}$	$\text{Root}\left[-3175\right]$
$\frac{\sqrt{\frac{1959}{773}}}{2}$	$\text{Root}\left[-3187 + 164\,443 \#1^2 - 2\,088\,884 \#1^4 + 6\,601\,420 \#1^6 \&, 6\right]$	0	$\text{Root}\left[-3187\right]$
$7\sqrt{\frac{10}{773}}$	$\text{Root}\left[-455 + 13\,241 \#1^2 - 120\,841 \#1^4 + 330\,071 \#1^6 \&, 6\right]$	0	$\text{Root}\left[-45\right]$
$2\sqrt{\frac{858}{5411}}$	$\text{Root}\left[-1523 + 113\,835 \#1^2 - 1\,554\,280 \#1^4 + 5\,281\,136 \#1^6 \&, 6\right]$	$\frac{1}{\sqrt{14}}$	$\text{Root}\left[-1523\right]$
$\frac{\sqrt{\frac{1951}{773}}}{2}$	$\text{Root}\left[-31 + 34\,359 \#1^2 - 526\,491 \#1^4 + 1\,650\,355 \#1^6 \&, 6\right]$	0	$\text{Root}\left[-31\right]$
$2\sqrt{\frac{122}{773}}$	$\text{Root}\left[-1459 + 49\,771 \#1^2 - 486\,780 \#1^4 + 1\,320\,284 \#1^6 \&, 6\right]$	0	$\text{Root}\left[-145\right]$
$9\sqrt{\frac{6}{773}}$	$\text{Root}\left[-202 + 11\,208 \#1^2 - 122\,549 \#1^4 + 330\,071 \#1^6 \&, 6\right]$	0	$\text{Root}\left[-20\right]$

Dimensions[angle6]

{76, 6}

orderedroots[minipoly[chi6]]

{-5, $\text{Root}\left[-812 + 281 \#1 - 30 \#1^2 + \#1^3 \&, 1\right]$, 9,
 $\text{Root}\left[-812 + 281 \#1 - 30 \#1^2 + \#1^3 \&, 2\right]$, 11, $\text{Root}\left[-812 + 281 \#1 - 30 \#1^2 + \#1^3 \&, 3\right]$ }

chi6

$(-11 + x)^2 (-9 + x)^{12} (5 + x)^{32} (-812 + 281 x - 30 x^2 + x^3)$

coeff[chi6, (x + 5) (x - 9) (x - 11)] // FullSimplify

{ $\text{Root}\left[989\,440 + 59\,136 \#1 - 531 \#1^2 + \#1^3 \&, 2\right]$,
 $\text{Root}\left[989\,440 + 59\,136 \#1 - 531 \#1^2 + \#1^3 \&, 1\right]$,
 $\text{Root}\left[989\,440 + 59\,136 \#1 - 531 \#1^2 + \#1^3 \&, 3\right]$ }

```

combinationangle[{Root[989440 + 59136 #1 - 531 #1^2 + #1^3 &, 2],
  Root[989440 + 59136 #1 - 531 #1^2 + #1^3 &, 1],
  Root[989440 + 59136 #1 - 531 #1^2 + #1^3 &, 3]},
{2, 18}, {2, 4, 6}, angle6] // FullSimplify

{Root[4489 - 191268 #1^2 + 1028150 #1^4 - 124196 #1^6 + 3721 #1^8 &, 7],
Root[4489 - 191268 #1^2 + 1028150 #1^4 - 124196 #1^6 + 3721 #1^8 &, 3],
Root[4489 - 191268 #1^2 + 1028150 #1^4 - 124196 #1^6 + 3721 #1^8 &, 8],
Root[4489 - 191268 #1^2 + 1028150 #1^4 - 124196 #1^6 + 3721 #1^8 &, 5]}

compatible[{Root[4489 - 191268 #1^2 + 1028150 #1^4 - 124196 #1^6 + 3721 #1^8 &, 7],
  Root[4489 - 191268 #1^2 + 1028150 #1^4 - 124196 #1^6 + 3721 #1^8 &, 3],
  Root[4489 - 191268 #1^2 + 1028150 #1^4 - 124196 #1^6 + 3721 #1^8 &, 8],
  Root[4489 - 191268 #1^2 + 1028150 #1^4 - 124196 #1^6 + 3721 #1^8 &, 5]}]

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0