

$$\text{chi7} = (-11 + x)^2 (-9 + x)^{12} (5 + x)^{32} (-808 + 281 x - 30 x^2 + x^3) \\ (-11 + x)^2 (-9 + x)^{12} (5 + x)^{32} (-808 + 281 x - 30 x^2 + x^3)$$

list7 =

$$\begin{aligned} & \left\{ (-11 + x) (3459 - 1990 x + 404 x^2 - 34 x^3 + x^4), (-11 + x) (-9 + x) (-7 + x) (53 - 18 x + x^2), \right. \\ & -36969 + 25157 x - 6426 x^2 + 778 x^3 - 45 x^4 + x^5, -36937 + 25157 x - \\ & 6426 x^2 + 778 x^3 - 45 x^4 + x^5, (-11 + x) (3355 - 1982 x + 404 x^2 - 34 x^3 + x^4), \\ & (139 - 24 x + x^2) (-267 + 135 x - 21 x^2 + x^3), (-11 + x) \\ & (3371 - 1982 x + 404 x^2 - 34 x^3 + x^4), -37289 + 25189 x - 6426 x^2 + 778 x^3 - 45 x^4 + x^5, \\ & (-11 + x) (3387 - 1982 x + 404 x^2 - 34 x^3 + x^4), (-11 + x) (83 - 20 x + x^2) (41 - 14 x + x^2), \\ & -35825 + 24965 x - 6418 x^2 + 778 x^3 - 45 x^4 + x^5, \\ & (-9 + x) (3977 - 2332 x + 454 x^2 - 36 x^3 + x^4), (-7 + x) (139 - 24 x + x^2) (37 - 14 x + x^2), \\ & -35969 + 24981 x - 6418 x^2 + 778 x^3 - 45 x^4 + x^5, (-11 + x) (-9 + x) \\ & (-363 + 179 x - 25 x^2 + x^3), -36145 + 24997 x - 6418 x^2 + 778 x^3 - 45 x^4 + x^5, \\ & (-11 + x) (-7 + x) (-469 + 215 x - 27 x^2 + x^3), -36321 + 25013 x - 6418 x^2 + \\ & 778 x^3 - 45 x^4 + x^5, (-11 + x) (3299 - 1974 x + 404 x^2 - 34 x^3 + x^4), \\ & (-11 + x) (3315 - 1974 x + 404 x^2 - 34 x^3 + x^4), (-11 + x) \\ & (3331 - 1974 x + 404 x^2 - 34 x^3 + x^4), (-11 + x) (3347 - 1974 x + 404 x^2 - 34 x^3 + x^4), \\ & (-9 + x) (3857 - 2324 x + 454 x^2 - 36 x^3 + x^4), (-9 + x) \\ & (3873 - 2324 x + 454 x^2 - 36 x^3 + x^4), -35033 + 24805 x - 6410 x^2 + 778 x^3 - 45 x^4 + x^5, \\ & (-9 + x) (3889 - 2324 x + 454 x^2 - 36 x^3 + x^4), -35209 + 24821 x - 6410 x^2 + \\ & 778 x^3 - 45 x^4 + x^5, -35177 + 24821 x - 6410 x^2 + 778 x^3 - 45 x^4 + x^5, \\ & (-11 + x) (-9 + x) (-355 + 179 x - 25 x^2 + x^3), -35353 + 24837 x - 6410 x^2 + \\ & 778 x^3 - 45 x^4 + x^5, (-11 + x) (3211 - 1966 x + 404 x^2 - 34 x^3 + x^4), \\ & -35529 + 24853 x - 6410 x^2 + 778 x^3 - 45 x^4 + x^5, (-11 + x) (-7 + x) \\ & (-461 + 215 x - 27 x^2 + x^3), (-11 + x) (3243 - 1966 x + 404 x^2 - 34 x^3 + x^4), \\ & (-11 + x) (3259 - 1966 x + 404 x^2 - 34 x^3 + x^4), (-9 + x) \\ & (3769 - 2316 x + 454 x^2 - 36 x^3 + x^4), (-9 + x) (3785 - 2316 x + 454 x^2 - 36 x^3 + x^4), \\ & -34241 + 24645 x - 6402 x^2 + 778 x^3 - 45 x^4 + x^5, (-9 + x) \\ & (3801 - 2316 x + 454 x^2 - 36 x^3 + x^4), -34385 + 24661 x - 6402 x^2 + 778 x^3 - 45 x^4 + x^5, \\ & (-11 + x) (-9 + x) (-347 + 179 x - 25 x^2 + x^3), -34561 + 24677 x - 6402 x^2 + \\ & 778 x^3 - 45 x^4 + x^5, (-11 + x) (3139 - 1958 x + 404 x^2 - 34 x^3 + x^4), \\ & (-11 + x) (3155 - 1958 x + 404 x^2 - 34 x^3 + x^4), (-11 + x) (-7 + x) \\ & (-453 + 215 x - 27 x^2 + x^3), (-11 + x) (3187 - 1958 x + 404 x^2 - 34 x^3 + x^4), \\ & (-9 + x) (3697 - 2308 x + 454 x^2 - 36 x^3 + x^4), -33449 + 24485 x - 6394 x^2 + \\ & 778 x^3 - 45 x^4 + x^5, (-9 + x) (3713 - 2308 x + 454 x^2 - 36 x^3 + x^4), \\ & -33593 + 24501 x - 6394 x^2 + 778 x^3 - 45 x^4 + x^5, (-11 + x) (-9 + x) (-3 + x) \\ & (113 - 22 x + x^2), -33769 + 24517 x - 6394 x^2 + 778 x^3 - 45 x^4 + x^5, \\ & (-11 + x) (3067 - 1950 x + 404 x^2 - 34 x^3 + x^4), (-11 + x) \\ & (3083 - 1950 x + 404 x^2 - 34 x^3 + x^4), (-11 + x) (3099 - 1950 x + 404 x^2 - 34 x^3 + x^4), \\ & (-9 + x)^2 (-401 + 211 x - 27 x^2 + x^3), (-9 + x) (3625 - 2300 x + 454 x^2 - 36 x^3 + x^4), \\ & -32801 + 24341 x - 6386 x^2 + 778 x^3 - 45 x^4 + x^5, (-11 + x) (-9 + x) \\ & (-331 + 179 x - 25 x^2 + x^3), (-11 + x) (2995 - 1942 x + 404 x^2 - 34 x^3 + x^4), \end{aligned}$$

$$\begin{aligned}
& (-11+x) (3011 - 1942x + 404x^2 - 34x^3 + x^4), (-9+x)^2 (-393 + 211x - 27x^2 + x^3), \\
& -32009 + 24181x - 6378x^2 + 778x^3 - 45x^4 + x^5, \\
& (-11+x) (-9+x) (-323 + 179x - 25x^2 + x^3), (-11+x) \\
& (2923 - 1934x + 404x^2 - 34x^3 + x^4), (-11+x) (2939 - 1934x + 404x^2 - 34x^3 + x^4), \\
& (-9+x) (3449 - 2284x + 454x^2 - 36x^3 + x^4), (-11+x) (-9+x)^2 (35 - 16x + x^2), \\
& (-11+x) (2851 - 1926x + 404x^2 - 34x^3 + x^4), \\
& (-9+x) (3361 - 2276x + 454x^2 - 36x^3 + x^4), \\
& (-11+x) (-9+x) (-307 + 179x - 25x^2 + x^3), \\
& (-11+x) (2779 - 1918x + 404x^2 - 34x^3 + x^4), (-13+x) (-11+x) \\
& (-9+x) (23 - 12x + x^2), (-11+x) (-9+x) (-291 + 179x - 25x^2 + x^3) \}; 
\end{aligned}$$

**Length[list7]**

74

**A7 = CoefficientList[list7, x];**

**A7 // MatrixForm**

|        |       |       |     |     |     |
|--------|-------|-------|-----|-----|-----|
| -38049 | 25349 | -6434 | 778 | -45 | 1   |
| -36729 | 25141 | -6426 | 778 | -45 | 1   |
| -36969 | 25157 | -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   |
| -37289 | 25189 | -6426 | 778 | -45 | 1   |
| -37257 | 25189 | -6426 | 778 | -45 | 1   |
| -37433 | 25205 | -6426 | 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   |
| -36641 | 25045 | -6418 | 778 | -45 | 1   |
| -36817 | 25061 | -6418 | 778 | -45 | 1   |
| -34713 | 24773 | -6410 | 778 | -45 | 1   |
| -34857 | 24789 | -6410 | 778 | -45 | 1   |
| -35033 | 24805 | -6410 | 778 | -45 | 1   |
| -35001 | 24805 | -6410 | 778 | -45 | 1   |
| -35209 | 24821 | -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   |
| -35529 | 24853 | -6410 | 778 | -45 | 1   |
| -35497 | 24853 | -6410 | 778 | -45 | 1   |
| -35673 | 24869 | -6410 | 778 | -45 | 1   |
| -35849 | 24885 | -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 |
| -34353 | 24661 | -6402 | 778 | -45 | 1 |
| -34561 | 24677 | -6402 | 778 | -45 | 1 |
| -34529 | 24677 | -6402 | 778 | -45 | 1 |
| -34705 | 24693 | -6402 | 778 | -45 | 1 |
| -34881 | 24709 | -6402 | 778 | -45 | 1 |
| -35057 | 24725 | -6402 | 778 | -45 | 1 |
| -33273 | 24469 | -6394 | 778 | -45 | 1 |
| -33449 | 24485 | -6394 | 778 | -45 | 1 |
| -33417 | 24485 | -6394 | 778 | -45 | 1 |
| -33593 | 24501 | -6394 | 778 | -45 | 1 |
| -33561 | 24501 | -6394 | 778 | -45 | 1 |
| -33769 | 24517 | -6394 | 778 | -45 | 1 |
| -33737 | 24517 | -6394 | 778 | -45 | 1 |
| -33913 | 24533 | -6394 | 778 | -45 | 1 |
| -34089 | 24549 | -6394 | 778 | -45 | 1 |
| -32481 | 24309 | -6386 | 778 | -45 | 1 |
| -32625 | 24325 | -6386 | 778 | -45 | 1 |
| -32801 | 24341 | -6386 | 778 | -45 | 1 |
| -32769 | 24341 | -6386 | 778 | -45 | 1 |
| -32945 | 24357 | -6386 | 778 | -45 | 1 |
| -33121 | 24373 | -6386 | 778 | -45 | 1 |
| -31833 | 24165 | -6378 | 778 | -45 | 1 |
| -32009 | 24181 | -6378 | 778 | -45 | 1 |
| -31977 | 24181 | -6378 | 778 | -45 | 1 |
| -32153 | 24197 | -6378 | 778 | -45 | 1 |
| -32329 | 24213 | -6378 | 778 | -45 | 1 |
| -31041 | 24005 | -6370 | 778 | -45 | 1 |
| -31185 | 24021 | -6370 | 778 | -45 | 1 |
| -31361 | 24037 | -6370 | 778 | -45 | 1 |
| -30249 | 23845 | -6362 | 778 | -45 | 1 |
| -30393 | 23861 | -6362 | 778 | -45 | 1 |
| -30569 | 23877 | -6362 | 778 | -45 | 1 |
| -29601 | 23701 | -6354 | 778 | -45 | 1 |
| -28809 | 23541 | -6346 | 778 | -45 | 1 |

**Dimensions[A7]**

{74, 6}

**gpart[chi7]**

{-1814649, 1231237, -314698, 38122, -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 && Array[n, 74].A7 = gpart[chi7], Array[n, 74], Integers]

{{n[1] → 0, n[2] → 0, n[3] → 5, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
n[8] → 22, 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] → 3, n[22] → 19, 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}}}

```

```

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 && Array[n, 74].A7 = gpart[chi7], Array[n, 74], Integers]

{{n[1] → 1, n[2] → 0, n[3] → 6, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
n[8] → 20, 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] → 21, 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] → 1, 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} }

list7[{8, 22}] * mu[chi7] // Factor
{ (-11 + x) (-9 + x)^11 (5 + x)^31 (-37289 + 25189 x - 6426 x^2 + 778 x^3 - 45 x^4 + x^5),
(-11 + x)^2 (-9 + x)^11 (5 + x)^31 (3347 - 1974 x + 404 x^2 - 34 x^3 + x^4) }

Array[m, 6].Transpose[A7]
{-38049 m[1] + 25349 m[2] - 6434 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],
-36969 m[1] + 25157 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],
-37289 m[1] + 25189 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],
-37433 m[1] + 25205 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6],
-35825 m[1] + 24965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6],
-35793 m[1] + 24965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6],
-36001 m[1] + 24981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6],
-35969 m[1] + 24981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6],
-35937 m[1] + 24981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6],
-36145 m[1] + 24997 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6],
-36113 m[1] + 24997 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6],

```

$-36\ 321\ m[1] + 25\ 013\ m[2] - 6418\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-36\ 289\ m[1] + 25\ 013\ m[2] - 6418\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-36\ 465\ m[1] + 25\ 029\ m[2] - 6418\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-36\ 641\ m[1] + 25\ 045\ m[2] - 6418\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-36\ 817\ m[1] + 25\ 061\ m[2] - 6418\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 713\ m[1] + 24\ 773\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 857\ m[1] + 24\ 789\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 033\ m[1] + 24\ 805\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 001\ m[1] + 24\ 805\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 209\ m[1] + 24\ 821\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 177\ m[1] + 24\ 821\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 145\ m[1] + 24\ 821\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 353\ m[1] + 24\ 837\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 321\ m[1] + 24\ 837\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 529\ m[1] + 24\ 853\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 497\ m[1] + 24\ 853\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 673\ m[1] + 24\ 869\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 849\ m[1] + 24\ 885\ m[2] - 6410\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-33\ 921\ m[1] + 24\ 613\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 065\ m[1] + 24\ 629\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 241\ m[1] + 24\ 645\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 209\ m[1] + 24\ 645\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 385\ m[1] + 24\ 661\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 353\ m[1] + 24\ 661\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 561\ m[1] + 24\ 677\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 529\ m[1] + 24\ 677\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 705\ m[1] + 24\ 693\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 881\ m[1] + 24\ 709\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-35\ 057\ m[1] + 24\ 725\ m[2] - 6402\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-33\ 273\ m[1] + 24\ 469\ m[2] - 6394\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-33\ 449\ m[1] + 24\ 485\ m[2] - 6394\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-33\ 417\ m[1] + 24\ 485\ m[2] - 6394\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-33\ 593\ m[1] + 24\ 501\ m[2] - 6394\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-33\ 561\ m[1] + 24\ 501\ m[2] - 6394\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-33\ 769\ m[1] + 24\ 517\ m[2] - 6394\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-33\ 737\ m[1] + 24\ 517\ m[2] - 6394\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-33\ 913\ m[1] + 24\ 533\ m[2] - 6394\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-34\ 089\ m[1] + 24\ 549\ m[2] - 6394\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-32\ 481\ m[1] + 24\ 309\ m[2] - 6386\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-32\ 625\ m[1] + 24\ 325\ m[2] - 6386\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-32\ 801\ m[1] + 24\ 341\ m[2] - 6386\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-32\ 769\ m[1] + 24\ 341\ m[2] - 6386\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-32\ 945\ m[1] + 24\ 357\ m[2] - 6386\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-33\ 121\ m[1] + 24\ 373\ m[2] - 6386\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-31\ 833\ m[1] + 24\ 165\ m[2] - 6378\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-32\ 009\ m[1] + 24\ 181\ m[2] - 6378\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,  
 $-31\ 977\ m[1] + 24\ 181\ m[2] - 6378\ m[3] + 778\ m[4] - 45\ m[5] + m[6]$ ,

```

- 32 153 m[1] + 24 197 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ,
- 32 329 m[1] + 24 213 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] ,
- 30 569 m[1] + 23 877 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] ,
- 28 809 m[1] + 23 541 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] }

```

**Array[m, 6].gpart[chi7]**

```
- 1814 649 m[1] + 1 231 237 m[2] - 314 698 m[3] + 38 122 m[4] - 2205 m[5] + 49 m[6]
```

**FindInstance[**

```

- 1814 649 m[1] + 1 231 237 m[2] - 314 698 m[3] + 38 122 m[4] - 2205 m[5] + 49 m[6] < 0 &&
- 38 049 m[1] + 25 349 m[2] - 6434 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 &&
- 36 969 m[1] + 25 157 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 &&
- 37 289 m[1] + 25 189 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 &&
- 35 825 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 &&
- 36 641 m[1] + 25 045 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 817 m[1] + 25 061 m[2] - 6418 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 &&
- 34 857 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 &&
- 35 209 m[1] + 24 821 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 &&

```

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- 35 529 m[1] + 24 853 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 &&
- 35 849 m[1] + 24 885 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 &&
- 35 057 m[1] + 24 725 m[2] - 6402 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 &&
- 33 449 m[1] + 24 485 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 &&
- 33 769 m[1] + 24 517 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 &&
- 34 089 m[1] + 24 549 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 &&
- 31 833 m[1] + 24 165 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 009 m[1] + 24 181 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 &&
- 32 329 m[1] + 24 213 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 &&
- 30 569 m[1] + 23 877 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 &&
- 28 809 m[1] + 23 541 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0,
Array[m, 6], Integers]
{ }

```

```

FindInstance[
-1814649 m[1] + 1231237 m[2] - 314698 m[3] + 38122 m[4] - 2205 m[5] + 49 m[6] < 0 &&
-38049 m[1] + 25349 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36729 m[1] + 25141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36969 m[1] + 25157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36937 m[1] + 25157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36905 m[1] + 25157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37113 m[1] + 25173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37081 m[1] + 25173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37289 m[1] + 25189 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] < 0 &&
-37257 m[1] + 25189 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-37433 m[1] + 25205 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35825 m[1] + 24965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35793 m[1] + 24965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36001 m[1] + 24981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35969 m[1] + 24981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35937 m[1] + 24981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36145 m[1] + 24997 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36113 m[1] + 24997 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36321 m[1] + 25013 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36289 m[1] + 25013 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36465 m[1] + 25029 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36641 m[1] + 25045 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-36817 m[1] + 25061 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34713 m[1] + 24773 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34857 m[1] + 24789 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35033 m[1] + 24805 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35001 m[1] + 24805 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35209 m[1] + 24821 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35177 m[1] + 24821 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35145 m[1] + 24821 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35353 m[1] + 24837 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35321 m[1] + 24837 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35529 m[1] + 24853 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35497 m[1] + 24853 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35673 m[1] + 24869 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-35849 m[1] + 24885 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-33921 m[1] + 24613 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34065 m[1] + 24629 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34241 m[1] + 24645 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34209 m[1] + 24645 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34385 m[1] + 24661 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34353 m[1] + 24661 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
-34561 m[1] + 24677 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&

```

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- 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 &&
- 35 057 m[1] + 24 725 m[2] - 6402 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 &&
- 33 449 m[1] + 24 485 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 &&
- 33 769 m[1] + 24 517 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 &&
- 34 089 m[1] + 24 549 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 &&
- 31 833 m[1] + 24 165 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 009 m[1] + 24 181 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 &&
- 32 329 m[1] + 24 213 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 &&
- 30 569 m[1] + 23 877 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 &&
- 28 809 m[1] + 23 541 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0,
Array[m, 6], Integers]
{ {m[1] → 19 927, m[2] → 192 633,
  m[3] → 1 932 968, m[4] → 0, m[5] → 0, m[6] → 8 311 896 038} }

Array[m, 6] /. {m[1] → 19 927, m[2] → 192 633,
  m[3] → 1 932 968, m[4] → 0, m[5] → 0, m[6] → 8 311 896 038}
{19 927, 192 633, 1 932 968, 0, 0, 8 311 896 038}

GCD[19 927, 192 633, 1 932 968, 0, 0, 8 311 896 038]
1

Reverse[{19 927, 192 633, 1 932 968, 0, 0, 8 311 896 038}]
{8 311 896 038, 0, 0, 1 932 968, 192 633, 19 927}

```

```

{19927, 192633, 1932968, 0, 0, 8311896038}.gpart[chi7]
- 1891404

{19927, 192633, 1932968, 0, 0, 8311896038}.Transpose[A7]
{31420, 1731140, 30788, 668452, 1306116, 243428, 881092, -181596, 456068,
31044, 1305484, 1943148, 880460, 1518124, 2155788, 1093100, 1730764,
668076, 1305740, 880716, 455692, 30668, 1942516, 2155156, 1730132, 2367796,
1305108, 1942772, 2580436, 1517748, 2155412, 1092724, 1730388, 1305364,
880340, 2367164, 2579804, 2154780, 2792444, 2367420, 3005084, 1942396,
2580060, 2155036, 1730012, 1304988, 3004452, 2579428, 3217092, 2792068,
3429732, 2367044, 3004708, 2579684, 2154660, 3429100, 3641740, 3216716,
3854380, 3429356, 3004332, 4066388, 3641364, 4279028, 3854004, 3428980,
4491036, 4703676, 4278652, 4915684, 5128324, 4703300, 5552972, 5977620}

```

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FindInstance[
- 1814649 m[1] + 1231237 m[2] - 314698 m[3] + 38122 m[4] - 2205 m[5] + 49 m[6] < 0 &&
- 38049 m[1] + 25349 m[2] - 6434 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36729 m[1] + 25141 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36969 m[1] + 25157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36937 m[1] + 25157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36905 m[1] + 25157 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37113 m[1] + 25173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37081 m[1] + 25173 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37289 m[1] + 25189 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37257 m[1] + 25189 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 37433 m[1] + 25205 m[2] - 6426 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35825 m[1] + 24965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35793 m[1] + 24965 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36001 m[1] + 24981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35969 m[1] + 24981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35937 m[1] + 24981 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36145 m[1] + 24997 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36113 m[1] + 24997 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36321 m[1] + 25013 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36289 m[1] + 25013 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36465 m[1] + 25029 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36641 m[1] + 25045 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36817 m[1] + 25061 m[2] - 6418 m[3] + 778 m[4] - 45 m[5] + m[6] < 0 &&
- 34713 m[1] + 24773 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34857 m[1] + 24789 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35033 m[1] + 24805 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35001 m[1] + 24805 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35209 m[1] + 24821 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35177 m[1] + 24821 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35145 m[1] + 24821 m[2] - 6410 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&

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- 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 &&
- 35 529 m[1] + 24 853 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 &&
- 35 849 m[1] + 24 885 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 &&
- 35 057 m[1] + 24 725 m[2] - 6402 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 &&
- 33 449 m[1] + 24 485 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 &&
- 33 769 m[1] + 24 517 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 &&
- 34 089 m[1] + 24 549 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 &&
- 31 833 m[1] + 24 165 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 009 m[1] + 24 181 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 &&
- 32 329 m[1] + 24 213 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 &&
- 30 569 m[1] + 23 877 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 &&
- 28 809 m[1] + 23 541 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0,

```

Array[m, 6], Integers]

```

{{m[1] → 7591, m[2] → 68 323, m[3] → 614 905, m[4] → 0, m[5] → 0, m[6] → 2 513 477 598} }

Array[m, 6] /.

{m[1] → 7591, m[2] → 68 323, m[3] → 614 905, m[4] → 0, m[5] → 0, m[6] → 2 513 477 598}

{7591, 68 323, 614 905, 0, 0, 2 513 477 598}

GCD[7591, 68 323, 614 905, 0, 0, 2 513 477 598]

1

Reverse[{7591, 68 323, 614 905, 0, 0, 2 513 477 598}]

{2 513 477 598, 0, 0, 614 905, 68 323, 7591}

{7591, 68 323, 614 905, 0, 0, 2 513 477 598}.gpart[chi7]

-2 166 396

{7591, 68 323, 614 905, 0, 0, 2 513 477 598}.Transpose[A7]

{268 596, 996 772, 268 100, 511 012, 753 924, 268 164, 511 076, 25 316, 268 228, 25 380,
753 428, 996 340, 510 580, 753 492, 996 404, 510 644, 753 556, 267 796, 510 708,
267 860, 25 012, -217 836, 995 844, 995 908, 753 060, 995 972, 510 212, 753 124,
996 036, 510 276, 753 188, 267 428, 510 340, 267 492, 24 644, 995 476, 995 540, 752 692,
995 604, 752 756, 995 668, 509 908, 752 820, 509 972, 267 124, 24 276, 995 172,
752 324, 995 236, 752 388, 995 300, 509 540, 752 452, 509 604, 266 756, 994 804,
994 868, 752 020, 994 932, 752 084, 509 236, 994 500, 751 652, 994 564, 751 716,
508 868, 994 132, 994 196, 751 348, 993 764, 993 828, 750 980, 993 460, 993 092}

```

```

anglesq7 = anglesquaredmat[chi7, list7] // FullSimplify;

Dimensions[anglesq7]

{74, 6}

angle7 = Sqrt[anglesq7] // FullSimplify;

angle7 // MatrixForm


$$\begin{pmatrix} \sqrt{\frac{887}{1351}} & \text{Root}\left[-1 + 751 \#1^2 - 141 764 \#1^4 + 824 110 \#1^6 \&, 4\right] & \sqrt{\frac{6}{35}} & \text{Root}\left[\frac{6}{35}\right] \\ 3 \sqrt{\frac{14}{193}} & \text{Root}\left[-2 + 1368 \#1^2 - 28 609 \#1^4 + 82 411 \#1^6 \&, 5\right] & 0 & \text{Root}\left[0\right] \\ \frac{\sqrt{\frac{7061}{2702}}}{2} & \text{Root}\left[-1 + 1733 \#1^2 - 165 676 \#1^4 + 3 296 440 \#1^6 \&, 6\right] & \sqrt{\frac{6}{35}} & \text{Root}\left[-\sqrt{\frac{6}{35}}\right] \\ \frac{3 \sqrt{\frac{1569}{1351}}}{4} & \text{Root}\left[-61 + 21 101 \#1^2 - 640 256 \#1^4 + 3 767 360 \#1^6 \&, 5\right] & \frac{2}{\sqrt{35}} & \text{Root}\left[-6\right] \\ \sqrt{\frac{1765}{2702}} & \text{Root}\left[-403 + 80 571 \#1^2 - 1 909 544 \#1^4 + 6 592 880 \#1^6 \&, 5\right] & \sqrt{\frac{2}{35}} & \text{Root}\left[-40\right] \\ \frac{\sqrt{\frac{14129}{1351}}}{4} & \text{Root}\left[-431 + 78 415 \#1^2 - 2 965 088 \#1^4 + 26 371 520 \#1^6 \&, 5\right] & \sqrt{\frac{6}{35}} & \text{Root}\left[-431\right] \\ \sqrt{\frac{883}{1351}} & \text{Root}\left[-103 + 13 931 \#1^2 - 382 592 \#1^4 + 1 648 220 \#1^6 \&, 5\right] & \frac{2}{\sqrt{35}} & \text{Root}\left[-103\right] \\ \frac{\sqrt{\frac{14137}{1351}}}{4} & \text{Root}\left[-139 + 25 211 \#1^2 - 1 448 384 \#1^4 + 26 371 520 \#1^6 \&, 5\right] & 2 \sqrt{\frac{2}{35}} & \text{Root}\left[-139\right] \end{pmatrix}$$


```

|                               |  |                        |  |
|-------------------------------|--|------------------------|--|
| $\sqrt{\frac{193}{2702}}$     | $\text{Root}[-283 + 34899 \#1^2 - 1151192 \#1^4 + 6592880 \#1^6 \&, 5]$    | $\sqrt{\frac{5}{35}}$  | $\text{Root}[-28\#1^2 - 1151192 \#1^4 + 6592880 \#1^6 \&, 5]$              |
| $2\sqrt{\frac{221}{1351}}$    | $\text{Root}[-7 + 1131 \#1^2 - 48251 \#1^4 + 412055 \#1^6 \&, 4]$          | $2\sqrt{\frac{2}{35}}$ | $\text{Root}[-7 + 1131 \#1^2 - 48251 \#1^4 + 412055 \#1^6 \&, 4]$          |
| $5\sqrt{\frac{281}{2702}}/2$  | $\text{Root}[-151 + 48127 \#1^2 - 1106784 \#1^4 + 6592880 \#1^6 \&, 5]$    | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-151 + 48127 \#1^2 - 1106784 \#1^4 + 6592880 \#1^6 \&, 5]$    |
| $3\sqrt{\frac{223}{193}}/4$   | $\text{Root}[-515 + 95003 \#1^2 - 1516704 \#1^4 + 5274304 \#1^6 \&, 5]$    | 0                      | $\text{Root}[-515 + 95003 \#1^2 - 1516704 \#1^4 + 5274304 \#1^6 \&, 5]$    |
| $3\sqrt{\frac{781}{2702}}/2$  | $\text{Root}[-1 + 173 \#1^2 - 5964 \#1^4 + 54040 \#1^6 \&, 6]$             | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-1 + 173 \#1^2 - 5964 \#1^4 + 54040 \#1^6 \&, 6]$             |
| $\sqrt{\frac{14057}{1351}}/4$ | $\text{Root}[-2843 + 336835 \#1^2 - 6066816 \#1^4 + 26371520 \#1^6 \&, 5]$ | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-2843 + 336835 \#1^2 - 6066816 \#1^4 + 26371520 \#1^6 \&, 5]$ |
| $\sqrt{\frac{251}{386}}$      | $\text{Root}[-331 + 31499 \#1^2 - 461160 \#1^4 + 1318576 \#1^6 \&, 5]$     | 0                      | $\text{Root}[-331 + 31499 \#1^2 - 461160 \#1^4 + 1318576 \#1^6 \&, 5]$     |
| $\sqrt{\frac{14065}{1351}}/4$ | $\text{Root}[-2239 + 214743 \#1^2 - 4550112 \#1^4 + 26371520 \#1^6 \&, 5]$ | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-2239 + 214743 \#1^2 - 4550112 \#1^4 + 26371520 \#1^6 \&, 5]$ |
| $\sqrt{\frac{879}{1351}}$     | $\text{Root}[-27 + 2133 \#1^2 - 34404 \#1^4 + 117730 \#1^6 \&, 5]$         | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-27 + 2133 \#1^2 - 34404 \#1^4 + 117730 \#1^6 \&, 5]$         |
| $\sqrt{\frac{14073}{1351}}/4$ | $\text{Root}[-1147 + 108739 \#1^2 - 3033408 \#1^4 + 26371520 \#1^6 \&, 5]$ | $\sqrt{\frac{6}{35}}$  | $\text{Root}[-1147 + 108739 \#1^2 - 3033408 \#1^4 + 26371520 \#1^6 \&, 5]$ |
| $\sqrt{\frac{1759}{2702}}$    | $\text{Root}[-1183 + 85423 \#1^2 - 1547448 \#1^4 + 6592880 \#1^6 \&, 5]$   | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-1183 + 85423 \#1^2 - 1547448 \#1^4 + 6592880 \#1^6 \&, 5]$   |
| $4\sqrt{\frac{55}{1351}}$     | $\text{Root}[-191 + 13855 \#1^2 - 292068 \#1^4 + 1648220 \#1^6 \&, 5]$     | $\sqrt{\frac{6}{35}}$  | $\text{Root}[-191 + 13855 \#1^2 - 292068 \#1^4 + 1648220 \#1^6 \&, 5]$     |
| $\sqrt{\frac{1761}{2702}}$    | $\text{Root}[-351 + 29439 \#1^2 - 789096 \#1^4 + 6592880 \#1^6 \&, 4]$     | $2\sqrt{\frac{2}{35}}$ | $\text{Root}[-351 + 29439 \#1^2 - 789096 \#1^4 + 6592880 \#1^6 \&, 4]$     |
| $\sqrt{\frac{881}{1351}}$     | $\text{Root}[-1 + 187 \#1^2 - 10248 \#1^4 + 164822 \#1^6 \&, 5]$           | $\sqrt{\frac{2}{7}}$   | $\text{Root}[-1 + 187 \#1^2 - 10248 \#1^4 + 164822 \#1^6 \&, 5]$           |
| $\sqrt{\frac{1997}{193}}/4$   | $\text{Root}[-103 + 31687 \#1^2 - 874496 \#1^4 + 5274304 \#1^6 \&, 6]$     | 0                      | $\text{Root}[-103 + 31687 \#1^2 - 874496 \#1^4 + 5274304 \#1^6 \&, 6]$     |
| $3\sqrt{\frac{111}{386}}/2$   | $\text{Root}[-163 + 18595 \#1^2 - 300608 \#1^4 + 1318576 \#1^6 \&, 5]$     | 0                      | $\text{Root}[-163 + 18595 \#1^2 - 300608 \#1^4 + 1318576 \#1^6 \&, 5]$     |
| $\sqrt{\frac{6997}{2702}}/2$  | $\text{Root}[-277 + 26377 \#1^2 - 561932 \#1^4 + 3296440 \#1^6 \&, 6]$     | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-277 + 26377 \#1^2 - 561932 \#1^4 + 3296440 \#1^6 \&, 6]$     |
| $\sqrt{\frac{1999}{193}}/4$   | $\text{Root}[-1583 + 116399 \#1^2 - 1530368 \#1^4 + 5274304 \#1^6 \&, 5]$  | 0                      | $\text{Root}[-1583 + 116399 \#1^2 - 1530368 \#1^4 + 5274304 \#1^6 \&, 5]$  |
| $\sqrt{\frac{7001}{2702}}/2$  | $\text{Root}[-13 + 2365 \#1^2 - 106384 \#1^4 + 941840 \#1^6 \&, 6]$        | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-13 + 2365 \#1^2 - 106384 \#1^4 + 941840 \#1^6 \&, 6]$        |
| $\sqrt{\frac{14001}{1351}}/4$ | $\text{Root}[-6191 + 407103 \#1^2 - 6135136 \#1^4 + 26371520 \#1^6 \&, 5]$ | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-6191 + 407103 \#1^2 - 6135136 \#1^4 + 26371520 \#1^6 \&, 5]$ |
| $5\sqrt{\frac{5}{193}}$       | $\text{Root}[-175 + 9859 \#1^2 - 116144 \#1^4 + 329644 \#1^6 \&, 5]$       | 0                      | $\text{Root}[-175 + 9859 \#1^2 - 116144 \#1^4 + 329644 \#1^6 \&, 5]$       |
| $\sqrt{\frac{14009}{1351}}/4$ | $\text{Root}[-3787 + 248299 \#1^2 - 4618432 \#1^4 + 26371520 \#1^6 \&, 6]$ | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-3787 + 248299 \#1^2 - 4618432 \#1^4 + 26371520 \#1^6 \&, 6]$ |
| $\sqrt{\frac{1751}{2702}}$    | $\text{Root}[-2843 + 149955 \#1^2 - 1943704 \#1^4 + 6592880 \#1^6 \&, 5]$  | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-2843 + 149955 \#1^2 - 1943704 \#1^4 + 6592880 \#1^6 \&, 5]$  |
| $\sqrt{\frac{14017}{1351}}/4$ | $\text{Root}[-1087 + 105583 \#1^2 - 3101728 \#1^4 + 26371520 \#1^6 \&, 6]$ | $\sqrt{\frac{6}{35}}$  | $\text{Root}[-1087 + 105583 \#1^2 - 3101728 \#1^4 + 26371520 \#1^6 \&, 6]$ |
| $2\sqrt{\frac{219}{1351}}$    | $\text{Root}[-128 + 6672 \#1^2 - 97783 \#1^4 + 412055 \#1^6 \&, 5]$        | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-128 + 6672 \#1^2 - 97783 \#1^4 + 412055 \#1^6 \&, 5]$        |
| $\sqrt{\frac{1753}{2702}}$    | $\text{Root}[-173 + 9653 \#1^2 - 169336 \#1^4 + 941840 \#1^6 \&, 5]$       | $\sqrt{\frac{6}{35}}$  | $\text{Root}[-173 + 9653 \#1^2 - 169336 \#1^4 + 941840 \#1^6 \&, 5]$       |
| $\sqrt{\frac{877}{1351}}$     | $\text{Root}[-107 + 8103 \#1^2 - 201544 \#1^4 + 1648220 \#1^6 \&, 6]$      | $2\sqrt{\frac{2}{35}}$ | $\text{Root}[-107 + 8103 \#1^2 - 201544 \#1^4 + 1648220 \#1^6 \&, 6]$      |
| $3\sqrt{\frac{221}{193}}/4$   | $\text{Root}[-29 + 3669 \#1^2 - 126880 \#1^4 + 753472 \#1^6 \&, 6]$        | 0                      | $\text{Root}[-29 + 3669 \#1^2 - 126880 \#1^4 + 753472 \#1^6 \&, 6]$        |

|                             |  |                        |                           |
|-----------------------------|--|------------------------|---------------------------|
| $\frac{\sqrt{995}}{2}$      | $\text{Root}[-149 + 9841 \#1^2 - 152\,012 \#1^4 + 659\,288 \#1^6 \&, 6]$             | 0                      | $\text{Root}[-\cdot]$     |
| $\frac{\sqrt{6969}}{2}$     | $\text{Root}[-619 + 49\,011 \#1^2 - 1\,140\,944 \#1^4 + 6\,592\,880 \#1^6 \&, 6]$    | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-61\cdot]$   |
| $\frac{\sqrt{1991}}{4}$     | $\text{Root}[-2611 + 131\,099 \#1^2 - 1\,544\,032 \#1^4 + 5\,274\,304 \#1^6 \&, 5]$  | 0                      | $\text{Root}[-261\cdot]$  |
| $\frac{\sqrt{13945}}{4}$    | $\text{Root}[-1261 + 63\,413 \#1^2 - 886\,208 \#1^4 + 3\,767\,360 \#1^6 \&, 6]$      | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-12\cdot]$   |
| $\frac{\sqrt{249}}{386}$    | $\text{Root}[-1091 + 45\,699 \#1^2 - 467\,992 \#1^4 + 1\,318\,576 \#1^6 \&, 5]$      | 0                      | $\text{Root}[-10\cdot]$   |
| $\frac{\sqrt{13953}}{4}$    | $\text{Root}[-4111 + 248\,375 \#1^2 - 4\,686\,752 \#1^4 + 26\,371\,520 \#1^6 \&, 6]$ | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-4111\cdot]$ |
| $2\sqrt{\frac{218}{1351}}$  | $\text{Root}[-1039 + 43\,023 \#1^2 - 490\,196 \#1^4 + 1\,648\,220 \#1^6 \&, 5]$      | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-10\cdot]$   |
| $\sqrt{\frac{1745}{2702}}$  | $\text{Root}[-2767 + 119\,711 \#1^2 - 1\,581\,608 \#1^4 + 6\,592\,880 \#1^6 \&, 5]$  | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-276\cdot]$  |
| $3\sqrt{\frac{97}{1351}}$   | $\text{Root}[-173 + 8919 \#1^2 - 150\,304 \#1^4 + 824\,110 \#1^6 \&, 6]$             | $\sqrt{\frac{6}{35}}$  | $\text{Root}[-1\cdot]$    |
| $\sqrt{\frac{1747}{2702}}$  | $\text{Root}[-103 + 27\,015 \#1^2 - 823\,256 \#1^4 + 6\,592\,880 \#1^6 \&, 6]$       | $2\sqrt{\frac{2}{35}}$ | $\text{Root}[-10\cdot]$   |
| $\frac{\sqrt{991}}{2}$      | $\text{Root}[-343 + 19\,095 \#1^2 - 307\,440 \#1^4 + 1\,318\,576 \#1^6 \&, 6]$       | 0                      | $\text{Root}[-34\cdot]$   |
| $\frac{\sqrt{6941}}{2}$     | $\text{Root}[-53 + 18\,449 \#1^2 - 579\,012 \#1^4 + 3\,296\,440 \#1^6 \&, 6]$        | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-5\cdot]$    |
| $\frac{\sqrt{1983}}{4}$     | $\text{Root}[-3407 + 139\,103 \#1^2 - 1\,557\,696 \#1^4 + 5\,274\,304 \#1^6 \&, 6]$  | 0                      | $\text{Root}[-340\cdot]$  |
| $\frac{\sqrt{13889}}{4}$    | $\text{Root}[-9791 + 447\,199 \#1^2 - 6\,271\,776 \#1^4 + 26\,371\,520 \#1^6 \&, 6]$ | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-9791\cdot]$ |
| $2\sqrt{\frac{31}{193}}$    | $\text{Root}[-13 + 449 \#1^2 - 4209 \#1^4 + 11\,773 \#1^6 \&, 5]$                    | 0                      | $\text{Root}[-\cdot]$     |
| $\sqrt{\frac{13897}{1351}}$ | $\text{Root}[-2251 + 214\,971 \#1^2 - 4\,755\,072 \#1^4 + 26\,371\,520 \#1^6 \&, 6]$ | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-2251\cdot]$ |
| $\frac{3}{\sqrt{14}}$       | $\text{Root}[-27 + 963 \#1^2 - 10\,248 \#1^4 + 34\,160 \#1^6 \&, 5]$                 | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-\cdot]$     |
| $\sqrt{\frac{869}{1351}}$   | $\text{Root}[-775 + 31\,075 \#1^2 - 399\,672 \#1^4 + 1\,648\,220 \#1^6 \&, 6]$       | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-77\cdot]$   |
| $\sqrt{\frac{1739}{2702}}$  | $\text{Root}[-1043 + 66\,763 \#1^2 - 1\,219\,512 \#1^4 + 6\,592\,880 \#1^6 \&, 6]$   | $\sqrt{\frac{6}{35}}$  | $\text{Root}[-104\cdot]$  |
| $\frac{\sqrt{987}}{2}$      | $\text{Root}[-125 + 8417 \#1^2 - 155\,428 \#1^4 + 659\,288 \#1^6 \&, 6]$             | 0                      | $\text{Root}[-\cdot]$     |
| $5\sqrt{\frac{79}{193}}$    | $\text{Root}[-3779 + 140\,411 \#1^2 - 1\,571\,360 \#1^4 + 5\,274\,304 \#1^6 \&, 6]$  | 0                      | $\text{Root}[-377\cdot]$  |
| $3\sqrt{\frac{1537}{1351}}$ | $\text{Root}[-8123 + 417\,027 \#1^2 - 6\,340\,096 \#1^4 + 26\,371\,520 \#1^6 \&, 6]$ | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-8123\cdot]$ |
| $\sqrt{\frac{247}{386}}$    | $\text{Root}[-1747 + 53\,203 \#1^2 - 474\,824 \#1^4 + 1\,318\,576 \#1^6 \&, 6]$      | 0                      | $\text{Root}[-17\cdot]$   |
| $\sqrt{\frac{865}{1351}}$   | $\text{Root}[-721 + 23\,907 \#1^2 - 249\,368 \#1^4 + 824\,110 \#1^6 \&, 6]$          | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-7\cdot]$    |
| $\sqrt{\frac{1731}{2702}}$  | $\text{Root}[-401 + 17\,217 \#1^2 - 230\,824 \#1^4 + 941\,840 \#1^6 \&, 6]$          | $\frac{2}{\sqrt{35}}$  | $\text{Root}[-4\cdot]$    |
| $\sqrt{\frac{1967}{193}}$   | $\text{Root}[-505 + 19\,289 \#1^2 - 226\,432 \#1^4 + 753\,472 \#1^6 \&, 6]$          | 0                      | $\text{Root}[-5\cdot]$    |
| $\sqrt{\frac{13777}{1351}}$ | $\text{Root}[-2863 + 353\,375 \#1^2 - 6\,408\,416 \#1^4 + 26\,371\,520 \#1^6 \&, 6]$ | $\sqrt{\frac{2}{35}}$  | $\text{Root}[-2863\cdot]$ |
| $\sqrt{\frac{123}{1351}}$   | $\text{Root}[-173 - 18\,611 \#1^2 - 110\,500 \#1^4 - 200\,011 \#1^6 \&, 6]$          | 0                      | $\text{Root}[-173\cdot]$  |

|                             |   |                       |                     |
|-----------------------------|---|-----------------------|---------------------|
| $\sqrt{\frac{193}{193}}$    | $\text{Root}[-479 + 13611 \#1^4 - 119560 \#1^7 + 329644 \#1^9 \&, 6]$     | 0                     | $\text{Root}[-4]$   |
| $\sqrt{\frac{1723}{2702}}$  | $\text{Root}[-5587 + 188283 \#1^2 - 2012024 \#1^4 + 6592880 \#1^6 \&, 6]$ | $\sqrt{\frac{2}{35}}$ | $\text{Root}[-558]$ |
| $\sqrt{\frac{862}{1351}}$   | $\text{Root}[-103 + 6773 \#1^2 - 102053 \#1^4 + 412055 \#1^6 \&, 6]$      | $\frac{2}{\sqrt{35}}$ | $\text{Root}[-]$    |
| $\sqrt{\frac{1959}{193}}/4$ | $\text{Root}[-2483 + 122939 \#1^2 - 1598688 \#1^4 + 5274304 \#1^6 \&, 6]$ | 0                     | $\text{Root}[-248]$ |
| $7\sqrt{\frac{5}{386}}$     | $\text{Root}[-1915 + 54011 \#1^2 - 481656 \#1^4 + 1318576 \#1^6 \&, 6]$   | 0                     | $\text{Root}[-19]$  |
| $\sqrt{\frac{858}{1351}}$   | $\text{Root}[-1107 + 44235 \#1^2 - 507276 \#1^4 + 1648220 \#1^6 \&, 6]$   | $\sqrt{\frac{2}{35}}$ | $\text{Root}[-11]$  |
| $\sqrt{\frac{1951}{193}}/4$ | $\text{Root}[-431 + 104159 \#1^2 - 1612352 \#1^4 + 5274304 \#1^6 \&, 6]$  | 0                     | $\text{Root}[-431]$ |
| $\sqrt{\frac{122}{193}}$    | $\text{Root}[-106 + 3244 \#1^2 - 30317 \#1^4 + 82411 \#1^6 \&, 6]$        | 0                     | $\text{Root}[-]$    |
| $\sqrt{\frac{1709}{2702}}$  | $\text{Root}[-293 + 22461 \#1^2 - 292312 \#1^4 + 941840 \#1^6 \&, 6]$     | $\sqrt{\frac{2}{35}}$ | $\text{Root}[-2]$   |
| $9\sqrt{\frac{3}{386}}$     | $\text{Root}[-1211 + 48123 \#1^2 - 488488 \#1^4 + 1318576 \#1^6 \&, 6]$   | 0                     | $\text{Root}[-12]$  |
| $\frac{11}{\sqrt{193}}$     | $\text{Root}[-103 + 10667 \#1^2 - 122976 \#1^4 + 329644 \#1^6 \&, 6]$     | 0                     | $\text{Root}[-1]$   |

**Dimensions[angle7]**

{74, 6}

**orderedroots[minipoly[chi7]]**

{-5,  $\text{Root}[-808 + 281 \#1 - 30 \#1^2 + \#1^3 \&, 1]$ , 9,  
 $\text{Root}[-808 + 281 \#1 - 30 \#1^2 + \#1^3 \&, 2]$ , 11,  $\text{Root}[-808 + 281 \#1 - 30 \#1^2 + \#1^3 \&, 3]$ }

**chi7**

$$(-11 + x)^2 (-9 + x)^{12} (5 + x)^{32} (-808 + 281x - 30x^2 + x^3)$$

**coeff[chi7, (x+5) (x-9) (x-11)] // FullSimplify**

{ $\text{Root}[988160 + 58176 \#1 - 519 \#1^2 + \#1^3 \&, 2]$ ,  
 $\text{Root}[988160 + 58176 \#1 - 519 \#1^2 + \#1^3 \&, 1]$ ,  
 $\text{Root}[988160 + 58176 \#1 - 519 \#1^2 + \#1^3 \&, 3]$ }

**combinationangle[{Root[988160 + 58176 #1 - 519 #1^2 + #1^3 &, 2],**

$\text{Root}[988160 + 58176 \#1 - 519 \#1^2 + \#1^3 \&, 1]$ ,

$\text{Root}[988160 + 58176 \#1 - 519 \#1^2 + \#1^3 \&, 3]}$ },

{8, 22}, {2, 4, 6}, angle7] // FullSimplify

{ $\text{Root}[232921099161 - 48338639236 \#1^2 + 2882445430 \#1^4 - 42445508 \#1^6 + 182329 \#1^8 \&, 7]$ ,  $\text{Root}[$

$232921099161 - 48338639236 \#1^2 + 2882445430 \#1^4 - 42445508 \#1^6 + 182329 \#1^8 \&, 3]$ ,

$\text{Root}[232921099161 - 48338639236 \#1^2 + 2882445430 \#1^4 - 42445508 \#1^6 + 182329 \#1^8 \&, 8]$ ,  $\text{Root}[$

$232921099161 - 48338639236 \#1^2 + 2882445430 \#1^4 - 42445508 \#1^6 + 182329 \#1^8 \&, 4]$ }

```

compatible[ {Root[
  232 921 099 161 - 48 338 639 236 #1^2 + 2 882 445 430 #1^4 - 42 445 508 #1^6 + 182 329 #1^8 &,
  7] , Root[232 921 099 161 - 48 338 639 236 #1^2 +
  2 882 445 430 #1^4 - 42 445 508 #1^6 + 182 329 #1^8 &, 3] , Root[
  232 921 099 161 - 48 338 639 236 #1^2 + 2 882 445 430 #1^4 - 42 445 508 #1^6 + 182 329 #1^8 &,
  8] , Root[232 921 099 161 - 48 338 639 236 #1^2 +
  2 882 445 430 #1^4 - 42 445 508 #1^6 + 182 329 #1^8 &, 4]]}

```

0

$$\begin{aligned}
 \text{chi8} = & (-11 + x)^3 (-9 + x)^{11} (-8 + x) (5 + x)^{32} (83 - 20x + x^2) \\
 & (-11 + x)^3 (-9 + x)^{11} (-8 + x) (5 + x)^{32} (83 - 20x + x^2)
 \end{aligned}$$

```

list8 =
{(-9 + x) (83 - 20 x + x^2) (41 - 14 x + x^2), -30 595 + 21 241 x - 5618 x^2 + 710 x^3 - 43 x^4 + x^5,
 -30 563 + 21 241 x - 5618 x^2 + 710 x^3 - 43 x^4 + x^5, -30 707 + 21 257 x - 5618 x^2 +
 710 x^3 - 43 x^4 + x^5, -30 675 + 21 257 x - 5618 x^2 + 710 x^3 - 43 x^4 + x^5, (-9 + x)
 (3299 - 1974 x + 404 x^2 - 34 x^3 + x^4), (-7 + x) (4237 - 2404 x + 458 x^2 - 36 x^3 + x^4),
 (-9 + x) (3315 - 1974 x + 404 x^2 - 34 x^3 + x^4), -29 803 + 21 081 x - 5610 x^2 +
 710 x^3 - 43 x^4 + x^5, (-7 + x) (4253 - 2404 x + 458 x^2 - 36 x^3 + x^4), (-9 + x)
 (3331 - 1974 x + 404 x^2 - 34 x^3 + x^4), -29 947 + 21 097 x - 5610 x^2 + 710 x^3 - 43 x^4 + x^5,
 (31 - 12 x + x^2) (-965 + 307 x - 31 x^2 + x^3), (-9 + x) (3347 - 1974 x + 404 x^2 - 34 x^3 + x^4),
 -30 091 + 21 113 x - 5610 x^2 + 710 x^3 - 43 x^4 + x^5,
 -30 059 + 21 113 x - 5610 x^2 + 710 x^3 - 43 x^4 + x^5,
 -30 027 + 21 113 x - 5610 x^2 + 710 x^3 - 43 x^4 + x^5,
 -30 235 + 21 129 x - 5610 x^2 + 710 x^3 - 43 x^4 + x^5,
 -30 203 + 21 129 x - 5610 x^2 + 710 x^3 - 43 x^4 + x^5,
 (113 - 22 x + x^2) (-267 + 135 x - 21 x^2 + x^3),
 -30 315 + 21 145 x - 5610 x^2 + 710 x^3 - 43 x^4 + x^5,
 (-11 + x) (2753 - 1672 x + 358 x^2 - 32 x^3 + x^4), (-9 + x)^2 (-355 + 179 x - 25 x^2 + x^3),
 (-9 + x) (3211 - 1966 x + 404 x^2 - 34 x^3 + x^4), (-9 + x) (-7 + x) (-461 + 215 x - 27 x^2 + x^3),
 -29 011 + 20 921 x - 5602 x^2 + 710 x^3 - 43 x^4 + x^5,
 (-9 + x) (3243 - 1966 x + 404 x^2 - 34 x^3 + x^4),
 (-7 + x) (4165 - 2396 x + 458 x^2 - 36 x^3 + x^4),
 (-9 + x) (3259 - 1966 x + 404 x^2 - 34 x^3 + x^4),
 -29 299 + 20 953 x - 5602 x^2 + 710 x^3 - 43 x^4 + x^5,
 (-7 + x) (113 - 22 x + x^2) (37 - 14 x + x^2), (-9 + x) (3275 - 1966 x + 404 x^2 - 34 x^3 + x^4),
 -29 443 + 20 969 x - 5602 x^2 + 710 x^3 - 43 x^4 + x^5, -29 411 + 20 969 x -

```

$$\begin{aligned}
& 5602 x^2 + 710 x^3 - 43 x^4 + x^5, (-9 + x) (3291 - 1966 x + 404 x^2 - 34 x^3 + x^4), \\
& -29587 + 20985 x - 5602 x^2 + 710 x^3 - 43 x^4 + x^5, -29555 + 20985 x - 5602 x^2 + \\
& 710 x^3 - 43 x^4 + x^5, -29523 + 20985 x - 5602 x^2 + 710 x^3 - 43 x^4 + x^5, \\
& (-9 + x) (3307 - 1966 x + 404 x^2 - 34 x^3 + x^4), -29731 + 21001 x - 5602 x^2 + \\
& 710 x^3 - 43 x^4 + x^5, -29699 + 21001 x - 5602 x^2 + 710 x^3 - 43 x^4 + x^5, \\
& (-11 + x) (87 - 20 x + x^2) (31 - 12 x + x^2), (-11 + x) (2713 - 1664 x + 358 x^2 - 32 x^3 + x^4), \\
& (-9 + x)^2 (-347 + 179 x - 25 x^2 + x^3), (-9 + x) (3139 - 1958 x + 404 x^2 - 34 x^3 + x^4), \\
& (-9 + x) (3155 - 1958 x + 404 x^2 - 34 x^3 + x^4), (113 - 22 x + x^2) (-251 + 135 x - 21 x^2 + x^3), \\
& (-9 + x) (-7 + x) (-453 + 215 x - 27 x^2 + x^3), -28507 + 20793 x - \\
& 5594 x^2 + 710 x^3 - 43 x^4 + x^5, (-9 + x) (3187 - 1958 x + 404 x^2 - 34 x^3 + x^4), \\
& (-7 + x) (4093 - 2388 x + 458 x^2 - 36 x^3 + x^4), -28619 + 20809 x - 5594 x^2 + \\
& 710 x^3 - 43 x^4 + x^5, (-9 + x) (3203 - 1958 x + 404 x^2 - 34 x^3 + x^4), \\
& -28795 + 20825 x - 5594 x^2 + 710 x^3 - 43 x^4 + x^5, \\
& (-7 + x) (4109 - 2388 x + 458 x^2 - 36 x^3 + x^4), (-9 + x) (87 - 20 x + x^2) (37 - 14 x + x^2), \\
& -28939 + 20841 x - 5594 x^2 + 710 x^3 - 43 x^4 + x^5, -28907 + 20841 x - \\
& 5594 x^2 + 710 x^3 - 43 x^4 + x^5, (-11 + x) (-7 + x) (-375 + 183 x - 25 x^2 + x^3), \\
& (-9 + x) (3235 - 1958 x + 404 x^2 - 34 x^3 + x^4), -29083 + 20857 x - 5594 x^2 + \\
& 710 x^3 - 43 x^4 + x^5, (-11 + x) (2641 - 1656 x + 358 x^2 - 32 x^3 + x^4), \\
& (-9 + x) (3251 - 1958 x + 404 x^2 - 34 x^3 + x^4), (-11 + x) \\
& (2657 - 1656 x + 358 x^2 - 32 x^3 + x^4), (-9 + x) (3067 - 1950 x + 404 x^2 - 34 x^3 + x^4), \\
& (-9 + x) (3083 - 1950 x + 404 x^2 - 34 x^3 + x^4), (-9 + x) \\
& (3099 - 1950 x + 404 x^2 - 34 x^3 + x^4), -27859 + 20649 x - 5586 x^2 + 710 x^3 - 43 x^4 + x^5, \\
& (-9 + x) (-7 + x) (-445 + 215 x - 27 x^2 + x^3), -28003 + 20665 x - 5586 x^2 + \\
& 710 x^3 - 43 x^4 + x^5, (-9 + x) (3131 - 1950 x + 404 x^2 - 34 x^3 + x^4), \\
& (-7 + x) (4021 - 2380 x + 458 x^2 - 36 x^3 + x^4), -28115 + 20681 x - 5586 x^2 + \\
& 710 x^3 - 43 x^4 + x^5, (-9 + x) (3147 - 1950 x + 404 x^2 - 34 x^3 + x^4), \\
& -28291 + 20697 x - 5586 x^2 + 710 x^3 - 43 x^4 + x^5, (-11 + x) (-7 + x) \\
& (-367 + 183 x - 25 x^2 + x^3), (-9 + x) (3163 - 1950 x + 404 x^2 - 34 x^3 + x^4), \\
& (-11 + x) (2585 - 1648 x + 358 x^2 - 32 x^3 + x^4), (-11 + x) (-9 + x) \\
& (-289 + 151 x - 23 x^2 + x^3), (-9 + x) (2995 - 1942 x + 404 x^2 - 34 x^3 + x^4), \\
& (-9 + x) (3011 - 1942 x + 404 x^2 - 34 x^3 + x^4), (-9 + x) (-3 + x) \\
& (-1009 + 311 x - 31 x^2 + x^3), -27211 + 20505 x - 5578 x^2 + 710 x^3 - 43 x^4 + x^5, \\
& (-9 + x) (3043 - 1942 x + 404 x^2 - 34 x^3 + x^4), -27355 + 20521 x - 5578 x^2 + 710 x^3 - \\
& 43 x^4 + x^5, (-9 + x) (-7 + x) (-437 + 215 x - 27 x^2 + x^3), -27499 + 20537 x - \\
& 5578 x^2 + 710 x^3 - 43 x^4 + x^5, (-11 + x) (2497 - 1640 x + 358 x^2 - 32 x^3 + x^4), \\
& (-9 + x) (3075 - 1942 x + 404 x^2 - 34 x^3 + x^4), (-11 + x) (-7 + x) \\
& (-359 + 183 x - 25 x^2 + x^3), (-11 + x) (-9 + x) (-281 + 151 x - 23 x^2 + x^3), (-9 + x) \\
& (2939 - 1934 x + 404 x^2 - 34 x^3 + x^4), (-9 + x) (2955 - 1934 x + 404 x^2 - 34 x^3 + x^4), \\
& (-9 + x) (2971 - 1934 x + 404 x^2 - 34 x^3 + x^4), -26707 + 20377 x - 5570 x^2 + \\
& 710 x^3 - 43 x^4 + x^5, (-9 + x) (2987 - 1934 x + 404 x^2 - 34 x^3 + x^4), \\
& (-11 + x) (2441 - 1632 x + 358 x^2 - 32 x^3 + x^4), (-13 + x) (-11 + x) (-9 + x) \\
& (-7 + x) (-3 + x), (-9 + x) (2867 - 1926 x + 404 x^2 - 34 x^3 + x^4), \\
& (-9 + x) (2883 - 1926 x + 404 x^2 - 34 x^3 + x^4), (-13 + x) (-9 + x)
\end{aligned}$$

```


$$\begin{aligned}
& \left( -223 + 131x - 21x^2 + x^3 \right), \left( -11 + x \right) \left( 2369 - 1624x + 358x^2 - 32x^3 + x^4 \right), \\
& \left( -11 + x \right) \left( -9 + x \right) \left( -265 + 151x - 23x^2 + x^3 \right), \\
& \left( -9 + x \right) \left( 2811 - 1918x + 404x^2 - 34x^3 + x^4 \right), \left( -11 + x \right) \left( -9 + x \right) \\
& \quad \left( -257 + 151x - 23x^2 + x^3 \right), \left( -11 + x \right) \left( -9 + x \right) \left( -249 + 151x - 23x^2 + x^3 \right) \} ;
\end{aligned}$$


Length[list8]
106

A8 = CoefficientList[list8, x];
A8 // MatrixForm

```

|         |        |       |     |     |   |
|---------|--------|-------|-----|-----|---|
| -30 627 | 21 241 | -5618 | 710 | -43 | 1 |
| -30 595 | 21 241 | -5618 | 710 | -43 | 1 |
| -30 563 | 21 241 | -5618 | 710 | -43 | 1 |
| -30 707 | 21 257 | -5618 | 710 | -43 | 1 |
| -30 675 | 21 257 | -5618 | 710 | -43 | 1 |
| -29 691 | 21 065 | -5610 | 710 | -43 | 1 |
| -29 659 | 21 065 | -5610 | 710 | -43 | 1 |
| -29 835 | 21 081 | -5610 | 710 | -43 | 1 |
| -29 803 | 21 081 | -5610 | 710 | -43 | 1 |
| -29 771 | 21 081 | -5610 | 710 | -43 | 1 |
| -29 979 | 21 097 | -5610 | 710 | -43 | 1 |
| -29 947 | 21 097 | -5610 | 710 | -43 | 1 |
| -29 915 | 21 097 | -5610 | 710 | -43 | 1 |
| -30 123 | 21 113 | -5610 | 710 | -43 | 1 |
| -30 091 | 21 113 | -5610 | 710 | -43 | 1 |
| -30 059 | 21 113 | -5610 | 710 | -43 | 1 |
| -30 027 | 21 113 | -5610 | 710 | -43 | 1 |
| -30 235 | 21 129 | -5610 | 710 | -43 | 1 |
| -30 203 | 21 129 | -5610 | 710 | -43 | 1 |
| -30 171 | 21 129 | -5610 | 710 | -43 | 1 |
| -30 315 | 21 145 | -5610 | 710 | -43 | 1 |
| -30 283 | 21 145 | -5610 | 710 | -43 | 1 |
| -28 755 | 20 889 | -5602 | 710 | -43 | 1 |
| -28 899 | 20 905 | -5602 | 710 | -43 | 1 |
| -29 043 | 20 921 | -5602 | 710 | -43 | 1 |
| -29 011 | 20 921 | -5602 | 710 | -43 | 1 |
| -29 187 | 20 937 | -5602 | 710 | -43 | 1 |
| -29 155 | 20 937 | -5602 | 710 | -43 | 1 |
| -29 331 | 20 953 | -5602 | 710 | -43 | 1 |
| -29 299 | 20 953 | -5602 | 710 | -43 | 1 |
| -29 267 | 20 953 | -5602 | 710 | -43 | 1 |
| -29 475 | 20 969 | -5602 | 710 | -43 | 1 |
| -29 443 | 20 969 | -5602 | 710 | -43 | 1 |
| -29 411 | 20 969 | -5602 | 710 | -43 | 1 |
| -29 619 | 20 985 | -5602 | 710 | -43 | 1 |
| -29 587 | 20 985 | -5602 | 710 | -43 | 1 |
| -29 555 | 20 985 | -5602 | 710 | -43 | 1 |
| -29 523 | 20 985 | -5602 | 710 | -43 | 1 |
| -29 763 | 21 001 | -5602 | 710 | -43 | 1 |
| -29 731 | 21 001 | -5602 | 710 | -43 | 1 |
| -29 699 | 21 001 | -5602 | 710 | -43 | 1 |
| -29 667 | 21 001 | -5602 | 710 | -43 | 1 |
| -29 843 | 21 017 | -5602 | 710 | -43 | 1 |

|         |        |       |     |     |   |
|---------|--------|-------|-----|-----|---|
| -28 107 | 20 745 | -5594 | 710 | -43 | 1 |
| -28 251 | 20 761 | -5594 | 710 | -43 | 1 |
| -28 395 | 20 777 | -5594 | 710 | -43 | 1 |
| -28 363 | 20 777 | -5594 | 710 | -43 | 1 |
| -28 539 | 20 793 | -5594 | 710 | -43 | 1 |
| -28 507 | 20 793 | -5594 | 710 | -43 | 1 |
| -28 683 | 20 809 | -5594 | 710 | -43 | 1 |
| -28 651 | 20 809 | -5594 | 710 | -43 | 1 |
| -28 619 | 20 809 | -5594 | 710 | -43 | 1 |
| -28 827 | 20 825 | -5594 | 710 | -43 | 1 |
| -28 795 | 20 825 | -5594 | 710 | -43 | 1 |
| -28 763 | 20 825 | -5594 | 710 | -43 | 1 |
| -28 971 | 20 841 | -5594 | 710 | -43 | 1 |
| -28 939 | 20 841 | -5594 | 710 | -43 | 1 |
| -28 907 | 20 841 | -5594 | 710 | -43 | 1 |
| -28 875 | 20 841 | -5594 | 710 | -43 | 1 |
| -29 115 | 20 857 | -5594 | 710 | -43 | 1 |
| -29 083 | 20 857 | -5594 | 710 | -43 | 1 |
| -29 051 | 20 857 | -5594 | 710 | -43 | 1 |
| -29 259 | 20 873 | -5594 | 710 | -43 | 1 |
| -29 227 | 20 873 | -5594 | 710 | -43 | 1 |
| -27 603 | 20 617 | -5586 | 710 | -43 | 1 |
| -27 747 | 20 633 | -5586 | 710 | -43 | 1 |
| -27 891 | 20 649 | -5586 | 710 | -43 | 1 |
| -27 859 | 20 649 | -5586 | 710 | -43 | 1 |
| -28 035 | 20 665 | -5586 | 710 | -43 | 1 |
| -28 003 | 20 665 | -5586 | 710 | -43 | 1 |
| -28 179 | 20 681 | -5586 | 710 | -43 | 1 |
| -28 147 | 20 681 | -5586 | 710 | -43 | 1 |
| -28 115 | 20 681 | -5586 | 710 | -43 | 1 |
| -28 323 | 20 697 | -5586 | 710 | -43 | 1 |
| -28 291 | 20 697 | -5586 | 710 | -43 | 1 |
| -28 259 | 20 697 | -5586 | 710 | -43 | 1 |
| -28 467 | 20 713 | -5586 | 710 | -43 | 1 |
| -28 435 | 20 713 | -5586 | 710 | -43 | 1 |
| -28 611 | 20 729 | -5586 | 710 | -43 | 1 |
| -26 955 | 20 473 | -5578 | 710 | -43 | 1 |
| -27 099 | 20 489 | -5578 | 710 | -43 | 1 |
| -27 243 | 20 505 | -5578 | 710 | -43 | 1 |
| -27 211 | 20 505 | -5578 | 710 | -43 | 1 |
| -27 387 | 20 521 | -5578 | 710 | -43 | 1 |
| -27 355 | 20 521 | -5578 | 710 | -43 | 1 |
| -27 531 | 20 537 | -5578 | 710 | -43 | 1 |
| -27 499 | 20 537 | -5578 | 710 | -43 | 1 |
| -27 467 | 20 537 | -5578 | 710 | -43 | 1 |
| -27 675 | 20 553 | -5578 | 710 | -43 | 1 |
| -27 643 | 20 553 | -5578 | 710 | -43 | 1 |
| -27 819 | 20 569 | -5578 | 710 | -43 | 1 |
| -26 451 | 20 345 | -5570 | 710 | -43 | 1 |
| -26 595 | 20 361 | -5570 | 710 | -43 | 1 |
| -26 739 | 20 377 | -5570 | 710 | -43 | 1 |
| -26 707 | 20 377 | -5570 | 710 | -43 | 1 |
| -26 883 | 20 393 | -5570 | 710 | -43 | 1 |
| -26 851 | 20 393 | -5570 | 710 | -43 | 1 |
| -27 027 | 20 409 | -5570 | 710 | -43 | 1 |

```

-----|-----|-----|-----|-----|-----|-----|
-25 803 20 201 -5562 710 -43 1
-25 947 20 217 -5562 710 -43 1
-26 091 20 233 -5562 710 -43 1
-26 059 20 233 -5562 710 -43 1
-26 235 20 249 -5562 710 -43 1
-25 299 20 073 -5554 710 -43 1
-25 443 20 089 -5554 710 -43 1
-24 651 19 929 -5546 710 -43 1

```

**Dimensions[A8]**

{106, 6}

**gpart[chi8]**

{-1 491 907, 1 038 793, -275 106, 34 790, -2107, 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 && Array[n, 106].A8 == gpart[chi8], Array[n, 106], Integers]

```

```

{{n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 31, 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] → 2, n[18] → 0, n[19] → 0, n[20] → 7, n[21] → 0, n[22] → 7,
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] → 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] → 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}}

```

5, 17, 20, 22, 59

```

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 && Array[n, 106].A8 == gpart[chi8], Array[n, 106], 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 && Array[n, 106].A8 == gpart[chi8], Array[n, 106], Integers]

{{n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 32, n[6] → 0, n[7] → 0, n[8] → 0,
n[9] → 0, n[10] → 1, 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] → 3, n[21] → 0, n[22] → 8,
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] → 4, n[39] → 0, n[40] → 0, n[41] → 0, n[42] → 1, 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,
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n[72] → 0, n[73] → 0, n[74] → 0, n[75] → 0, n[76] → 0, n[77] → 0, n[78] → 0,
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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}}

```

```

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 && Array[n, 106].A8 == gpart[chi8], Array[n, 106], Integers]

{{n[1] → 0, n[2] → 0, n[3] → 7, n[4] → 0, n[5] → 21, n[6] → 0, n[7] → 1, 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] → 19,
n[23] → 1, 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}}

```

```

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 && Array[n, 106].A8 == gpart[chi8], Array[n, 106], 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 && Array[n, 106].A8 == gpart[chi8], Array[n, 106], Integers]

{{n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 33, 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] → 2, n[18] → 0, n[19] → 0, n[20] → 3, n[21] → 0, n[22] → 8,
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] → 2, 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] → 1, 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} }

list8[[5, 22]] * mu[chi8] // Factor
{ (-11 + x)^2 (-9 + x)^10 (5 + x)^31 (-30 675 + 21 257 x - 5618 x^2 + 710 x^3 - 43 x^4 + x^5),
(-11 + x)^3 (-9 + x)^10 (5 + x)^31 (2753 - 1672 x + 358 x^2 - 32 x^3 + x^4) }

Array[m, 6].Transpose[A8]
{-30 627 m[1] + 21 241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6],
-30 595 m[1] + 21 241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6],
-30 563 m[1] + 21 241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6],
-30 707 m[1] + 21 257 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6],
-30 675 m[1] + 21 257 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6],
-29 691 m[1] + 21 065 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6],
-29 659 m[1] + 21 065 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6],
-29 835 m[1] + 21 081 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6],

```



$-28\ 971\ m[1] + 20\ 841\ m[2] - 5594\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 939\ m[1] + 20\ 841\ m[2] - 5594\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 907\ m[1] + 20\ 841\ m[2] - 5594\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 875\ m[1] + 20\ 841\ m[2] - 5594\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-29\ 115\ m[1] + 20\ 857\ m[2] - 5594\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-29\ 083\ m[1] + 20\ 857\ m[2] - 5594\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-29\ 051\ m[1] + 20\ 857\ m[2] - 5594\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-29\ 259\ m[1] + 20\ 873\ m[2] - 5594\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-29\ 227\ m[1] + 20\ 873\ m[2] - 5594\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 603\ m[1] + 20\ 617\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 747\ m[1] + 20\ 633\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 891\ m[1] + 20\ 649\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 859\ m[1] + 20\ 649\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 035\ m[1] + 20\ 665\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 003\ m[1] + 20\ 665\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 179\ m[1] + 20\ 681\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 147\ m[1] + 20\ 681\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 115\ m[1] + 20\ 681\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 323\ m[1] + 20\ 697\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 291\ m[1] + 20\ 697\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 259\ m[1] + 20\ 697\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 467\ m[1] + 20\ 713\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 435\ m[1] + 20\ 713\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-28\ 611\ m[1] + 20\ 729\ m[2] - 5586\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-26\ 955\ m[1] + 20\ 473\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 099\ m[1] + 20\ 489\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 243\ m[1] + 20\ 505\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 211\ m[1] + 20\ 505\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 387\ m[1] + 20\ 521\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 355\ m[1] + 20\ 521\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 531\ m[1] + 20\ 537\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 499\ m[1] + 20\ 537\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 467\ m[1] + 20\ 537\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 675\ m[1] + 20\ 553\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 643\ m[1] + 20\ 553\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 819\ m[1] + 20\ 569\ m[2] - 5578\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-26\ 451\ m[1] + 20\ 345\ m[2] - 5570\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-26\ 595\ m[1] + 20\ 361\ m[2] - 5570\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-26\ 739\ m[1] + 20\ 377\ m[2] - 5570\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-26\ 707\ m[1] + 20\ 377\ m[2] - 5570\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-26\ 883\ m[1] + 20\ 393\ m[2] - 5570\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-26\ 851\ m[1] + 20\ 393\ m[2] - 5570\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-27\ 027\ m[1] + 20\ 409\ m[2] - 5570\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-25\ 803\ m[1] + 20\ 201\ m[2] - 5562\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-25\ 947\ m[1] + 20\ 217\ m[2] - 5562\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-26\ 091\ m[1] + 20\ 233\ m[2] - 5562\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$   
 $-26\ 059\ m[1] + 20\ 233\ m[2] - 5562\ m[3] + 710\ m[4] - 43\ m[5] + m[6],$

```

- 26 235 m[1] + 20 249 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ,
- 25 299 m[1] + 20 073 m[2] - 5554 m[3] + 710 m[4] - 43 m[5] + m[6] ,
- 25 443 m[1] + 20 089 m[2] - 5554 m[3] + 710 m[4] - 43 m[5] + m[6] ,
- 24 651 m[1] + 19 929 m[2] - 5546 m[3] + 710 m[4] - 43 m[5] + m[6] }

```

**Array[m, 6].gpart[chi8]**

```
- 1 491 907 m[1] + 1 038 793 m[2] - 275 106 m[3] + 34 790 m[4] - 2107 m[5] + 49 m[6]
```

**FindInstance[**

```

- 1 491 907 m[1] + 1 038 793 m[2] - 275 106 m[3] + 34 790 m[4] - 2107 m[5] + 49 m[6] < 0 &&
- 30 627 m[1] + 21 241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 595 m[1] + 21 241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 563 m[1] + 21 241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 707 m[1] + 21 257 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 675 m[1] + 21 257 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 691 m[1] + 21 065 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 659 m[1] + 21 065 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 835 m[1] + 21 081 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 803 m[1] + 21 081 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 771 m[1] + 21 081 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 979 m[1] + 21 097 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 947 m[1] + 21 097 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 915 m[1] + 21 097 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 123 m[1] + 21 113 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 091 m[1] + 21 113 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 059 m[1] + 21 113 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 027 m[1] + 21 113 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 235 m[1] + 21 129 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 203 m[1] + 21 129 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 171 m[1] + 21 129 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 315 m[1] + 21 145 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 30 283 m[1] + 21 145 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 755 m[1] + 20 889 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 899 m[1] + 20 905 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 043 m[1] + 20 921 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 011 m[1] + 20 921 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 187 m[1] + 20 937 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 155 m[1] + 20 937 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 331 m[1] + 20 953 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 299 m[1] + 20 953 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 267 m[1] + 20 953 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 475 m[1] + 20 969 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 443 m[1] + 20 969 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 411 m[1] + 20 969 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 619 m[1] + 20 985 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 587 m[1] + 20 985 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 555 m[1] + 20 985 m[2] - 5602 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&

```



```

-27 355 m[1] + 20 521 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-27 531 m[1] + 20 537 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-27 499 m[1] + 20 537 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-27 467 m[1] + 20 537 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-27 675 m[1] + 20 553 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-27 643 m[1] + 20 553 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-27 819 m[1] + 20 569 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-26 451 m[1] + 20 345 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-26 595 m[1] + 20 361 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-26 739 m[1] + 20 377 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-26 707 m[1] + 20 377 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-26 883 m[1] + 20 393 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-26 851 m[1] + 20 393 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-27 027 m[1] + 20 409 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-25 803 m[1] + 20 201 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-25 947 m[1] + 20 217 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-26 091 m[1] + 20 233 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-26 059 m[1] + 20 233 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-26 235 m[1] + 20 249 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-25 299 m[1] + 20 073 m[2] - 5554 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-25 443 m[1] + 20 089 m[2] - 5554 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-24 651 m[1] + 19 929 m[2] - 5546 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0,
Array[m, 6], Integers]
{ }

```

```

FindInstance[
-1 491 907 m[1] + 1 038 793 m[2] - 275 106 m[3] + 34 790 m[4] - 2107 m[5] + 49 m[6] < 0 &&
-30 627 m[1] + 21 241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-30 595 m[1] + 21 241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-30 563 m[1] + 21 241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-30 707 m[1] + 21 257 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-30 675 m[1] + 21 257 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] < 0 &&
-29 691 m[1] + 21 065 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-29 659 m[1] + 21 065 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-29 835 m[1] + 21 081 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-29 803 m[1] + 21 081 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-29 771 m[1] + 21 081 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-29 979 m[1] + 21 097 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-29 947 m[1] + 21 097 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-29 915 m[1] + 21 097 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-30 123 m[1] + 21 113 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-30 091 m[1] + 21 113 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-30 059 m[1] + 21 113 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-30 027 m[1] + 21 113 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
-30 235 m[1] + 21 129 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&

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- 27 747 m[1] + 20 633 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 891 m[1] + 20 649 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 859 m[1] + 20 649 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 035 m[1] + 20 665 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 003 m[1] + 20 665 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 179 m[1] + 20 681 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 147 m[1] + 20 681 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 115 m[1] + 20 681 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 323 m[1] + 20 697 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 291 m[1] + 20 697 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 259 m[1] + 20 697 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 467 m[1] + 20 713 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 435 m[1] + 20 713 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 611 m[1] + 20 729 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 955 m[1] + 20 473 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 099 m[1] + 20 489 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 243 m[1] + 20 505 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 211 m[1] + 20 505 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 387 m[1] + 20 521 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 355 m[1] + 20 521 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 531 m[1] + 20 537 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 499 m[1] + 20 537 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 467 m[1] + 20 537 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 675 m[1] + 20 553 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 643 m[1] + 20 553 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 819 m[1] + 20 569 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 451 m[1] + 20 345 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 595 m[1] + 20 361 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 739 m[1] + 20 377 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 707 m[1] + 20 377 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 883 m[1] + 20 393 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 851 m[1] + 20 393 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 027 m[1] + 20 409 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 25 803 m[1] + 20 201 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 25 947 m[1] + 20 217 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 091 m[1] + 20 233 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 059 m[1] + 20 233 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 235 m[1] + 20 249 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 25 299 m[1] + 20 073 m[2] - 5554 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 25 443 m[1] + 20 089 m[2] - 5554 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 24 651 m[1] + 19 929 m[2] - 5546 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0,
Array[m, 6], Integers]
{ {m[1] → -7404, m[2] → -66627,
  m[3] → -540420, m[4] → 0, m[5] → 0, m[6] → -1847108310} }

```

```

Array[m, 6] /. {m[1] → -7404, m[2] → -66627,
  m[3] → -540420, m[4] → 0, m[5] → 0, m[6] → -1847108310}
{-7404, -66627, -540420, 0, 0, -1847108310}

GCD[-7404, -66627, -540420, 0, 0, -1847108310]
3

{-7404, -66627, -540420, 0, 0, -1847108310} / 3
{-2468, -22209, -180140, 0, 0, -615702770}

Reverse[{-2468, -22209, -180140, 0, 0, -615702770}]
{-615702770, 0, 0, -180140, -22209, -2468}

{-2468, -22209, -180140, 0, 0, -615702770}.gpart[chi8]
-368151

{-2468, -22209, -180140, 0, 0, -615702770}.Transpose[A8]
{169817, 90841, 11865, 11913, -67063, 327433, 248457, 327481, 248505,
  169529, 327529, 248553, 169577, 327577, 248601, 169625, 90649, 248649,
  169673, 90697, 90745, 11769, 485049, 485097, 485145, 406169, 485193,
  406217, 485241, 406265, 327289, 485289, 406313, 327337, 485337, 406361,
  327385, 248409, 485385, 406409, 327433, 248457, 327481, 642761, 642809,
  642857, 563881, 642905, 563929, 642953, 563977, 485001, 643001, 564025,
  485049, 643049, 564073, 485097, 406121, 643097, 564121, 485145, 643145,
  564169, 800521, 800569, 800617, 721641, 800665, 721689, 800713, 721737,
  642761, 800761, 721785, 642809, 800809, 721833, 800857, 958233, 958281,
  958329, 879353, 958377, 879401, 958425, 879449, 800473, 958473, 879497,
  958521, 1115993, 1116041, 1116089, 1037113, 1116137, 1037161, 1116185,
  1273705, 1273753, 1273801, 1194825, 1273849, 1431465, 1431513, 1589177}

```

```

FindInstance[
 -1491907 m[1] + 1038793 m[2] - 275106 m[3] + 34790 m[4] - 2107 m[5] + 49 m[6] < 0 &&
 -30627 m[1] + 21241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -30595 m[1] + 21241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -30563 m[1] + 21241 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -30707 m[1] + 21257 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -30675 m[1] + 21257 m[2] - 5618 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -29691 m[1] + 21065 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -29659 m[1] + 21065 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -29835 m[1] + 21081 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -29803 m[1] + 21081 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -29771 m[1] + 21081 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -29979 m[1] + 21097 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -29947 m[1] + 21097 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
 -29915 m[1] + 21097 m[2] - 5610 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&

```



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- 29 083 m[1] + 20 857 m[2] - 5594 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 051 m[1] + 20 857 m[2] - 5594 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 259 m[1] + 20 873 m[2] - 5594 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 29 227 m[1] + 20 873 m[2] - 5594 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 603 m[1] + 20 617 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 747 m[1] + 20 633 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 891 m[1] + 20 649 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 859 m[1] + 20 649 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 035 m[1] + 20 665 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 003 m[1] + 20 665 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 179 m[1] + 20 681 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 147 m[1] + 20 681 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 115 m[1] + 20 681 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 323 m[1] + 20 697 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 291 m[1] + 20 697 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 259 m[1] + 20 697 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 467 m[1] + 20 713 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 435 m[1] + 20 713 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 28 611 m[1] + 20 729 m[2] - 5586 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 955 m[1] + 20 473 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 099 m[1] + 20 489 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 243 m[1] + 20 505 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 211 m[1] + 20 505 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 387 m[1] + 20 521 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 355 m[1] + 20 521 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 531 m[1] + 20 537 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 499 m[1] + 20 537 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 467 m[1] + 20 537 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 675 m[1] + 20 553 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 643 m[1] + 20 553 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 819 m[1] + 20 569 m[2] - 5578 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 451 m[1] + 20 345 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 595 m[1] + 20 361 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 739 m[1] + 20 377 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 707 m[1] + 20 377 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 883 m[1] + 20 393 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 851 m[1] + 20 393 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 27 027 m[1] + 20 409 m[2] - 5570 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 25 803 m[1] + 20 201 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 25 947 m[1] + 20 217 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 091 m[1] + 20 233 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 059 m[1] + 20 233 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 26 235 m[1] + 20 249 m[2] - 5562 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 25 299 m[1] + 20 073 m[2] - 5554 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 25 443 m[1] + 20 089 m[2] - 5554 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0 &&
- 24 651 m[1] + 19 929 m[2] - 5546 m[3] + 710 m[4] - 43 m[5] + m[6] ≥ 0,
Array[m, 6], Integers]

```

```

{ {m[1] → -12 691, m[2] → -114 217,
  m[3] → -1 027 960, m[4] → 0, m[5] → 0, m[6] → -3 736 443 160} }

Array[m, 6] /. {m[1] → -12 691, m[2] → -114 217,
  m[3] → -1 027 960, m[4] → 0, m[5] → 0, m[6] → -3 736 443 160}

{-12 691, -114 217, -1 027 960, 0, 0, -3 736 443 160}

GCD[-12 691, -114 217, -1 027 960, 0, 0, -3 736 443 160]

1

Reverse[{-12 691, -114 217, -1 027 960, 0, 0, -3 736 443 160}]
{-3 736 443 160, 0, 0, -1 027 960, -114 217, -12 691}

{-12 691, -114 217, -1 027 960, 0, 0, -3 736 443 160}.gpart[chi8]
-1 779 424

{-12 691, -114 217, -1 027 960, 0, 0, -3 736 443 160].Transpose[A8]
{1 240 080, 833 968, 427 856, 427 888, 21 776, 1 239 816, 833 704, 1 239 848, 833 736,
 427 624, 1 239 880, 833 768, 427 656, 1 239 912, 833 800, 427 688, 21 576,
 833 832, 427 720, 21 608, 21 640, -384 472, 1 239 552, 1 239 584, 1 239 616,
 833 504, 1 239 648, 833 536, 1 239 680, 833 568, 427 456, 1 239 712, 833 600,
 427 488, 1 239 744, 833 632, 427 520, 21 408, 1 239 776, 833 664, 427 552, 21 440,
 427 584, 1 239 352, 1 239 384, 1 239 416, 833 304, 1 239 448, 833 336, 1 239 480,
 833 368, 427 256, 1 239 512, 833 400, 427 288, 1 239 544, 833 432, 427 320,
 21 208, 1 239 576, 833 464, 427 352, 1 239 608, 833 496, 1 239 184, 1 239 216,
 1 239 248, 833 136, 1 239 280, 833 168, 1 239 312, 833 200, 427 088, 1 239 344,
 833 232, 427 120, 1 239 376, 833 264, 1 239 408, 1 238 984, 1 239 016, 1 239 048,
 832 936, 1 239 080, 832 968, 1 239 112, 833 000, 426 888, 1 239 144, 833 032,
 1 239 176, 1 238 816, 1 238 848, 1 238 880, 832 768, 1 238 912, 832 800, 1 238 944,
 1 238 616, 1 238 648, 1 238 680, 832 568, 1 238 712, 1 238 448, 1 238 480, 1 238 248}

```

```

anglesq8 = anglesquaredmat[chi8, list8] // FullSimplify;

Dimensions[anglesq8]
{106, 6}

angle8 = Sqrt[anglesq8] // FullSimplify;

angle8 // MatrixForm


$$\begin{pmatrix} \sqrt{\frac{17}{26}} & 0 & \sqrt{\frac{7}{39}} & 0 & \frac{1}{\sqrt{6}} & 0 \\ \frac{15 \sqrt{\frac{55}{7}}}{52} & \frac{1}{52} \sqrt{17 + \frac{47}{\sqrt{17}}} & \frac{\sqrt{\frac{59}{3}}}{13} & \frac{1}{\sqrt{14}} & \frac{\sqrt{\frac{7}{3}}}{4} & \frac{1}{52} \sqrt{17 - \frac{47}{\sqrt{17}}} \\ \frac{\sqrt{\frac{6187}{14}}}{26} & \text{Root}\left[1 - 289 \pm 1^2 + 11492 \pm 1^4 \&, 4\right] & \frac{3}{13} & \frac{1}{\sqrt{7}} & \frac{1}{2\sqrt{2}} & \text{Root}\left[1 - 289 \pm 1^2 + 11492 \pm 1^4 \&, 4\right] \\ \frac{\sqrt{\frac{12381}{7}}}{52} & \frac{1}{52} \sqrt{19 - \frac{27}{\sqrt{17}}} & \frac{\sqrt{\frac{43}{3}}}{13} & \frac{1}{\sqrt{7}} & \frac{\sqrt{\frac{5}{3}}}{4} & \frac{1}{52} \sqrt{19 + \frac{27}{\sqrt{17}}} \\ \sqrt{\frac{3095}{7}} & 1 & \sqrt{\frac{11}{3}} & \sqrt{\frac{1}{3}} & 1 & 1 \end{pmatrix}$$


```

|                                     |  |                                  |                       |                                |  |
|-------------------------------------|--|----------------------------------|-----------------------|--------------------------------|--|
| $\frac{1}{26}$                      | $\sqrt{\frac{9}{14} + \frac{1}{\sqrt{17}}}$                | $\frac{1}{13}$                   | $\sqrt{\frac{1}{14}}$ | $\frac{2}{2\sqrt{3}}$          | $\frac{1}{26} \sqrt{\frac{9}{14} - \frac{1}{\sqrt{17}}}$ |
| $\frac{\sqrt{1759}}{52}$            | $\frac{1}{52} \sqrt{83 + \frac{309}{\sqrt{17}}}$           | $\frac{\sqrt{17}}{13}$           | $0$                   | $\frac{\sqrt{3}}{4}$           | $\frac{1}{52} \sqrt{83 - \frac{309}{\sqrt{17}}}$         |
| $\frac{9\sqrt{\frac{19}{14}}}{13}$  | $\frac{1}{26} \sqrt{25 + \frac{89}{\sqrt{17}}}$            | $\frac{\sqrt{\frac{19}{3}}}{13}$ | $\frac{1}{\sqrt{14}}$ | $\frac{1}{\sqrt{6}}$           | $\frac{1}{26} \sqrt{25 - \frac{89}{\sqrt{17}}}$          |
| $\frac{\sqrt{110}}{13}$             | $\frac{1}{26} \sqrt{17 + \frac{47}{\sqrt{17}}}$            | $\frac{\sqrt{\frac{67}{3}}}{13}$ | $0$                   | $\frac{1}{\sqrt{6}}$           | $\frac{1}{26} \sqrt{17 - \frac{47}{\sqrt{17}}}$          |
| $\frac{\sqrt{12319}}{52}$           | $\frac{1}{52} \sqrt{85 + \frac{235}{\sqrt{17}}}$           | $\frac{\sqrt{\frac{35}{3}}}{13}$ | $\frac{1}{\sqrt{14}}$ | $\frac{\sqrt{\frac{7}{3}}}{4}$ | $\frac{1}{52} \sqrt{85 - \frac{235}{\sqrt{17}}}$         |
| $\frac{\sqrt{6159}}{26}$            | Root $[9 - 867 \pm 1^2 + 11492 \pm 1^4 \&, 4]$             | $\frac{1}{13}$                   | $\frac{1}{\sqrt{7}}$  | $\frac{1}{2\sqrt{2}}$          | Root $[9 - 867 \pm 1^2 + 11492$                          |
| $\frac{\sqrt{1761}}{52}$            | $\frac{1}{52} \sqrt{53 + \frac{67}{\sqrt{17}}}$            | $\frac{\sqrt{\frac{83}{3}}}{13}$ | $0$                   | $\frac{\sqrt{\frac{7}{3}}}{4}$ | $\frac{1}{52} \sqrt{53 - \frac{67}{\sqrt{17}}}$          |
| $\frac{\sqrt{6163}}{26}$            | $\frac{1}{26} \sqrt{\frac{35}{2} + \frac{57}{2\sqrt{17}}}$ | $\frac{\sqrt{17}}{13}$           | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2\sqrt{2}}$          | Root $[13 - 1190 \pm 1^2 + 2298$                         |
| $\frac{5\sqrt{\frac{493}{7}}}{52}$  | $\frac{1}{52} \sqrt{87 + \frac{161}{\sqrt{17}}}$           | $\frac{\sqrt{\frac{19}{3}}}{13}$ | $\frac{1}{\sqrt{7}}$  | $\frac{\sqrt{\frac{5}{3}}}{4}$ | $\frac{1}{52} \sqrt{87 - \frac{161}{\sqrt{17}}}$         |
| $\frac{\sqrt{\frac{881}{2}}}{26}$   | Root $[2 - 323 \pm 1^2 + 11492 \pm 1^4 \&, 3]$             | $\frac{\sqrt{33}}{13}$           | $0$                   | $\frac{1}{2\sqrt{2}}$          | Root $[2 - 323 \pm 1^2 + 11492$                          |
| $\frac{\sqrt{12333}}{52}$           | $\frac{1}{52} \sqrt{55 - \frac{7}{\sqrt{17}}}$             | $\frac{\sqrt{\frac{67}{3}}}{13}$ | $\frac{1}{\sqrt{14}}$ | $\frac{\sqrt{\frac{5}{3}}}{4}$ | $\frac{1}{52} \sqrt{55 + \frac{7}{\sqrt{17}}}$           |
| $\frac{\sqrt{\frac{3083}{7}}}{26}$  | $\sqrt{\frac{9}{338} + \frac{5}{338\sqrt{17}}}$            | $\frac{\sqrt{\frac{35}{3}}}{13}$ | $\frac{1}{\sqrt{7}}$  | $\frac{1}{2\sqrt{3}}$          | Root $[2 - 153 \pm 1^2 + 2873$                           |
| $\frac{\sqrt{12331}}{52}$           | $\frac{1}{52} \sqrt{89 + \frac{87}{\sqrt{17}}}$            | $\frac{1}{13}$                   | $\sqrt{\frac{3}{14}}$ | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{89 - \frac{87}{\sqrt{17}}}$          |
| $\frac{\sqrt{\frac{3085}{7}}}{26}$  | $\frac{1}{13} \sqrt{\frac{5}{2} - \frac{8}{\sqrt{17}}}$    | $\frac{\sqrt{\frac{83}{3}}}{13}$ | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2\sqrt{3}}$          | $\frac{1}{13} \sqrt{\frac{5}{2} + \frac{8}{\sqrt{17}}}$  |
| $\frac{3\sqrt{\frac{1371}{7}}}{52}$ | $\frac{1}{52} \sqrt{57 - \frac{81}{\sqrt{17}}}$            | $\frac{\sqrt{17}}{13}$           | $\frac{1}{\sqrt{7}}$  | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{57 + \frac{81}{\sqrt{17}}}$          |
| $\frac{\sqrt{\frac{6169}{14}}}{26}$ | Root $[1 - 74 \pm 1^2 + 1352 \pm 1^4 \&, 3]$               | $\frac{\sqrt{\frac{19}{3}}}{13}$ | $\sqrt{\frac{3}{14}}$ | $\frac{1}{2\sqrt{6}}$          | $\frac{1}{26} \sqrt{\frac{1}{2} (37 + \sqrt{17})}$       |
| $\frac{\sqrt{\frac{12345}{7}}}{52}$ | $\frac{1}{52} \sqrt{59 - \frac{155}{\sqrt{17}}}$           | $\frac{\sqrt{\frac{35}{3}}}{13}$ | $\sqrt{\frac{3}{14}}$ | $\frac{1}{4\sqrt{3}}$          | $\frac{1}{52} \sqrt{59 + \frac{155}{\sqrt{17}}}$         |
| $\frac{\sqrt{\frac{1543}{14}}}{13}$ | $\frac{1}{26} \sqrt{19 - \frac{27}{\sqrt{17}}}$            | $\frac{1}{13}$                   | $\sqrt{\frac{2}{7}}$  | $0$                            | $\frac{1}{26} \sqrt{19 + \frac{27}{\sqrt{17}}}$          |
| $\frac{5\sqrt{\frac{35}{2}}}{26}$   | Root $[8 - 1411 \pm 1^2 + 11492 \pm 1^4 \&, 4]$            | $\frac{\sqrt{\frac{11}{3}}}{13}$ | $0$                   | $\frac{\sqrt{\frac{5}{6}}}{2}$ | Root $[8 - 1411 \pm 1^2 + 1149:$                         |
| $\frac{\sqrt{1751}}{52}$            | $\frac{1}{52} \sqrt{151 + \frac{497}{\sqrt{17}}}$          | $\frac{3}{13}$                   | $0$                   | $\frac{\sqrt{3}}{4}$           | $\frac{1}{52} \sqrt{151 - \frac{497}{\sqrt{17}}}$        |
| $\frac{\sqrt{\frac{219}{2}}}{13}$   | Root $[4 - 289 \pm 1^2 + 2873 \pm 1^4 \&, 4]$              | $\frac{\sqrt{\frac{43}{3}}}{13}$ | $0$                   | $\frac{1}{\sqrt{6}}$           | Root $[4 - 289 \pm 1^2 + 2873$                           |
| $\frac{\sqrt{\frac{12263}{7}}}{52}$ | $\frac{3}{52} \sqrt{17 + \frac{47}{\sqrt{17}}}$            | $\frac{\sqrt{\frac{11}{3}}}{13}$ | $\frac{1}{\sqrt{14}}$ | $\frac{\sqrt{\frac{7}{3}}}{4}$ | $\frac{3}{52} \sqrt{17 - \frac{47}{\sqrt{17}}}$          |
| $\frac{\sqrt{1753}}{52}$            | $\frac{15+\sqrt{17}}{52\sqrt{2}}$                          | $\frac{\sqrt{\frac{59}{3}}}{13}$ | $0$                   | $\frac{\sqrt{\frac{7}{3}}}{4}$ | $-\frac{15+\sqrt{17}}{52\sqrt{2}}$                       |
| $\frac{\sqrt{\frac{6135}{14}}}{26}$ | Root $[43 - 2346 \pm 1^2 + 22984 \pm 1^4 \&, 4]$           | $\frac{3}{13}$                   | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2\sqrt{2}}$          | Root $[43 - 2346 \pm 1^2 + 2298$                         |
| $\frac{\sqrt{\frac{877}{2}}}{26}$   | Root $[16 - 901 \pm 1^2 + 11492 \pm 1^4 \&, 4]$            | $\frac{5}{13}$                   | $0$                   | $\frac{1}{2\sqrt{2}}$          | Root $[16 - 901 \pm 1^2 + 1149:$                         |
| $\frac{\sqrt{\frac{12277}{7}}}{52}$ | $\frac{1}{52} \sqrt{123 + \frac{181}{\sqrt{17}}}$          | $\frac{\sqrt{\frac{43}{3}}}{13}$ | $\frac{1}{\sqrt{14}}$ | $\frac{\sqrt{\frac{5}{3}}}{4}$ | $\frac{1}{52} \sqrt{123 - \frac{181}{\sqrt{17}}}$        |

|                                      |  |                                   |                       |                                |  |
|--------------------------------------|--|-----------------------------------|-----------------------|--------------------------------|--|
| $\frac{52}{3 \sqrt{\frac{341}{7}}}$  | $\frac{52}{\sqrt{35 + \frac{57}{\sqrt{17}}}}$      | $\frac{13}{\sqrt{\frac{11}{3}}}$  | $\frac{1}{\sqrt{7}}$  | $\frac{1}{2 \sqrt{3}}$         | $\frac{52}{\sqrt{35 - \frac{57}{\sqrt{17}}}}$              |
| $\frac{3 \sqrt{\frac{15}{13}}}{4}$   | $\text{Root}[2 - 119 \#1^2 + 1768 \#1^4 \&, 4]$    | $\sqrt{\frac{7}{39}}$             | 0                     | $\frac{\sqrt{\frac{5}{3}}}{4}$ | $\text{Root}[2 - 119 \#1^2 + 1768$                         |
| $\frac{\sqrt{\frac{3071}{7}}}{26}$   | $\frac{1}{26} \sqrt{27 + \frac{15}{\sqrt{17}}}$    | $\frac{\sqrt{\frac{59}{3}}}{13}$  | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2 \sqrt{3}}$         | $\frac{1}{26} \sqrt{27 - \frac{15}{\sqrt{17}}}$            |
| $\frac{\sqrt{\frac{12283}{7}}}{52}$  | $\frac{1}{52} \sqrt{125 + \frac{107}{\sqrt{17}}}$  | $\frac{3}{13}$                    | $\frac{1}{\sqrt{7}}$  | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{125 - \frac{107}{\sqrt{17}}}$          |
| $\frac{\sqrt{439}}{26}$              | $\frac{1}{26} \sqrt{19 - \frac{27}{\sqrt{17}}}$    | $\frac{\sqrt{\frac{107}{3}}}{13}$ | 0                     | $\frac{1}{2 \sqrt{3}}$         | $\frac{1}{26} \sqrt{19 + \frac{27}{\sqrt{17}}}$            |
| $\frac{\sqrt{\frac{12291}{7}}}{52}$  | $\frac{1}{52} \sqrt{93 - \frac{61}{\sqrt{17}}}$    | $\frac{5}{13}$                    | $\frac{1}{\sqrt{14}}$ | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{93 + \frac{61}{\sqrt{17}}}$            |
| $\frac{\sqrt{\frac{6145}{14}}}{26}$  | $\text{Root}[19 - 935 \#1^2 + 11492 \#1^4 \&, 3]$  | $\frac{\sqrt{\frac{43}{3}}}{13}$  | $\frac{1}{\sqrt{7}}$  | $\frac{1}{2 \sqrt{6}}$         | $\frac{1}{26} \sqrt{\frac{55}{2} + \frac{7}{2 \sqrt{17}}}$ |
| $\frac{\sqrt{\frac{12289}{7}}}{52}$  | $\frac{1}{52} \sqrt{127 + \frac{33}{\sqrt{17}}}$   | $\frac{\sqrt{\frac{11}{3}}}{13}$  | $\sqrt{\frac{3}{14}}$ | $\frac{1}{4 \sqrt{3}}$         | $\frac{1}{52} \sqrt{127 - \frac{33}{\sqrt{17}}}$           |
| $\frac{\sqrt{1757}}{52}$             | $\frac{1}{52} \sqrt{61 - \frac{229}{\sqrt{17}}}$   | $\frac{\sqrt{41}}{13}$            | 0                     | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{61 + \frac{229}{\sqrt{17}}}$           |
| $\frac{\sqrt{\frac{473}{182}}}{2}$   | $\text{Root}[1 - 102 \#1^2 + 1768 \#1^4 \&, 3]$    | $\sqrt{\frac{7}{39}}$             | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2 \sqrt{6}}$         | $\sqrt{\frac{3}{104} + \frac{7}{104 \sqrt{17}}}$           |
| $\frac{\sqrt{\frac{12297}{7}}}{52}$  | $\frac{1}{52} \sqrt{95 - \frac{135}{\sqrt{17}}}$   | $\frac{\sqrt{\frac{59}{3}}}{13}$  | $\frac{1}{\sqrt{7}}$  | $\frac{1}{4 \sqrt{3}}$         | $\frac{1}{52} \sqrt{95 + \frac{135}{\sqrt{17}}}$           |
| $\frac{\sqrt{\frac{1537}{14}}}{13}$  | $\frac{1}{13} \sqrt{7 - \frac{11}{2 \sqrt{17}}}$   | $\frac{3}{13}$                    | $\sqrt{\frac{3}{14}}$ | 0                              | $\frac{1}{13} \sqrt{7 + \frac{11}{2 \sqrt{17}}}$           |
| $\frac{\sqrt{\frac{769}{7}}}{13}$    | $\frac{1}{13} \sqrt{5 - \frac{16}{\sqrt{17}}}$     | $\frac{5}{13}$                    | $\frac{1}{\sqrt{7}}$  | 0                              | $\frac{1}{13} \sqrt{5 + \frac{16}{\sqrt{17}}}$             |
| $\frac{\sqrt{1743}}{52}$             | $\frac{1}{52} \sqrt{219 + \frac{685}{\sqrt{17}}}$  | $\frac{1}{13}$                    | 0                     | $\frac{\sqrt{3}}{4}$           | $\frac{1}{52} \sqrt{219 - \frac{685}{\sqrt{17}}}$          |
| $\frac{\sqrt{109}}{13}$              | $\frac{1}{26} \sqrt{51 + \frac{141}{\sqrt{17}}}$   | $\frac{\sqrt{\frac{19}{3}}}{13}$  | 0                     | $\frac{1}{\sqrt{6}}$           | $\frac{1}{26} \sqrt{51 - \frac{141}{\sqrt{17}}}$           |
| $\frac{\sqrt{1745}}{52}$             | $\frac{1}{52} \sqrt{189 + \frac{443}{\sqrt{17}}}$  | $\frac{\sqrt{\frac{35}{3}}}{13}$  | 0                     | $\frac{\sqrt{\frac{7}{3}}}{4}$ | $\frac{1}{52} \sqrt{189 - \frac{443}{\sqrt{17}}}$          |
| $\frac{\sqrt{\frac{6107}{14}}}{26}$  | $\text{Root}[89 - 3502 \#1^2 + 22984 \#1^4 \&, 4]$ | $\frac{1}{13}$                    | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2 \sqrt{2}}$         | $\text{Root}[89 - 3502 \#1^2 + 2298$                       |
| $\frac{3 \sqrt{\frac{97}{2}}}{26}$   | $\text{Root}[38 - 1479 \#1^2 + 11492 \#1^4 \&, 4]$ | $\frac{\sqrt{17}}{13}$            | 0                     | $\frac{1}{2 \sqrt{2}}$         | $\text{Root}[38 - 1479 \#1^2 + 1149$                       |
| $\frac{11 \sqrt{\frac{101}{7}}}{52}$ | $\frac{1}{52} \sqrt{191 + \frac{369}{\sqrt{17}}}$  | $\frac{\sqrt{\frac{19}{3}}}{13}$  | $\frac{1}{\sqrt{14}}$ | $\frac{\sqrt{\frac{5}{3}}}{4}$ | $\frac{1}{52} \sqrt{191 - \frac{369}{\sqrt{17}}}$          |
| $\frac{\sqrt{1747}}{52}$             | $\frac{1}{52} \sqrt{159 + \frac{201}{\sqrt{17}}}$  | $\frac{\sqrt{\frac{67}{3}}}{13}$  | 0                     | $\frac{\sqrt{\frac{5}{3}}}{4}$ | $\frac{1}{52} \sqrt{159 - \frac{201}{\sqrt{17}}}$          |
| $\frac{\sqrt{\frac{3057}{7}}}{26}$   | $\frac{1}{13} \sqrt{11 + \frac{31}{2 \sqrt{17}}}$  | $\frac{\sqrt{\frac{35}{3}}}{13}$  | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2 \sqrt{3}}$         | $\frac{1}{13} \sqrt{11 - \frac{31}{2 \sqrt{17}}}$          |
| $\frac{\sqrt{\frac{12227}{7}}}{52}$  | $\frac{1}{52} \sqrt{193 + \frac{295}{\sqrt{17}}}$  | $\frac{1}{13}$                    | $\frac{1}{\sqrt{7}}$  | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{193 - \frac{295}{\sqrt{17}}}$          |
| $\frac{\sqrt{437}}{26}$              | $\frac{1}{13} \sqrt{9 + \frac{5}{\sqrt{17}}}$      | $\frac{\sqrt{\frac{83}{3}}}{13}$  | 0                     | $\frac{1}{2 \sqrt{3}}$         | $\frac{1}{13} \sqrt{9 - \frac{5}{\sqrt{17}}}$              |
| $\frac{\sqrt{\frac{12235}{7}}}{52}$  | $\frac{1}{52} \sqrt{161 + \frac{127}{\sqrt{17}}}$  | $\frac{\sqrt{17}}{13}$            | $\frac{1}{\sqrt{14}}$ | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{161 - \frac{127}{\sqrt{17}}}$          |
| $\frac{\sqrt{\frac{6117}{14}}}{13}$  | $1 - \sqrt{89 - 87}$                               | $\frac{\sqrt{\frac{19}{3}}}{13}$  | 1                     | 1                              | D88+T17 1512+12 . 1140                                     |

|                            |  |                         |                       |                        |  |
|----------------------------|--|-------------------------|-----------------------|------------------------|--|
| $\frac{26}{\sqrt{1749}}$   | $\frac{1}{52} \sqrt{129 - \frac{41}{\sqrt{17}}}$             | $\frac{\sqrt{33}}{13}$  | $\frac{1}{\sqrt{7}}$  | $\frac{1}{2 \sqrt{6}}$ | $\text{Root}[18 - 1513 \pm 1 + 1149]$                      |
| $\frac{\sqrt{6121}}{26}$   | $\frac{1}{26} \sqrt{\frac{73}{2} + \frac{3}{2 \sqrt{17}}}$   | $\frac{\sqrt{67}}{13}$  | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2 \sqrt{6}}$ | $\frac{1}{26} \sqrt{\frac{73}{2} - \frac{3}{2 \sqrt{17}}}$ |
| $\frac{\sqrt{12241}}{52}$  | $\frac{1}{52} \sqrt{163 + \frac{53}{\sqrt{17}}}$             | $\frac{\sqrt{35}}{13}$  | $\frac{1}{\sqrt{7}}$  | $\frac{1}{4 \sqrt{3}}$ | $\frac{1}{52} \sqrt{163 - \frac{53}{\sqrt{17}}}$           |
| $\frac{3 \sqrt{85}}{13}$   | $\frac{1}{26} \sqrt{45 + \frac{25}{\sqrt{17}}}$              | $\frac{1}{13}$          | $\sqrt{\frac{3}{14}}$ | $0$                    | $\frac{1}{26} \sqrt{45 - \frac{25}{\sqrt{17}}}$            |
| $\frac{5 \sqrt{35}}{26}$   | $\text{Root}[18 - 969 \pm 1^2 + 11492 \pm 1^4 \&, 3]$        | $\frac{\sqrt{115}}{13}$ | $0$                   | $\frac{1}{2 \sqrt{6}}$ | $\text{Root}[18 - 969 \pm 1^2 + 1149]$                     |
| $\frac{3 \sqrt{1361}}{52}$ | $\frac{1}{52} \sqrt{131 - \frac{115}{\sqrt{17}}}$            | $\frac{\sqrt{83}}{13}$  | $\frac{1}{\sqrt{14}}$ | $\frac{1}{4 \sqrt{3}}$ | $\frac{1}{52} \sqrt{131 + \frac{115}{\sqrt{17}}}$          |
| $\frac{\sqrt{1531}}{13}$   | $\frac{\sqrt{37 - \sqrt{17}}}{26}$                           | $\frac{\sqrt{17}}{13}$  | $\frac{1}{\sqrt{7}}$  | $0$                    | $\frac{\sqrt{37 + \sqrt{17}}}{26}$                         |
| $\frac{\sqrt{1751}}{52}$   | $\frac{1}{52} \sqrt{99 - \frac{283}{\sqrt{17}}}$             | $\frac{\sqrt{131}}{13}$ | $0$                   | $\frac{1}{4 \sqrt{3}}$ | $\frac{1}{52} \sqrt{99 + \frac{283}{\sqrt{17}}}$           |
| $\frac{\sqrt{766}}{13}$    | $\frac{1}{26} \sqrt{29 - \frac{59}{\sqrt{17}}}$              | $\frac{\sqrt{33}}{13}$  | $\frac{1}{\sqrt{14}}$ | $0$                    | $\frac{1}{26} \sqrt{29 + \frac{59}{\sqrt{17}}}$            |
| $\frac{3 \sqrt{193}}{52}$  | $\frac{1}{52} \sqrt{257 + \frac{631}{\sqrt{17}}}$            | $\frac{\sqrt{11}}{13}$  | $0$                   | $\frac{\sqrt{7}}{4}$   | $\frac{1}{52} \sqrt{257 - \frac{631}{\sqrt{17}}}$          |
| $\frac{\sqrt{869}}{26}$    | $\frac{1}{52} (15 + \sqrt{17})$                              | $\frac{3}{13}$          | $0$                   | $\frac{1}{2 \sqrt{2}}$ | $\frac{1}{52} (15 - \sqrt{17})$                            |
| $\frac{\sqrt{1739}}{52}$   | $\frac{1}{52} \sqrt{227 + \frac{389}{\sqrt{17}}}$            | $\frac{\sqrt{43}}{13}$  | $0$                   | $\frac{\sqrt{5}}{4}$   | $\frac{1}{52} \sqrt{227 - \frac{389}{\sqrt{17}}}$          |
| $\frac{\sqrt{3043}}{26}$   | $\frac{1}{26} \sqrt{61 + \frac{109}{\sqrt{17}}}$             | $\frac{\sqrt{11}}{13}$  | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2 \sqrt{3}}$ | $\frac{1}{26} \sqrt{61 - \frac{109}{\sqrt{17}}}$           |
| $\frac{\sqrt{435}}{26}$    | $\frac{1}{26} \sqrt{53 + \frac{67}{\sqrt{17}}}$              | $\frac{\sqrt{59}}{13}$  | $0$                   | $\frac{1}{2 \sqrt{3}}$ | $\frac{1}{26} \sqrt{53 - \frac{67}{\sqrt{17}}}$            |
| $\frac{\sqrt{12179}}{52}$  | $\frac{1}{52} \sqrt{229 + \frac{315}{\sqrt{17}}}$            | $\frac{3}{13}$          | $\frac{1}{\sqrt{14}}$ | $\frac{1}{4}$          | $\frac{1}{52} \sqrt{229 - \frac{315}{\sqrt{17}}}$          |
| $\frac{\sqrt{1741}}{52}$   | $\frac{1}{52} \sqrt{197 + \frac{147}{\sqrt{17}}}$            | $\frac{5}{13}$          | $0$                   | $\frac{1}{4}$          | $\frac{1}{52} \sqrt{197 - \frac{147}{\sqrt{17}}}$          |
| $\frac{3 \sqrt{677}}{26}$  | $\frac{1}{26} \sqrt{\frac{107}{2} + \frac{97}{2 \sqrt{17}}}$ | $\frac{\sqrt{43}}{13}$  | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2 \sqrt{6}}$ | $\text{Root}[137 - 3638 \pm 1^2 + 229]$                    |
| $\frac{\sqrt{12185}}{52}$  | $\frac{1}{52} \sqrt{231 + \frac{241}{\sqrt{17}}}$            | $\frac{\sqrt{11}}{13}$  | $\frac{1}{\sqrt{7}}$  | $\frac{1}{4 \sqrt{3}}$ | $\frac{1}{52} \sqrt{231 - \frac{241}{\sqrt{17}}}$          |
| $\frac{\sqrt{67}}{2}$      | $\text{Root}[4 - 119 \pm 1^2 + 884 \pm 1^4 \&, 4]$           | $\sqrt{\frac{7}{39}}$   | $0$                   | $\frac{1}{2 \sqrt{6}}$ | $\text{Root}[4 - 119 \pm 1^2 + 884 \pm 1^4 \&, 4]$         |
| $\frac{\sqrt{12193}}{52}$  | $\frac{1}{52} \sqrt{199 + \frac{73}{\sqrt{17}}}$             | $\frac{\sqrt{59}}{13}$  | $\frac{1}{\sqrt{14}}$ | $\frac{1}{4 \sqrt{3}}$ | $\frac{1}{52} \sqrt{199 - \frac{73}{\sqrt{17}}}$           |
| $\frac{\sqrt{762}}{13}$    | $\text{Root}[18 - 459 \pm 1^2 + 2873 \pm 1^4 \&, 4]$         | $\frac{3}{13}$          | $\frac{1}{\sqrt{7}}$  | $0$                    | $\text{Root}[18 - 459 \pm 1^2 + 2873 \pm 1^4 \&, 4]$       |
| $\frac{\sqrt{1743}}{52}$   | $\frac{1}{52} \sqrt{167 - \frac{95}{\sqrt{17}}}$             | $\frac{\sqrt{107}}{13}$ | $0$                   | $\frac{1}{4 \sqrt{3}}$ | $\frac{1}{52} \sqrt{167 + \frac{95}{\sqrt{17}}}$           |
| $\frac{5 \sqrt{61}}{13}$   | $\frac{1}{13} \sqrt{\frac{23}{2} - \frac{3}{\sqrt{17}}}$     | $\frac{5}{13}$          | $\frac{1}{\sqrt{14}}$ | $0$                    | $\frac{1}{13} \sqrt{\frac{23}{2} + \frac{3}{\sqrt{17}}}$   |
| $\frac{\sqrt{109}}{13}$    | $\text{Root}[8 - 323 \pm 1^2 + 2873 \pm 1^4 \&, 3]$          | $\frac{\sqrt{41}}{13}$  | $0$                   | $0$                    | $\text{Root}[8 - 323 \pm 1^2 + 2873 \pm 1^4 \&, 3]$        |
| $\frac{\sqrt{865}}{26}$    | $\text{Root}[106 - 2635 \pm 1^2 + 11492 \pm 1^4 \&, 4]$      | $\frac{1}{13}$          | $0$                   | $\frac{1}{2 \sqrt{2}}$ | $\text{Root}[106 - 2635 \pm 1^2 + 11492 \pm 1^4 \&, 4]$    |

|                                      |   |                                  |                       |                                |   |
|--------------------------------------|---|----------------------------------|-----------------------|--------------------------------|---|
| $\frac{\sqrt{1731}}{52}$             | $\frac{1}{52} \sqrt{295 + \frac{577}{\sqrt{17}}}$       | $\frac{\sqrt{\frac{19}{3}}}{13}$ | 0                     | $\frac{\sqrt{\frac{5}{3}}}{4}$ | $\frac{1}{52} \sqrt{295 - \frac{577}{\sqrt{17}}}$   |
| $\frac{\sqrt{433}}{26}$              | $\text{Root}[26 - 595 \#1^2 + 2873 \#1^4 \&, 4]$        | $\frac{\sqrt{\frac{35}{3}}}{13}$ | 0                     | $\frac{1}{2 \sqrt{3}}$         | $\text{Root}[26 - 595 \#1^2 + 2873$                 |
| $\frac{3 \sqrt{\frac{1347}{7}}}{52}$ | $\frac{1}{52} \sqrt{297 + \frac{503}{\sqrt{17}}}$       | $\frac{1}{13}$                   | $\frac{1}{\sqrt{14}}$ | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{297 - \frac{503}{\sqrt{17}}}$   |
| $\frac{\sqrt{1733}}{52}$             | $\frac{1}{52} \sqrt{265 + \frac{335}{\sqrt{17}}}$       | $\frac{\sqrt{17}}{13}$           | 0                     | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{265 - \frac{335}{\sqrt{17}}}$   |
| $\frac{\sqrt{\frac{6065}{14}}}{26}$  | $\text{Root}[223 - 4794 \#1^2 + 22984 \#1^4 \&, 4]$     | $\frac{\sqrt{\frac{19}{3}}}{13}$ | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2 \sqrt{6}}$         | $\text{Root}[223 - 4794 \#1^2 + 22984 \#1^4 \&, 4]$ |
| $\frac{17 \sqrt{\frac{3}{2}}}{26}$   | $\text{Root}[94 - 2125 \#1^2 + 11492 \#1^4 \&, 4]$      | $\frac{\sqrt{\frac{67}{3}}}{13}$ | 0                     | $\frac{1}{2 \sqrt{6}}$         | $\text{Root}[94 - 2125 \#1^2 + 11492 \#1^4 \&, 4]$  |
| $\frac{\sqrt{\frac{12137}{7}}}{52}$  | $\frac{1}{52} \sqrt{267 + \frac{261}{\sqrt{17}}}$       | $\frac{\sqrt{\frac{35}{3}}}{13}$ | $\frac{1}{\sqrt{14}}$ | $\frac{1}{4 \sqrt{3}}$         | $\frac{1}{52} \sqrt{267 - \frac{261}{\sqrt{17}}}$   |
| $\frac{\sqrt{\frac{1517}{14}}}{13}$  | $\frac{1}{26} \sqrt{71 + \frac{77}{\sqrt{17}}}$         | $\frac{1}{13}$                   | $\frac{1}{\sqrt{7}}$  | 0                              | $\frac{1}{26} \sqrt{71 - \frac{77}{\sqrt{17}}}$     |
| $\frac{\sqrt{1735}}{52}$             | $\frac{1}{52} \sqrt{235 + \frac{93}{\sqrt{17}}}$        | $\frac{\sqrt{\frac{83}{3}}}{13}$ | 0                     | $\frac{1}{4 \sqrt{3}}$         | $\frac{1}{52} \sqrt{235 - \frac{93}{\sqrt{17}}}$    |
| $\frac{\sqrt{759}}{13}$              | $\frac{1}{26} \sqrt{63 + \frac{35}{\sqrt{17}}}$         | $\frac{\sqrt{17}}{13}$           | $\frac{1}{\sqrt{14}}$ | 0                              | $\frac{1}{26} \sqrt{63 - \frac{35}{\sqrt{17}}}$     |
| $\frac{\sqrt{\frac{217}{2}}}{13}$    | $\frac{1}{26} \sqrt{55 - \frac{7}{\sqrt{17}}}$          | $\frac{\sqrt{33}}{13}$           | 0                     | 0                              | $\frac{1}{26} \sqrt{55 + \frac{7}{\sqrt{17}}}$      |
| $\frac{\sqrt{431}}{26}$              | $\frac{1}{26} \sqrt{87 + \frac{161}{\sqrt{17}}}$        | $\frac{\sqrt{\frac{11}{3}}}{13}$ | 0                     | $\frac{1}{2 \sqrt{3}}$         | $\frac{1}{26} \sqrt{87 - \frac{161}{\sqrt{17}}}$    |
| $\frac{5 \sqrt{69}}{52}$             | $\frac{1}{52} \sqrt{333 + \frac{523}{\sqrt{17}}}$       | $\frac{3}{13}$                   | 0                     | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{333 - \frac{523}{\sqrt{17}}}$   |
| $\frac{\sqrt{\frac{863}{2}}}{26}$    | $\frac{1}{26} \sqrt{\frac{3}{34} (901 + 67 \sqrt{17})}$ | $\frac{\sqrt{\frac{43}{3}}}{13}$ | 0                     | $\frac{1}{2 \sqrt{6}}$         | $\text{Root}[144 - 2703 \#1^2 + 11492 \#1^4 \&, 4]$ |
| $\frac{\sqrt{\frac{12081}{7}}}{52}$  | $\frac{1}{52} \sqrt{335 + \frac{449}{\sqrt{17}}}$       | $\frac{\sqrt{\frac{11}{3}}}{13}$ | $\frac{1}{\sqrt{14}}$ | $\frac{1}{4 \sqrt{3}}$         | $\frac{1}{52} \sqrt{335 - \frac{449}{\sqrt{17}}}$   |
| $\frac{\sqrt{1727}}{52}$             | $\frac{1}{52} \sqrt{303 + \frac{281}{\sqrt{17}}}$       | $\frac{\sqrt{\frac{59}{3}}}{13}$ | 0                     | $\frac{1}{4 \sqrt{3}}$         | $\frac{1}{52} \sqrt{303 - \frac{281}{\sqrt{17}}}$   |
| $\frac{\sqrt{\frac{1511}{14}}}{13}$  | $\frac{1}{13} \sqrt{20 + \frac{41}{2 \sqrt{17}}}$       | $\frac{3}{13}$                   | $\frac{1}{\sqrt{14}}$ | 0                              | $\frac{1}{13} \sqrt{20 - \frac{41}{2 \sqrt{17}}}$   |
| $\frac{6 \sqrt{3}}{13}$              | $\frac{1}{13} \sqrt{18 + \frac{10}{\sqrt{17}}}$         | $\frac{5}{13}$                   | 0                     | 0                              | $\frac{1}{13} \sqrt{18 - \frac{10}{\sqrt{17}}}$     |
| $\frac{\sqrt{1717}}{52}$             | $\frac{1}{52} \sqrt{401 + \frac{711}{\sqrt{17}}}$       | $\frac{1}{13}$                   | 0                     | $\frac{1}{4}$                  | $\frac{1}{52} \sqrt{401 - \frac{711}{\sqrt{17}}}$   |
| $\frac{\sqrt{\frac{859}{2}}}{26}$    | $\text{Root}[202 - 3281 \#1^2 + 11492 \#1^4 \&, 4]$     | $\frac{\sqrt{\frac{19}{3}}}{13}$ | 0                     | $\frac{1}{2 \sqrt{6}}$         | $\text{Root}[202 - 3281 \#1^2 + 11492 \#1^4 \&, 4]$ |
| $\frac{3 \sqrt{191}}{52}$            | $\frac{1}{52} \sqrt{371 + \frac{469}{\sqrt{17}}}$       | $\frac{\sqrt{\frac{35}{3}}}{13}$ | 0                     | $\frac{1}{4 \sqrt{3}}$         | $\frac{1}{52} \sqrt{371 - \frac{469}{\sqrt{17}}}$   |
| $\frac{4 \sqrt{\frac{47}{7}}}{13}$   | $\frac{1}{26} \sqrt{97 + \frac{129}{\sqrt{17}}}$        | $\frac{1}{13}$                   | $\frac{1}{\sqrt{14}}$ | 0                              | $\frac{1}{26} \sqrt{97 - \frac{129}{\sqrt{17}}}$    |
| $\frac{\sqrt{\frac{215}{2}}}{13}$    | $\frac{1}{26} \sqrt{89 + \frac{87}{\sqrt{17}}}$         | $\frac{\sqrt{17}}{13}$           | 0                     | 0                              | $\frac{1}{26} \sqrt{89 - \frac{87}{\sqrt{17}}}$     |
| $\frac{\sqrt{1711}}{52}$             | $\frac{1}{52} \sqrt{439 + \frac{657}{\sqrt{17}}}$       | $\frac{\sqrt{\frac{11}{3}}}{13}$ | 0                     | $\frac{1}{4 \sqrt{3}}$         | $\frac{1}{52} \sqrt{439 - \frac{657}{\sqrt{17}}}$   |
| $\frac{\sqrt{107}}{13}$              | $\text{Root}[64 - 901 \#1^2 + 2873 \#1^4 \&, 4]$        | $\frac{3}{13}$                   | 0                     | 0                              | $\text{Root}[64 - 901 \#1^2 + 2873 \#1^4 \&, 4]$    |
| $\frac{\sqrt{\frac{213}{2}}}{2}$     | $\frac{1}{2} \sqrt{122 + \frac{181}{\sqrt{17}}}$        | $\frac{1}{2}$                    | $\frac{1}{2}$         | $\frac{1}{2}$                  | $\frac{1}{2} \sqrt{122 - \frac{181}{\sqrt{17}}}$    |

$$\left( -\frac{1}{13} \right) \sqrt{\frac{140}{26}} + \sqrt{\frac{140}{17}}$$

$$\left( -\frac{1}{13} \right)^2 = \frac{1}{169}$$

$$\sqrt{\frac{140}{26}} - \sqrt{\frac{140}{17}}$$

**Dimensions[angle8]**

{106, 6}

**orderedroots[minipoly[chi8]]**

{-5, 10 - √17, 8, 9, 11, 10 + √17}

**chi8**

$$(-11+x)^3 (-9+x)^{11} (-8+x) (5+x)^{32} (83-20x+x^2)$$

**coeff[chi8, (x+5) (x-9) (x-11)] // FullSimplify**

{-16 (-15 + √17), 39, 16 (15 + √17)}

**combinationangle[{-16 (-15 + √17), 39, 16 (15 + √17)},**

**{5, 22}, {2, 3, 6}, angle8] // FullSimplify**

$$\left\{ \frac{1}{13} \sqrt{\frac{11}{17} (22579 + 64 \sqrt{1122})}, \frac{1}{13} (-32 \sqrt{2} + \sqrt{33}) \right.,$$

$$\left. \frac{1}{13} \sqrt{\frac{11}{17} (22579 - 64 \sqrt{1122})}, \frac{1}{13} (-32 \sqrt{2} - \sqrt{33}) \right\}$$

**compatible[{{1}/{13} \sqrt{{11}/{17} (22579 + 64 \sqrt{1122})}, {1}/{13} (-32 \sqrt{2} + \sqrt{33})},**

**{1}/{13} \sqrt{{11}/{17} (22579 - 64 \sqrt{1122})}, {1}/{13} (-32 \sqrt{2} - \sqrt{33})}]**

0

$$\text{chi9} = (-11+x)^3 (-9+x)^{10} (-7+x) (5+x)^{32} (-852+285x-30x^2+x^3)$$

$$(-11+x)^3 (-9+x)^{10} (-7+x) (5+x)^{32} (-852+285x-30x^2+x^3)$$

$$\text{list9} = \{ (-7+x) (-39533 + 26097x - 6534x^2 + 782x^3 - 45x^4 + x^5),$$

$$(-9+x) (-30755 + 21273x - 5618x^2 + 710x^3 - 43x^4 + x^5),$$

$$(-11+x) (-9+x) (-7+x)^2 (57 - 18x + x^2),$$

$$(-7+x) (-39709 + 26113x - 6534x^2 + 782x^3 - 45x^4 + x^5),$$

$$(-11+x) (-7+x) (3607 - 2046x + 408x^2 - 34x^3 + x^4),$$

$$(-11+x) (-7+x) (3623 - 2046x + 408x^2 - 34x^3 + x^4),$$

$$270467 - 220076x + 71603x^2 - 12000x^3 + 1097x^4 - 52x^5 + x^6,$$

$$(-9+x) (-30059 + 21113x - 5610x^2 + 710x^3 - 43x^4 + x^5),$$

$$\begin{aligned}
& (-7+x) \left( -38597 + 25921x - 6526x^2 + 782x^3 - 45x^4 + x^5 \right), \\
& (-9+x) \left( -30027 + 21113x - 5610x^2 + 710x^3 - 43x^4 + x^5 \right), \\
& (-9+x) (-7+x) \left( 4285 - 2404x + 458x^2 - 36x^3 + x^4 \right), \\
& 271763 - 220364x + 71619x^2 - 12000x^3 + 1097x^4 - 52x^5 + x^6, \\
& 271475 - 220332x + 71619x^2 - 12000x^3 + 1097x^4 - 52x^5 + x^6, \\
& (-9+x) \left( 113 - 22x + x^2 \right) \left( -267 + 135x - 21x^2 + x^3 \right), \\
& (-7+x) \left( -38741 + 25937x - 6526x^2 + 782x^3 - 45x^4 + x^5 \right), \\
& (-9+x) \left( -30139 + 21129x - 5610x^2 + 710x^3 - 43x^4 + x^5 \right), \\
& (-11+x) (-9+x) (-7+x) \left( -391 + 183x - 25x^2 + x^3 \right), \\
& (-7+x) \left( -38917 + 25953x - 6526x^2 + 782x^3 - 45x^4 + x^5 \right), \\
& 272483 - 220588x + 71635x^2 - 12000x^3 + 1097x^4 - 52x^5 + x^6, \\
& (-11+x) (-9+x) \left( 2753 - 1672x + 358x^2 - 32x^3 + x^4 \right), \\
& (-11+x) (-7+x)^2 \left( -505 + 219x - 27x^2 + x^3 \right), \\
& 273715 - 220876x + 71651x^2 - 12000x^3 + 1097x^4 - 52x^5 + x^6, \\
& (-11+x) (-7+x) \left( 3551 - 2038x + 408x^2 - 34x^3 + x^4 \right), \\
& (-11+x) (-7+x) \left( 87 - 20x + x^2 \right) \left( 41 - 14x + x^2 \right), (-9+x) (-7+x) \\
& \quad \left( 4165 - 2396x + 458x^2 - 36x^3 + x^4 \right), (-9+x)^2 \left( 3259 - 1966x + 404x^2 - 34x^3 + x^4 \right), \\
& (-9+x) \left( -29299 + 20953x - 5602x^2 + 710x^3 - 43x^4 + x^5 \right), (-9+x) (-7+x) \\
& \quad \left( 113 - 22x + x^2 \right) \left( 37 - 14x + x^2 \right), (-9+x)^2 \left( 3275 - 1966x + 404x^2 - 34x^3 + x^4 \right), \\
& (-9+x) \left( -29443 + 20969x - 5602x^2 + 710x^3 - 43x^4 + x^5 \right), \\
& (-7+x) \left( -37805 + 25761x - 6518x^2 + 782x^3 - 45x^4 + x^5 \right), \\
& (-9+x) \left( -29411 + 20969x - 5602x^2 + 710x^3 - 43x^4 + x^5 \right), \\
& (-9+x) (-7+x) \left( 4197 - 2396x + 458x^2 - 36x^3 + x^4 \right), \\
& (-9+x) \left( -29587 + 20985x - 5602x^2 + 710x^3 - 43x^4 + x^5 \right), \\
& 265931 - 218420x + 71403x^2 - 11992x^3 + 1097x^4 - 52x^5 + x^6, \\
& (-9+x) \left( -29555 + 20985x - 5602x^2 + 710x^3 - 43x^4 + x^5 \right), \\
& (-7+x) \left( -37949 + 25777x - 6518x^2 + 782x^3 - 45x^4 + x^5 \right), \\
& (-9+x) \left( -29523 + 20985x - 5602x^2 + 710x^3 - 43x^4 + x^5 \right), \\
& (-11+x) (-9+x) (-7+x) \left( -383 + 183x - 25x^2 + x^3 \right), \\
& 267227 - 218708x + 71419x^2 - 11992x^3 + 1097x^4 - 52x^5 + x^6, \\
& (-9+x) \left( -29699 + 21001x - 5602x^2 + 710x^3 - 43x^4 + x^5 \right), \\
& 266939 - 218676x + 71419x^2 - 11992x^3 + 1097x^4 - 52x^5 + x^6, \\
& (-11+x) (-9+x) \left( 87 - 20x + x^2 \right) \left( 31 - 12x + x^2 \right), \\
& (-11+x) (-7+x) \left( 3463 - 2030x + 408x^2 - 34x^3 + x^4 \right), \\
& 268171 - 218964x + 71435x^2 - 11992x^3 + 1097x^4 - 52x^5 + x^6, \\
& (-11+x) \left( -24385 + 17689x - 4886x^2 + 646x^3 - 41x^4 + x^5 \right), (-11+x) (-7+x)^2 \\
& \quad \left( -497 + 219x - 27x^2 + x^3 \right), (-9+x)^2 (-7+x) \left( -453 + 215x - 27x^2 + x^3 \right), \\
& (-9+x)^2 \left( 3187 - 1958x + 404x^2 - 34x^3 + x^4 \right), (-9+x) (-7+x) \\
& \quad \left( 4093 - 2388x + 458x^2 - 36x^3 + x^4 \right), (-9+x)^2 \left( 3203 - 1958x + 404x^2 - 34x^3 + x^4 \right), \\
& (-9+x) \left( -28795 + 20825x - 5594x^2 + 710x^3 - 43x^4 + x^5 \right), \\
& (-9+x) (-7+x) \left( 4109 - 2388x + 458x^2 - 36x^3 + x^4 \right), \\
& (-9+x) \left( -29003 + 20841x - 5594x^2 + 710x^3 - 43x^4 + x^5 \right), \\
& (-9+x)^2 \left( 87 - 20x + x^2 \right) \left( 37 - 14x + x^2 \right),
\end{aligned}$$

$$\begin{aligned}
& 260\,387 - 216\,508\,x + 71\,187\,x^2 - 11\,984\,x^3 + 1097\,x^4 - 52\,x^5 + x^6, \\
& (-9 + x) \left( -28\,939 + 20\,841\,x - 5594\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-7 + x) \left( -37\,157 + 25\,617\,x - 6510\,x^2 + 782\,x^3 - 45\,x^4 + x^5 \right), \\
& (-9 + x) \left( -28\,907 + 20\,841\,x - 5594\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-11 + x) \left( -9 + x \right) \left( -7 + x \right) \left( -375 + 183\,x - 25\,x^2 + x^3 \right), \\
& (-9 + x)^2 \left( 3235 - 1958\,x + 404\,x^2 - 34\,x^3 + x^4 \right), \\
& 261\,683 - 216\,796\,x + 71\,203\,x^2 - 11\,984\,x^3 + 1097\,x^4 - 52\,x^5 + x^6, \\
& (-9 + x) \left( -29\,083 + 20\,857\,x - 5594\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& 261\,395 - 216\,764\,x + 71\,203\,x^2 - 11\,984\,x^3 + 1097\,x^4 - 52\,x^5 + x^6, \\
& (-11 + x) \left( -9 + x \right) \left( 2641 - 1656\,x + 358\,x^2 - 32\,x^3 + x^4 \right), \\
& (-11 + x) \left( -7 + x \right) \left( 3391 - 2022\,x + 408\,x^2 - 34\,x^3 + x^4 \right), \\
& 262\,979 - 217\,084\,x + 71\,219\,x^2 - 11\,984\,x^3 + 1097\,x^4 - 52\,x^5 + x^6, \\
& (-11 + x) \left( -23\,881 + 17\,561\,x - 4878\,x^2 + 646\,x^3 - 41\,x^4 + x^5 \right), \\
& (-11 + x) \left( -7 + x \right) \left( 3407 - 2022\,x + 408\,x^2 - 34\,x^3 + x^4 \right), \\
& (-11 + x) \left( -23\,993 + 17\,577\,x - 4878\,x^2 + 646\,x^3 - 41\,x^4 + x^5 \right), \\
& (-9 + x)^2 \left( -7 + x \right) \left( -445 + 215\,x - 27\,x^2 + x^3 \right), \\
& (-9 + x) \left( -28\,211 + 20\,681\,x - 5586\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-9 + x)^2 \left( 3131 - 1950\,x + 404\,x^2 - 34\,x^3 + x^4 \right), \\
& (-9 + x) \left( -7 + x \right) \left( 4021 - 2380\,x + 458\,x^2 - 36\,x^3 + x^4 \right), \\
& (-9 + x) \left( -28\,355 + 20\,697\,x - 5586\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-9 + x)^2 \left( 3147 - 1950\,x + 404\,x^2 - 34\,x^3 + x^4 \right), \\
& (-7 + x) \left( -36\,365 + 25\,457\,x - 6502\,x^2 + 782\,x^3 - 45\,x^4 + x^5 \right), \\
& (-9 + x) \left( -28\,291 + 20\,697\,x - 5586\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-11 + x) \left( -9 + x \right) \left( -367 + 183\,x - 25\,x^2 + x^3 \right), \\
& (-9 + x) \left( -28\,499 + 20\,713\,x - 5586\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-9 + x)^2 \left( 3163 - 1950\,x + 404\,x^2 - 34\,x^3 + x^4 \right), \\
& 255\,851 - 214\,852\,x + 70\,987\,x^2 - 11\,976\,x^3 + 1097\,x^4 - 52\,x^5 + x^6, \\
& (-11 + x) \left( -9 + x \right) \left( 2585 - 1648\,x + 358\,x^2 - 32\,x^3 + x^4 \right), \\
& (-11 + x) \left( -7 + x \right) \left( 3319 - 2014\,x + 408\,x^2 - 34\,x^3 + x^4 \right), \\
& 257\,435 - 215\,172\,x + 71\,003\,x^2 - 11\,976\,x^3 + 1097\,x^4 - 52\,x^5 + x^6, \\
& (-11 + x) \left( -9 + x \right)^2 \left( -289 + 151\,x - 23\,x^2 + x^3 \right), \\
& (-11 + x) \left( -23\,377 + 17\,433\,x - 4870\,x^2 + 646\,x^3 - 41\,x^4 + x^5 \right), \\
& (-9 + x) \left( -27\,563 + 20\,537\,x - 5578\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-9 + x)^2 \left( -7 + x \right) \left( -437 + 215\,x - 27\,x^2 + x^3 \right), \\
& (-9 + x) \left( -27\,707 + 20\,553\,x - 5578\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-9 + x)^2 \left( 3075 - 1942\,x + 404\,x^2 - 34\,x^3 + x^4 \right), \\
& (-11 + x) \left( -9 + x \right) \left( -7 + x \right) \left( -359 + 183\,x - 25\,x^2 + x^3 \right), \\
& (-9 + x) \left( -27\,883 + 20\,569\,x - 5578\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-9 + x) \left( -27\,851 + 20\,569\,x - 5578\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-11 + x) \left( -9 + x \right)^2 \left( -281 + 151\,x - 23\,x^2 + x^3 \right), \\
& (-11 + x) \left( -7 + x \right) \left( 3247 - 2006\,x + 408\,x^2 - 34\,x^3 + x^4 \right), \\
& (-9 + x) \left( -28\,027 + 20\,585\,x - 5578\,x^2 + 710\,x^3 - 43\,x^4 + x^5 \right), \\
& (-11 + x) \left( -9 + x \right) \left( 2545 - 1640\,x + 358\,x^2 - 32\,x^3 + x^4 \right),
\end{aligned}$$

```

(-11 + x) (-22 873 + 17 305 x - 4862 x2 + 646 x3 - 41 x4 + x5) ,
(-9 + x) (-7 + x) (3845 - 2364 x + 458 x2 - 36 x3 + x4) ,
(-9 + x) (-27 059 + 20 409 x - 5570 x2 + 710 x3 - 43 x4 + x5) ,
(-13 + x) (-11 + x) (-9 + x)2 (-7 + x) (-3 + x) ,
(-13 + x) (-9 + x) (2095 - 1410 x + 320 x2 - 30 x3 + x4) ,
(-11 + x) (-9 + x) (2473 - 1632 x + 358 x2 - 32 x3 + x4) ,
(-11 + x) (-7 + x) (3175 - 1998 x + 408 x2 - 34 x3 + x4) ,
(-11 + x) (-9 + x) (2489 - 1632 x + 358 x2 - 32 x3 + x4) ,
(-11 + x) (-9 + x) (2505 - 1632 x + 358 x2 - 32 x3 + x4) ,
(-9 + x) (-26 443 + 20 265 x - 5562 x2 + 710 x3 - 43 x4 + x5) ,
(-11 + x) (-9 + x) (-7 + x) (-343 + 183 x - 25 x2 + x3) ,
(-11 + x) (-9 + x) (2417 - 1624 x + 358 x2 - 32 x3 + x4) ,
(-11 + x) (-9 + x) (-7 + x) (-335 + 183 x - 25 x2 + x3) }};

Length[list9]
111

A9 = CoefficientList[list9, x];
A9 // MatrixForm
( 276 731 -222 212 71 835 -12 008 1097 -52 1
 276 795 -222 212 71 835 -12 008 1097 -52 1
 276 507 -222 180 71 835 -12 008 1097 -52 1
 277 963 -222 500 71 851 -12 008 1097 -52 1
 277 739 -222 468 71 851 -12 008 1097 -52 1
 278 971 -222 756 71 867 -12 008 1097 -52 1
 270 467 -220 076 71 603 -12 000 1097 -52 1
 270 531 -220 076 71 603 -12 000 1097 -52 1
 270 179 -220 044 71 603 -12 000 1097 -52 1
 270 243 -220 044 71 603 -12 000 1097 -52 1
 269 955 -220 012 71 603 -12 000 1097 -52 1
 271 763 -220 364 71 619 -12 000 1097 -52 1
 271 475 -220 332 71 619 -12 000 1097 -52 1
 271 539 -220 332 71 619 -12 000 1097 -52 1
 271 187 -220 300 71 619 -12 000 1097 -52 1
 271 251 -220 300 71 619 -12 000 1097 -52 1
 270 963 -220 268 71 619 -12 000 1097 -52 1
 272 419 -220 588 71 635 -12 000 1097 -52 1
 272 483 -220 588 71 635 -12 000 1097 -52 1
 272 547 -220 588 71 635 -12 000 1097 -52 1
 272 195 -220 556 71 635 -12 000 1097 -52 1
 273 715 -220 876 71 651 -12 000 1097 -52 1
 273 427 -220 844 71 651 -12 000 1097 -52 1
 274 659 -221 132 71 667 -12 000 1097 -52 1
 262 395 -217 588 71 355 -11 992 1097 -52 1
 263 979 -217 908 71 371 -11 992 1097 -52 1
 263 691 -217 876 71 371 -11 992 1097 -52 1
 263 403 -217 844 71 371 -11 992 1097 -52 1
 265 275 -218 196 71 387 -11 992 1097 -52 1
 264 987 -218 164 71 387 -11 992 1097 -52 1
 264 635 -218 132 71 387 -11 992 1097 -52 1
 264 600 218 132 71 387 11 992 1097 -52 1
)

```

|         | -218 152 | 71 301 | -11 992 | 1097 | -52 | 1 |
|---------|----------|--------|---------|------|-----|---|
| 264 411 | -218 100 | 71 387 | -11 992 | 1097 | -52 | 1 |
| 266 283 | -218 452 | 71 403 | -11 992 | 1097 | -52 | 1 |
| 265 931 | -218 420 | 71 403 | -11 992 | 1097 | -52 | 1 |
| 265 995 | -218 420 | 71 403 | -11 992 | 1097 | -52 | 1 |
| 265 643 | -218 388 | 71 403 | -11 992 | 1097 | -52 | 1 |
| 265 707 | -218 388 | 71 403 | -11 992 | 1097 | -52 | 1 |
| 265 419 | -218 356 | 71 403 | -11 992 | 1097 | -52 | 1 |
| 267 227 | -218 708 | 71 419 | -11 992 | 1097 | -52 | 1 |
| 267 291 | -218 708 | 71 419 | -11 992 | 1097 | -52 | 1 |
| 266 939 | -218 676 | 71 419 | -11 992 | 1097 | -52 | 1 |
| 267 003 | -218 676 | 71 419 | -11 992 | 1097 | -52 | 1 |
| 266 651 | -218 644 | 71 419 | -11 992 | 1097 | -52 | 1 |
| 268 171 | -218 964 | 71 435 | -11 992 | 1097 | -52 | 1 |
| 268 235 | -218 964 | 71 435 | -11 992 | 1097 | -52 | 1 |
| 267 883 | -218 932 | 71 435 | -11 992 | 1097 | -52 | 1 |
| 256 851 | -215 676 | 71 139 | -11 984 | 1097 | -52 | 1 |
| 258 147 | -215 964 | 71 155 | -11 984 | 1097 | -52 | 1 |
| 257 859 | -215 932 | 71 155 | -11 984 | 1097 | -52 | 1 |
| 259 443 | -216 252 | 71 171 | -11 984 | 1097 | -52 | 1 |
| 259 155 | -216 220 | 71 171 | -11 984 | 1097 | -52 | 1 |
| 258 867 | -216 188 | 71 171 | -11 984 | 1097 | -52 | 1 |
| 261 027 | -216 572 | 71 187 | -11 984 | 1097 | -52 | 1 |
| 260 739 | -216 540 | 71 187 | -11 984 | 1097 | -52 | 1 |
| 260 387 | -216 508 | 71 187 | -11 984 | 1097 | -52 | 1 |
| 260 451 | -216 508 | 71 187 | -11 984 | 1097 | -52 | 1 |
| 260 099 | -216 476 | 71 187 | -11 984 | 1097 | -52 | 1 |
| 260 163 | -216 476 | 71 187 | -11 984 | 1097 | -52 | 1 |
| 259 875 | -216 444 | 71 187 | -11 984 | 1097 | -52 | 1 |
| 262 035 | -216 828 | 71 203 | -11 984 | 1097 | -52 | 1 |
| 261 683 | -216 796 | 71 203 | -11 984 | 1097 | -52 | 1 |
| 261 747 | -216 796 | 71 203 | -11 984 | 1097 | -52 | 1 |
| 261 395 | -216 764 | 71 203 | -11 984 | 1097 | -52 | 1 |
| 261 459 | -216 764 | 71 203 | -11 984 | 1097 | -52 | 1 |
| 261 107 | -216 732 | 71 203 | -11 984 | 1097 | -52 | 1 |
| 262 979 | -217 084 | 71 219 | -11 984 | 1097 | -52 | 1 |
| 262 691 | -217 052 | 71 219 | -11 984 | 1097 | -52 | 1 |
| 262 339 | -217 020 | 71 219 | -11 984 | 1097 | -52 | 1 |
| 263 923 | -217 340 | 71 235 | -11 984 | 1097 | -52 | 1 |
| 252 315 | -214 020 | 70 939 | -11 976 | 1097 | -52 | 1 |
| 253 899 | -214 340 | 70 955 | -11 976 | 1097 | -52 | 1 |
| 253 611 | -214 308 | 70 955 | -11 976 | 1097 | -52 | 1 |
| 253 323 | -214 276 | 70 955 | -11 976 | 1097 | -52 | 1 |
| 255 195 | -214 628 | 70 971 | -11 976 | 1097 | -52 | 1 |
| 254 907 | -214 596 | 70 971 | -11 976 | 1097 | -52 | 1 |
| 254 555 | -214 564 | 70 971 | -11 976 | 1097 | -52 | 1 |
| 254 619 | -214 564 | 70 971 | -11 976 | 1097 | -52 | 1 |
| 254 331 | -214 532 | 70 971 | -11 976 | 1097 | -52 | 1 |
| 256 491 | -214 916 | 70 987 | -11 976 | 1097 | -52 | 1 |
| 256 203 | -214 884 | 70 987 | -11 976 | 1097 | -52 | 1 |
| 255 851 | -214 852 | 70 987 | -11 976 | 1097 | -52 | 1 |
| 255 915 | -214 852 | 70 987 | -11 976 | 1097 | -52 | 1 |
| 255 563 | -214 820 | 70 987 | -11 976 | 1097 | -52 | 1 |
| 257 435 | -215 172 | 71 003 | -11 976 | 1097 | -52 | 1 |
| 257 499 | -215 172 | 71 003 | -11 976 | 1097 | -52 | 1 |
| 257 147 | -215 112 | 71 003 | -11 976 | 1097 | -52 | 1 |

|        |         |       |        |      |     |   |
|--------|---------|-------|--------|------|-----|---|
| 257147 | -215140 | 71003 | -11976 | 1097 | -52 | 1 |
| 248067 | -212396 | 70739 | -11968 | 1097 | -52 | 1 |
| 247779 | -212364 | 70739 | -11968 | 1097 | -52 | 1 |
| 249363 | -212684 | 70755 | -11968 | 1097 | -52 | 1 |
| 249075 | -212652 | 70755 | -11968 | 1097 | -52 | 1 |
| 248787 | -212620 | 70755 | -11968 | 1097 | -52 | 1 |
| 250947 | -213004 | 70771 | -11968 | 1097 | -52 | 1 |
| 250659 | -212972 | 70771 | -11968 | 1097 | -52 | 1 |
| 250371 | -212940 | 70771 | -11968 | 1097 | -52 | 1 |
| 250019 | -212908 | 70771 | -11968 | 1097 | -52 | 1 |
| 252243 | -213292 | 70787 | -11968 | 1097 | -52 | 1 |
| 251955 | -213260 | 70787 | -11968 | 1097 | -52 | 1 |
| 251603 | -213228 | 70787 | -11968 | 1097 | -52 | 1 |
| 242235 | -210452 | 70523 | -11960 | 1097 | -52 | 1 |
| 243531 | -210740 | 70539 | -11960 | 1097 | -52 | 1 |
| 243243 | -210708 | 70539 | -11960 | 1097 | -52 | 1 |
| 245115 | -211060 | 70555 | -11960 | 1097 | -52 | 1 |
| 244827 | -211028 | 70555 | -11960 | 1097 | -52 | 1 |
| 244475 | -210996 | 70555 | -11960 | 1097 | -52 | 1 |
| 246411 | -211348 | 70571 | -11960 | 1097 | -52 | 1 |
| 247995 | -211668 | 70587 | -11960 | 1097 | -52 | 1 |
| 237987 | -208828 | 70323 | -11952 | 1097 | -52 | 1 |
| 237699 | -208796 | 70323 | -11952 | 1097 | -52 | 1 |
| 239283 | -209116 | 70339 | -11952 | 1097 | -52 | 1 |
| 232155 | -206884 | 70107 | -11944 | 1097 | -52 | 1 |

**Dimensions[A9]**

{111, 7}

**gpart[chi9]**

{13399347, -10822572, 3511299, -588032, 53753, -2548, 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 && Array[n, 111].A9 == gpart[chi9], Array[n, 111], Integers]

{{n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 5, n[5] → 0, n[6] → 0, n[7] → 13, n[8] → 0,
n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 5, 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] → 25, 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] → 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}}

```

4, 7, 12, 24, 45

```

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 && Array[n, 111].A9 == gpart[chi9], Array[n, 111], 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 && Array[n, 111].A9 == gpart[chi9], Array[n, 111], 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 && Array[n, 111].A9 == gpart[chi9], Array[n, 111], Integers]

{{n[1] → 0, n[2] → 0, n[3] → 0, n[4] → 4, n[5] → 0, n[6] → 0, n[7] → 14, n[8] → 0,
n[9] → 0, n[10] → 0, n[11] → 0, n[12] → 4, 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] → 2,
n[23] → 0, n[24] → 25, 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} }

list9[[4, 7, 12, 24]] * mu[chi9] // Factor
{(-11 + x)^2 (-9 + x)^9 (-7 + x) (5 + x)^31 (-39 709 + 26 113 x - 6534 x^2 + 782 x^3 - 45 x^4 + x^5),
(-11 + x)^2 (-9 + x)^9 (5 + x)^31
(270 467 - 220 076 x + 71 603 x^2 - 12 000 x^3 + 1097 x^4 - 52 x^5 + x^6), (-11 + x)^2
(-9 + x)^9 (5 + x)^31 (271 763 - 220 364 x + 71 619 x^2 - 12 000 x^3 + 1097 x^4 - 52 x^5 + x^6),
(-11 + x)^3 (-9 + x)^9 (-7 + x) (5 + x)^31 (87 - 20 x + x^2) (41 - 14 x + x^2)} }

Array[m, 7].Transpose[A9]
{276 731 m[1] - 222 212 m[2] + 71 835 m[3] - 12 008 m[4] + 1097 m[5] - 52 m[6] + m[7],
276 795 m[1] - 222 212 m[2] + 71 835 m[3] - 12 008 m[4] + 1097 m[5] - 52 m[6] + m[7],

```

$276\ 507\ m[1] - 222\ 180\ m[2] + 71\ 835\ m[3] - 12\ 008\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $277\ 963\ m[1] - 222\ 500\ m[2] + 71\ 851\ m[3] - 12\ 008\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $277\ 739\ m[1] - 222\ 468\ m[2] + 71\ 851\ m[3] - 12\ 008\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $278\ 971\ m[1] - 222\ 756\ m[2] + 71\ 867\ m[3] - 12\ 008\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $270\ 467\ m[1] - 220\ 076\ m[2] + 71\ 603\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $270\ 531\ m[1] - 220\ 076\ m[2] + 71\ 603\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $270\ 179\ m[1] - 220\ 044\ m[2] + 71\ 603\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $270\ 243\ m[1] - 220\ 044\ m[2] + 71\ 603\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $269\ 955\ m[1] - 220\ 012\ m[2] + 71\ 603\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $271\ 763\ m[1] - 220\ 364\ m[2] + 71\ 619\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $271\ 475\ m[1] - 220\ 332\ m[2] + 71\ 619\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $271\ 539\ m[1] - 220\ 332\ m[2] + 71\ 619\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $271\ 187\ m[1] - 220\ 300\ m[2] + 71\ 619\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $271\ 251\ m[1] - 220\ 300\ m[2] + 71\ 619\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $270\ 963\ m[1] - 220\ 268\ m[2] + 71\ 619\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $272\ 419\ m[1] - 220\ 588\ m[2] + 71\ 635\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $272\ 483\ m[1] - 220\ 588\ m[2] + 71\ 635\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $272\ 547\ m[1] - 220\ 588\ m[2] + 71\ 635\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $272\ 195\ m[1] - 220\ 556\ m[2] + 71\ 635\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $273\ 715\ m[1] - 220\ 876\ m[2] + 71\ 651\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $273\ 427\ m[1] - 220\ 844\ m[2] + 71\ 651\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $274\ 659\ m[1] - 221\ 132\ m[2] + 71\ 667\ m[3] - 12\ 000\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $262\ 395\ m[1] - 217\ 588\ m[2] + 71\ 355\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $263\ 979\ m[1] - 217\ 908\ m[2] + 71\ 371\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $263\ 691\ m[1] - 217\ 876\ m[2] + 71\ 371\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $263\ 403\ m[1] - 217\ 844\ m[2] + 71\ 371\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $265\ 275\ m[1] - 218\ 196\ m[2] + 71\ 387\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $264\ 987\ m[1] - 218\ 164\ m[2] + 71\ 387\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $264\ 635\ m[1] - 218\ 132\ m[2] + 71\ 387\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $264\ 699\ m[1] - 218\ 132\ m[2] + 71\ 387\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $264\ 411\ m[1] - 218\ 100\ m[2] + 71\ 387\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $266\ 283\ m[1] - 218\ 452\ m[2] + 71\ 403\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $265\ 931\ m[1] - 218\ 420\ m[2] + 71\ 403\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $265\ 995\ m[1] - 218\ 420\ m[2] + 71\ 403\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $265\ 643\ m[1] - 218\ 388\ m[2] + 71\ 403\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $265\ 707\ m[1] - 218\ 388\ m[2] + 71\ 403\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $265\ 419\ m[1] - 218\ 356\ m[2] + 71\ 403\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $267\ 227\ m[1] - 218\ 708\ m[2] + 71\ 419\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $267\ 291\ m[1] - 218\ 708\ m[2] + 71\ 419\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $266\ 939\ m[1] - 218\ 676\ m[2] + 71\ 419\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $267\ 003\ m[1] - 218\ 676\ m[2] + 71\ 419\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $266\ 651\ m[1] - 218\ 644\ m[2] + 71\ 419\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $268\ 171\ m[1] - 218\ 964\ m[2] + 71\ 435\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $268\ 235\ m[1] - 218\ 964\ m[2] + 71\ 435\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $267\ 883\ m[1] - 218\ 932\ m[2] + 71\ 435\ m[3] - 11\ 992\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $256\ 851\ m[1] - 215\ 676\ m[2] + 71\ 139\ m[3] - 11\ 984\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,  
 $258\ 147\ m[1] - 215\ 964\ m[2] + 71\ 155\ m[3] - 11\ 984\ m[4] + 1097\ m[5] - 52\ m[6] + m[7]$ ,

257 859  $m[1]$  - 215 932  $m[2]$  + 71 155  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 259 443  $m[1]$  - 216 252  $m[2]$  + 71 171  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 259 155  $m[1]$  - 216 220  $m[2]$  + 71 171  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 258 867  $m[1]$  - 216 188  $m[2]$  + 71 171  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 261 027  $m[1]$  - 216 572  $m[2]$  + 71 187  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 260 739  $m[1]$  - 216 540  $m[2]$  + 71 187  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 260 387  $m[1]$  - 216 508  $m[2]$  + 71 187  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 260 451  $m[1]$  - 216 508  $m[2]$  + 71 187  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 260 099  $m[1]$  - 216 476  $m[2]$  + 71 187  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 260 163  $m[1]$  - 216 476  $m[2]$  + 71 187  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 259 875  $m[1]$  - 216 444  $m[2]$  + 71 187  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 262 035  $m[1]$  - 216 828  $m[2]$  + 71 203  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 261 683  $m[1]$  - 216 796  $m[2]$  + 71 203  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 261 747  $m[1]$  - 216 796  $m[2]$  + 71 203  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 261 395  $m[1]$  - 216 764  $m[2]$  + 71 203  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 261 459  $m[1]$  - 216 764  $m[2]$  + 71 203  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 261 107  $m[1]$  - 216 732  $m[2]$  + 71 203  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 262 979  $m[1]$  - 217 084  $m[2]$  + 71 219  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 262 691  $m[1]$  - 217 052  $m[2]$  + 71 219  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 262 339  $m[1]$  - 217 020  $m[2]$  + 71 219  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 263 923  $m[1]$  - 217 340  $m[2]$  + 71 235  $m[3]$  - 11 984  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 252 315  $m[1]$  - 214 020  $m[2]$  + 70 939  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 253 899  $m[1]$  - 214 340  $m[2]$  + 70 955  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 253 611  $m[1]$  - 214 308  $m[2]$  + 70 955  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 253 323  $m[1]$  - 214 276  $m[2]$  + 70 955  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 255 195  $m[1]$  - 214 628  $m[2]$  + 70 971  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 254 907  $m[1]$  - 214 596  $m[2]$  + 70 971  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 254 555  $m[1]$  - 214 564  $m[2]$  + 70 971  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 254 619  $m[1]$  - 214 564  $m[2]$  + 70 971  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 254 331  $m[1]$  - 214 532  $m[2]$  + 70 971  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 256 491  $m[1]$  - 214 916  $m[2]$  + 70 987  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 256 203  $m[1]$  - 214 884  $m[2]$  + 70 987  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 255 851  $m[1]$  - 214 852  $m[2]$  + 70 987  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 255 915  $m[1]$  - 214 852  $m[2]$  + 70 987  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 255 563  $m[1]$  - 214 820  $m[2]$  + 70 987  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 257 435  $m[1]$  - 215 172  $m[2]$  + 71 003  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 257 499  $m[1]$  - 215 172  $m[2]$  + 71 003  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 257 147  $m[1]$  - 215 140  $m[2]$  + 71 003  $m[3]$  - 11 976  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 248 067  $m[1]$  - 212 396  $m[2]$  + 70 739  $m[3]$  - 11 968  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 247 779  $m[1]$  - 212 364  $m[2]$  + 70 739  $m[3]$  - 11 968  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 249 363  $m[1]$  - 212 684  $m[2]$  + 70 755  $m[3]$  - 11 968  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 249 075  $m[1]$  - 212 652  $m[2]$  + 70 755  $m[3]$  - 11 968  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 248 787  $m[1]$  - 212 620  $m[2]$  + 70 755  $m[3]$  - 11 968  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 250 947  $m[1]$  - 213 004  $m[2]$  + 70 771  $m[3]$  - 11 968  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 250 659  $m[1]$  - 212 972  $m[2]$  + 70 771  $m[3]$  - 11 968  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 250 371  $m[1]$  - 212 940  $m[2]$  + 70 771  $m[3]$  - 11 968  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,  
 250 019  $m[1]$  - 212 908  $m[2]$  + 70 771  $m[3]$  - 11 968  $m[4]$  + 1097  $m[5]$  - 52  $m[6]$  +  $m[7]$  ,

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252 243 m[1] - 213 292 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
251 955 m[1] - 213 260 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
251 603 m[1] - 213 228 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
242 235 m[1] - 210 452 m[2] + 70 523 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
243 531 m[1] - 210 740 m[2] + 70 539 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
243 243 m[1] - 210 708 m[2] + 70 539 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
245 115 m[1] - 211 060 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
244 827 m[1] - 211 028 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
244 475 m[1] - 210 996 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
246 411 m[1] - 211 348 m[2] + 70 571 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
247 995 m[1] - 211 668 m[2] + 70 587 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
237 987 m[1] - 208 828 m[2] + 70 323 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
237 699 m[1] - 208 796 m[2] + 70 323 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
239 283 m[1] - 209 116 m[2] + 70 339 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ,
232 155 m[1] - 206 884 m[2] + 70 107 m[3] - 11 944 m[4] + 1097 m[5] - 52 m[6] + m[7] }

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**Array[m, 7].gpart[chi9]**

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13 399 347 m[1] - 10 822 572 m[2] + 3 511 299 m[3] -
588 032 m[4] + 53 753 m[5] - 2548 m[6] + 49 m[7]

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FindInstance[13 399 347 m[1] - 10 822 572 m[2] +
3 511 299 m[3] - 588 032 m[4] + 53 753 m[5] - 2548 m[6] + 49 m[7] < 0 &&
276 731 m[1] - 222 212 m[2] + 71 835 m[3] - 12 008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
276 795 m[1] - 222 212 m[2] + 71 835 m[3] - 12 008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
276 507 m[1] - 222 180 m[2] + 71 835 m[3] - 12 008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
277 963 m[1] - 222 500 m[2] + 71 851 m[3] - 12 008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
277 739 m[1] - 222 468 m[2] + 71 851 m[3] - 12 008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
278 971 m[1] - 222 756 m[2] + 71 867 m[3] - 12 008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
270 467 m[1] - 220 076 m[2] + 71 603 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
270 531 m[1] - 220 076 m[2] + 71 603 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
270 179 m[1] - 220 044 m[2] + 71 603 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
270 243 m[1] - 220 044 m[2] + 71 603 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
269 955 m[1] - 220 012 m[2] + 71 603 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
271 763 m[1] - 220 364 m[2] + 71 619 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
271 475 m[1] - 220 332 m[2] + 71 619 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
271 539 m[1] - 220 332 m[2] + 71 619 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
271 187 m[1] - 220 300 m[2] + 71 619 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
271 251 m[1] - 220 300 m[2] + 71 619 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
270 963 m[1] - 220 268 m[2] + 71 619 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
272 419 m[1] - 220 588 m[2] + 71 635 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
272 483 m[1] - 220 588 m[2] + 71 635 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
272 547 m[1] - 220 588 m[2] + 71 635 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
272 195 m[1] - 220 556 m[2] + 71 635 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
273 715 m[1] - 220 876 m[2] + 71 651 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
273 427 m[1] - 220 844 m[2] + 71 651 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
274 659 m[1] - 221 132 m[2] + 71 667 m[3] - 12 000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
262 395 m[1] - 217 588 m[2] + 71 355 m[3] - 11 992 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&

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253 611 m[1] - 214 308 m[2] + 70 955 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
253 323 m[1] - 214 276 m[2] + 70 955 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
255 195 m[1] - 214 628 m[2] + 70 971 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
254 907 m[1] - 214 596 m[2] + 70 971 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
254 555 m[1] - 214 564 m[2] + 70 971 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
254 619 m[1] - 214 564 m[2] + 70 971 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
254 331 m[1] - 214 532 m[2] + 70 971 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
256 491 m[1] - 214 916 m[2] + 70 987 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
256 203 m[1] - 214 884 m[2] + 70 987 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
255 851 m[1] - 214 852 m[2] + 70 987 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
255 915 m[1] - 214 852 m[2] + 70 987 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
255 563 m[1] - 214 820 m[2] + 70 987 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
257 435 m[1] - 215 172 m[2] + 71 003 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
257 499 m[1] - 215 172 m[2] + 71 003 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
257 147 m[1] - 215 140 m[2] + 71 003 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
248 067 m[1] - 212 396 m[2] + 70 739 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
247 779 m[1] - 212 364 m[2] + 70 739 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
249 363 m[1] - 212 684 m[2] + 70 755 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
249 075 m[1] - 212 652 m[2] + 70 755 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
248 787 m[1] - 212 620 m[2] + 70 755 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
250 947 m[1] - 213 004 m[2] + 70 771 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
250 659 m[1] - 212 972 m[2] + 70 771 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
250 371 m[1] - 212 940 m[2] + 70 771 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
250 019 m[1] - 212 908 m[2] + 70 771 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
252 243 m[1] - 213 292 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
251 955 m[1] - 213 260 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
251 603 m[1] - 213 228 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
242 235 m[1] - 210 452 m[2] + 70 523 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
243 531 m[1] - 210 740 m[2] + 70 539 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
243 243 m[1] - 210 708 m[2] + 70 539 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
245 115 m[1] - 211 060 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
244 827 m[1] - 211 028 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
244 475 m[1] - 210 996 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
246 411 m[1] - 211 348 m[2] + 70 571 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
247 995 m[1] - 211 668 m[2] + 70 587 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
237 987 m[1] - 208 828 m[2] + 70 323 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
237 699 m[1] - 208 796 m[2] + 70 323 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
239 283 m[1] - 209 116 m[2] + 70 339 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
232 155 m[1] - 206 884 m[2] + 70 107 m[3] - 11 944 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{ }

```

```

FindInstance[13 399 347 m[1] - 10 822 572 m[2] +
3 511 299 m[3] - 588 032 m[4] + 53 753 m[5] - 2548 m[6] + 49 m[7] < 0 &&
276 731 m[1] - 222 212 m[2] + 71 835 m[3] - 12 008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&

```





```

250 019 m[1] - 212 908 m[2] + 70 771 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
252 243 m[1] - 213 292 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
251 955 m[1] - 213 260 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
251 603 m[1] - 213 228 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
242 235 m[1] - 210 452 m[2] + 70 523 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
243 531 m[1] - 210 740 m[2] + 70 539 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
243 243 m[1] - 210 708 m[2] + 70 539 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
245 115 m[1] - 211 060 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
244 827 m[1] - 211 028 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
244 475 m[1] - 210 996 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
246 411 m[1] - 211 348 m[2] + 70 571 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
247 995 m[1] - 211 668 m[2] + 70 587 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
237 987 m[1] - 208 828 m[2] + 70 323 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
237 699 m[1] - 208 796 m[2] + 70 323 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
239 283 m[1] - 209 116 m[2] + 70 339 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
232 155 m[1] - 206 884 m[2] + 70 107 m[3] - 11 944 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{ {m[1] → 221 701, m[2] → 2 290 900, m[3] → 23 278 501,
  m[4] → 236 406 108, m[5] → 0, m[6] → 0, m[7] → 1 614 272 396 498} }

Array[m, 7] /. {m[1] → 221 701, m[2] → 2 290 900, m[3] → 23 278 501,
  m[4] → 236 406 108, m[5] → 0, m[6] → 0, m[7] → 1 614 272 396 498}
{221 701, 2 290 900, 23 278 501, 236 406 108, 0, 0, 1 614 272 396 498}

GCD[221 701, 2 290 900, 23 278 501, 236 406 108, 0, 0, 1 614 272 396 498]
1

Reverse[{221 701, 2 290 900, 23 278 501, 236 406 108, 0, 0, 1 614 272 396 498}]
{1 614 272 396 498, 0, 0, 236 406 108, 23 278 501, 2 290 900, 221 701}

{221 701, 2 290 900, 23 278 501, 236 406 108, 0, 0, 1 614 272 396 498}.gpart[chi9]
- 13 353 808

```

```
{221701, 2290900, 23278501, 236406108, 0, 0, 1614272396498}.Transpose[A9]
{5039600, 19228464, 28687376, -9147952, 14499824, 312272, 303568, 14492432,
9762480, 23951344, 33410256, 304880, 9763792, 23952656, 19222704,
33411568, 42870480, 5035152, 19224016, 33412880, 28682928, 5036464,
14495376, 307824, 28672912, 19215312, 28674224, 38133136, 19216624,
28675536, 23945584, 38134448, 47593360, 28676848, 23946896, 38135760,
33405808, 47594672, 57053584, 23948208, 38137072, 33407120, 47595984,
42866032, 19219568, 33408432, 28678480, 42856016, 42857328, 52316240,
42858640, 52317552, 61776464, 33401040, 42859952, 38130000, 52318864,
47588912, 61777776, 71236688, 42861264, 38131312, 52320176, 47590224,
61779088, 57049136, 38132624, 47591536, 42861584, 33403984, 66499344,
57041744, 66500656, 75959568, 57043056, 66501968, 61772016, 75960880,
85419792, 57044368, 66503280, 61773328, 75962192, 71232240, 52315728,
66504592, 61774640, 80683760, 90142672, 80685072, 90143984, 99602896,
71227472, 80686384, 90145296, 85415344, 71228784, 80687696, 75957744,
104325776, 104327088, 113786000, 94869488, 104328400, 99598448,
94870800, 85413200, 118510192, 127969104, 118511504, 142152208}
```

```
FindInstance[13399347 m[1] - 10822572 m[2] +
3511299 m[3] - 588032 m[4] + 53753 m[5] - 2548 m[6] + 49 m[7] < 0 &&
276731 m[1] - 222212 m[2] + 71835 m[3] - 12008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
276795 m[1] - 222212 m[2] + 71835 m[3] - 12008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
276507 m[1] - 222180 m[2] + 71835 m[3] - 12008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
277963 m[1] - 222500 m[2] + 71851 m[3] - 12008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
277739 m[1] - 222468 m[2] + 71851 m[3] - 12008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
278971 m[1] - 222756 m[2] + 71867 m[3] - 12008 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
270467 m[1] - 220076 m[2] + 71603 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] < 0 &&
270531 m[1] - 220076 m[2] + 71603 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
270179 m[1] - 220044 m[2] + 71603 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
270243 m[1] - 220044 m[2] + 71603 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
269955 m[1] - 220012 m[2] + 71603 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
271763 m[1] - 220364 m[2] + 71619 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
271475 m[1] - 220332 m[2] + 71619 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
271539 m[1] - 220332 m[2] + 71619 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
271187 m[1] - 220300 m[2] + 71619 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
271251 m[1] - 220300 m[2] + 71619 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
270963 m[1] - 220268 m[2] + 71619 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
272419 m[1] - 220588 m[2] + 71635 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
272483 m[1] - 220588 m[2] + 71635 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
272547 m[1] - 220588 m[2] + 71635 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
272195 m[1] - 220556 m[2] + 71635 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
273715 m[1] - 220876 m[2] + 71651 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
273427 m[1] - 220844 m[2] + 71651 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
274659 m[1] - 221132 m[2] + 71667 m[3] - 12000 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
```



```

253 899 m[1] - 214 340 m[2] + 70 955 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
253 611 m[1] - 214 308 m[2] + 70 955 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
253 323 m[1] - 214 276 m[2] + 70 955 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
255 195 m[1] - 214 628 m[2] + 70 971 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
254 907 m[1] - 214 596 m[2] + 70 971 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
254 555 m[1] - 214 564 m[2] + 70 971 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
254 619 m[1] - 214 564 m[2] + 70 971 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
254 331 m[1] - 214 532 m[2] + 70 971 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
256 491 m[1] - 214 916 m[2] + 70 987 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
256 203 m[1] - 214 884 m[2] + 70 987 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
255 851 m[1] - 214 852 m[2] + 70 987 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
255 915 m[1] - 214 852 m[2] + 70 987 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
255 563 m[1] - 214 820 m[2] + 70 987 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
257 435 m[1] - 215 172 m[2] + 71 003 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
257 499 m[1] - 215 172 m[2] + 71 003 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
257 147 m[1] - 215 140 m[2] + 71 003 m[3] - 11 976 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
248 067 m[1] - 212 396 m[2] + 70 739 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
247 779 m[1] - 212 364 m[2] + 70 739 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
249 363 m[1] - 212 684 m[2] + 70 755 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
249 075 m[1] - 212 652 m[2] + 70 755 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
248 787 m[1] - 212 620 m[2] + 70 755 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
250 947 m[1] - 213 004 m[2] + 70 771 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
250 659 m[1] - 212 972 m[2] + 70 771 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
250 371 m[1] - 212 940 m[2] + 70 771 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
250 019 m[1] - 212 908 m[2] + 70 771 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
252 243 m[1] - 213 292 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
251 955 m[1] - 213 260 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
251 603 m[1] - 213 228 m[2] + 70 787 m[3] - 11 968 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
242 235 m[1] - 210 452 m[2] + 70 523 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
243 531 m[1] - 210 740 m[2] + 70 539 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
243 243 m[1] - 210 708 m[2] + 70 539 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
245 115 m[1] - 211 060 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
244 827 m[1] - 211 028 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
244 475 m[1] - 210 996 m[2] + 70 555 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
246 411 m[1] - 211 348 m[2] + 70 571 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
247 995 m[1] - 211 668 m[2] + 70 587 m[3] - 11 960 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
237 987 m[1] - 208 828 m[2] + 70 323 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
237 699 m[1] - 208 796 m[2] + 70 323 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
239 283 m[1] - 209 116 m[2] + 70 339 m[3] - 11 952 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0 &&
232 155 m[1] - 206 884 m[2] + 70 107 m[3] - 11 944 m[4] + 1097 m[5] - 52 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{ {m[1] → 110 851, m[2] → 1 071 550, m[3] → 10 456 851,
  m[4] → 103 053 553, m[5] → 0, m[6] → 0, m[7] → 693 739 600 051} }

```

```

Array[m, 7] /. {m[1] → 110 851, m[2] → 1 071 550, m[3] → 10 456 851,
    m[4] → 103 053 553, m[5] → 0, m[6] → 0, m[7] → 693 739 600 051}
{110 851, 1 071 550, 10 456 851, 103 053 553, 0, 0, 693 739 600 051}

GCD[110 851, 1 071 550, 10 456 851, 103 053 553, 0, 0, 693 739 600 051]
1

Reverse[{110 851, 1 071 550, 10 456 851, 103 053 553, 0, 0, 693 739 600 051}]
{693 739 600 051, 0, 0, 103 053 553, 10 456 851, 1 071 550, 110 851}

{110 851, 1 071 550, 10 456 851, 103 053 553, 0, 0, 693 739 600 051}.gpart[chi9]
-12 028 051

{110 851, 1 071 550, 10 456 851, 103 053 553, 0, 0, 693 739 600 051}.Transpose[A9]
{5 066 693, 12 161 157, 14 525 669, 338 341, 9 797 317, 5 068 965, -2 034 179, 5 060 285,
330 333, 7 424 797, 9 789 309, 331 933, 2 696 445, 9 790 909, 5 060 957, 12 155 421,
14 519 933, 332 605, 7 427 069, 14 521 533, 9 791 581, 2 698 717, 5 063 229, 334 877,
322 325, 323 925, 2 688 437, 5 052 949, 2 690 037, 5 054 549, 324 597, 7 419 061,
9 783 573, 7 420 661, 2 690 709, 9 785 173, 5 055 221, 12 149 685, 14 514 197,
5 056 821, 12 151 285, 7 421 333, 14 515 797, 9 785 845, 2 692 981, 9 787 445,
5 057 493, 316 589, 2 682 701, 5 047 213, 5 048 813, 7 413 325, 9 777 837, 5 050 413,
7 414 925, 2 684 973, 9 779 437, 5 049 485, 12 143 949, 14 508 461, 9 781 037,
5 051 085, 12 145 549, 7 415 597, 14 510 061, 9 780 109, 7 417 197, 9 781 709,
5 051 757, 5 053 357, 5 041 477, 5 043 077, 7 407 589, 9 772 101, 7 409 189, 9 773 701,
5 043 749, 12 138 213, 14 502 725, 9 775 301, 12 139 813, 7 409 861, 14 504 325,
9 774 373, 7 411 461, 14 505 925, 9 775 973, 7 401 853, 9 766 365, 9 767 965,
12 132 477, 14 496 989, 9 769 565, 12 134 077, 14 498 589, 9 768 637, 12 135 677,
14 500 189, 9 770 237, 9 760 629, 12 126 741, 14 491 253, 12 128 341, 14 492 853,
9 762 901, 14 494 453, 14 496 053, 12 121 005, 14 485 517, 14 487 117, 14 479 781}

```

```

anglesq9 = anglesquaredmat[chi9, list9] // FullSimplify;
Dimensions[anglesq9]
{111, 7}

angle9 = Sqrt[anglesq9] // FullSimplify;
angle9 // MatrixForm

```

|                             |  |                       |                       |                                 |
|-----------------------------|--|-----------------------|-----------------------|---------------------------------|
| $\sqrt{\frac{14449}{1379}}$ | $\text{Root}\left[-1 + 1341 \#1^2 - 47844 \#1^4 + 255312 \#1^6 \&, 5\right]$       | 0                     | $\sqrt{\frac{2}{21}}$ | Re                              |
| $\sqrt{\frac{12385}{1182}}$ | $\text{Root}\left[-73 + 45081 \#1^2 - 2872584 \#1^4 + 10552896 \#1^6 \&, 5\right]$ | $\frac{1}{2\sqrt{6}}$ | 0                     | $\text{Root}\left[\dots\right]$ |
| $\sqrt{\frac{129}{197}}$    | $\text{Root}\left[-1 + 252 \#1^2 - 6324 \#1^4 + 18321 \#1^6 \&, 5\right]$          | 0                     | 0                     |                                 |
| $\sqrt{\frac{14457}{1379}}$ | $\text{Root}\left[-53 + 12753 \#1^2 - 726516 \#1^4 + 7914672 \#1^6 \&, 5\right]$   | 0                     | $\frac{2}{\sqrt{21}}$ | $\text{Root}\left[\dots\right]$ |
| $\sqrt{\frac{1807}{2758}}$  | $\text{Root}\left[-97 + 14499 \#1^2 - 493830 \#1^4 + 1978668 \#1^6 \&, 5\right]$   | 0                     | $\sqrt{\frac{2}{21}}$ | $\text{Root}\left[\dots\right]$ |

|                                       |  |                       |                       |                  |
|---------------------------------------|--|-----------------------|-----------------------|------------------|
| $2 \sqrt{\frac{226}{1379}}$           | $\text{Root}[-5 + 1377 \#1^2 - 76167 \#1^4 + 494667 \#1^6 \&, 4]$          | 0                     | $\frac{2}{\sqrt{21}}$ | Re               |
| $\frac{\sqrt{\frac{86323}{8274}}}{4}$ | $\text{Root}[-31 + 16839 \#1^2 - 1734264 \#1^4 + 31658688 \#1^6 \&, 6]$    | $\frac{1}{2\sqrt{6}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[$   |
| $\frac{\sqrt{\frac{3083}{1182}}}{2}$  | $\text{Root}[-25 + 8433 \#1^2 - 368280 \#1^4 + 2638224 \#1^6 \&, 5]$       | $\frac{1}{2\sqrt{3}}$ | 0                     | Ro               |
| $\frac{\sqrt{\frac{7193}{2758}}}{2}$  | $\text{Root}[-37 + 8559 \#1^2 - 252774 \#1^4 + 1978668 \#1^6 \&, 6]$       | 0                     | $\sqrt{\frac{2}{21}}$ | Ro               |
| $\frac{\sqrt{\frac{12331}{1182}}}{4}$ | $\text{Root}[-169 + 32097 \#1^2 - 747720 \#1^4 + 3517632 \#1^6 \&, 5]$     | $\frac{1}{2\sqrt{6}}$ | 0                     | Root             |
| $\frac{\sqrt{\frac{2055}{197}}}{4}$   | $\text{Root}[-353 + 46773 \#1^2 - 753300 \#1^4 + 2638224 \#1^6 \&, 5]$     | 0                     | 0                     | Root             |
| $\frac{\sqrt{\frac{21593}{8274}}}{2}$ | $\text{Root}[-13 + 3933 \#1^2 - 348192 \#1^4 + 7914672 \#1^6 \&, 4]$       | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{2}{21}}$ | Ro               |
| $\frac{\sqrt{\frac{86365}{8274}}}{4}$ | $\text{Root}[-865 + 113481 \#1^2 - 3702888 \#1^4 + 31658688 \#1^6 \&, 5]$  | $\frac{1}{2\sqrt{6}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[ -$ |
| $\frac{\sqrt{\frac{6169}{591}}}{4}$   | $\text{Root}[-3 + 471 \#1^2 - 19716 \#1^4 + 97712 \#1^6 \&, 5]$            | $\frac{1}{2\sqrt{3}}$ | 0                     | I                |
| $\frac{\sqrt{\frac{14393}{1379}}}{4}$ | $\text{Root}[-769 + 73989 \#1^2 - 1503252 \#1^4 + 7914672 \#1^6 \&, 5]$    | 0                     | $\sqrt{\frac{2}{21}}$ | $\text{Root}[$   |
| $\frac{13 \sqrt{\frac{73}{1182}}}{4}$ | $\text{Root}[-1409 + 134217 \#1^2 - 2899368 \#1^4 + 10552896 \#1^6 \&, 5]$ | $\frac{1}{2\sqrt{6}}$ | 0                     | Root             |
| $\sqrt{\frac{257}{394}}$              | $\text{Root}[-205 + 15363 \#1^2 - 229338 \#1^4 + 659556 \#1^6 \&, 5]$      | 0                     | 0                     | Root             |
| $\sqrt{\frac{14401}{1379}}/4$         | $\text{Root}[-215 + 22563 \#1^2 - 746604 \#1^4 + 7914672 \#1^6 \&, 6]$     | 0                     | $\frac{2}{\sqrt{21}}$ | Root             |
| $\sqrt{\frac{86407}{8274}}/4$         | $\text{Root}[-1963 + 198675 \#1^2 - 5671512 \#1^4 + 31658688 \#1^6 \&, 5]$ | $\frac{1}{2\sqrt{6}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[ -$ |
| $\sqrt{\frac{1543}{591}}/2$           | $\text{Root}[-47 + 16047 \#1^2 - 696384 \#1^4 + 2638224 \#1^6 \&, 4]$      | $\frac{1}{2\sqrt{3}}$ | 0                     | Root             |
| $\frac{30}{\sqrt{1379}}$              | $\text{Root}[-100 + 6930 \#1^2 - 124713 \#1^4 + 494667 \#1^6 \&, 5]$       | 0                     | $\sqrt{\frac{2}{21}}$ | Ro               |
| $\sqrt{\frac{86455}{8274}}/4$         | $\text{Root}[-179 + 54315 \#1^2 - 2644920 \#1^4 + 31658688 \#1^6 \&, 4]$   | $\frac{1}{2\sqrt{6}}$ | $\frac{2}{\sqrt{21}}$ | $\text{Root}[ -$ |
| $\sqrt{\frac{1801}{2758}}$            | $\text{Root}[-167 + 13077 \#1^2 - 309690 \#1^4 + 1978668 \#1^6 \&, 5]$     | 0                     | $\frac{2}{\sqrt{21}}$ | Root             |
| $\sqrt{\frac{901}{1379}}$             | $\text{Root}[-1 + 180 \#1^2 - 10044 \#1^4 + 164889 \#1^6 \&, 4]$           | 0                     | $\sqrt{\frac{2}{7}}$  | R                |
| $\sqrt{\frac{2045}{197}}/4$           | $\text{Root}[-47 + 13707 \#1^2 - 431892 \#1^4 + 2638224 \#1^6 \&, 6]$      | 0                     | 0                     | Root             |
| $\sqrt{\frac{6139}{591}}/4$           | $\text{Root}[-5 + 1137 \#1^2 - 70308 \#1^4 + 879408 \#1^6 \&, 6]$          | $\frac{1}{2\sqrt{3}}$ | 0                     | Ro               |
| $\sqrt{\frac{12277}{1182}}/4$         | $\text{Root}[-533 + 66933 \#1^2 - 1613736 \#1^4 + 10552896 \#1^6 \&, 6]$   | $\frac{1}{2\sqrt{6}}$ | 0                     | Root             |
| $\sqrt{\frac{1023}{394}}/2$           | $\text{Root}[-97 + 9279 \#1^2 - 148986 \#1^4 + 659556 \#1^6 \&, 6]$        | 0                     | 0                     | Ro               |
| $3 \sqrt{\frac{455}{394}}/4$          | $\text{Root}[-37 + 5349 \#1^2 - 243288 \#1^4 + 3517632 \#1^6 \&, 5]$       | $\frac{1}{2\sqrt{2}}$ | 0                     | Ro               |
| $\sqrt{\frac{3071}{1182}}/2$          | $\text{Root}[-167 + 15471 \#1^2 - 374976 \#1^4 + 2638224 \#1^6 \&, 5]$     | $\frac{1}{2\sqrt{3}}$ | 0                     | Root             |
| $\sqrt{\frac{7165}{2758}}/2$          | $\text{Root}[-61 + 7389 \#1^2 - 257796 \#1^4 + 1978668 \#1^6 \&, 6]$       | 0                     | $\sqrt{\frac{2}{21}}$ | Ro               |
| $\sqrt{\frac{12283}{1182}}$           | $\text{Root}[-1867 + 135963 \#1^2 - 2269944 \#1^4 + 10552896 \#1^6 \&, 5]$ | $\frac{1}{2}$         | 0                     | Root             |

|                                       |  |                       |                       |                 |
|---------------------------------------|--|-----------------------|-----------------------|-----------------|
| $\frac{4}{\sqrt{\frac{2047}{197}}}$   | $\text{Root}[-325 + 19857 \#1^2 - 253332 \#1^4 + 879408 \#1^6 \&, 5]$      | 0                     | 0                     | Root            |
| $\frac{4}{\sqrt{\frac{4097}{394}}}$   | $\text{Root}[-305 + 39681 \#1^2 - 1386072 \#1^4 + 10552896 \#1^6 \&, 4]$   | $\frac{1}{2\sqrt{2}}$ | 0                     | $\text{Root}[-$ |
| $\frac{4}{\sqrt{\frac{86029}{8274}}}$ | $\text{Root}[-1681 + 142065 \#1^2 - 3783240 \#1^4 + 31658688 \#1^6 \&, 6]$ | $\frac{1}{2\sqrt{6}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |
| $\frac{4}{\sqrt{\frac{6145}{591}}}$   | $\text{Root}[-373 + 26577 \#1^2 - 539028 \#1^4 + 2638224 \#1^6 \&, 5]$     | $\frac{1}{2\sqrt{3}}$ | 0                     | Root            |
| $\frac{9}{\sqrt{\frac{177}{1379}}}$   | $\text{Root}[-1483 + 89775 \#1^2 - 1523340 \#1^4 + 7914672 \#1^6 \&, 6]$   | 0                     | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |
| $\frac{4}{\sqrt{\frac{12289}{1182}}}$ | $\text{Root}[-401 + 22353 \#1^2 - 325128 \#1^4 + 1172544 \#1^6 \&, 5]$     | $\frac{1}{2\sqrt{6}}$ | 0                     | Root            |
| $8\sqrt{\frac{2}{197}}$               | $\text{Root}[-107 + 5067 \#1^2 - 57753 \#1^4 + 164889 \#1^6 \&, 5]$        | 0                     | 0                     | Ro              |
| $\frac{4}{\sqrt{\frac{43039}{4137}}}$ | $\text{Root}[-295 + 28611 \#1^2 - 860436 \#1^4 + 7914672 \#1^6 \&, 4]$     | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{2}{21}}$ | Root            |
| $\frac{4}{\sqrt{\frac{4099}{394}}}$   | $\text{Root}[-139 + 59499 \#1^2 - 2042280 \#1^4 + 10552896 \#1^6 \&, 4]$   | $\frac{1}{2\sqrt{2}}$ | 0                     | Root            |
| $\frac{4}{\sqrt{\frac{86071}{8274}}}$ | $\text{Root}[-5107 + 309123 \#1^2 - 5751864 \#1^4 + 31658688 \#1^6 \&, 5]$ | $\frac{1}{2\sqrt{6}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |
| $\frac{2}{\sqrt{\frac{1537}{591}}}$   | $\text{Root}[-179 + 12243 \#1^2 - 234360 \#1^4 + 879408 \#1^6 \&, 4]$      | $\frac{1}{2\sqrt{3}}$ | 0                     | Root            |
| $\sqrt{\frac{1793}{2758}}$            | $\text{Root}[-769 + 36783 \#1^2 - 503874 \#1^4 + 1978668 \#1^6 \&, 5]$     | 0                     | $\sqrt{\frac{2}{21}}$ | Root            |
| $\frac{4}{\sqrt{\frac{86119}{8274}}}$ | $\text{Root}[-635 + 74331 \#1^2 - 2725272 \#1^4 + 31658688 \#1^6 \&, 5]$   | $\frac{1}{2\sqrt{6}}$ | $\frac{2}{\sqrt{21}}$ | $\text{Root}[-$ |
| $\frac{2}{\sqrt{\frac{10765}{4137}}}$ | $\text{Root}[-409 + 51921 \#1^2 - 1352592 \#1^4 + 7914672 \#1^6 \&, 4]$    | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{2}{21}}$ | Root            |
| $\sqrt{\frac{897}{1379}}$             | $\text{Root}[-71 + 4122 \#1^2 - 78678 \#1^4 + 494667 \#1^6 \&, 5]$         | 0                     | $\frac{2}{\sqrt{21}}$ | Ro              |
| $\frac{4}{\sqrt{\frac{2037}{197}}}$   | $\text{Root}[-1 + 813 \#1^2 - 48732 \#1^4 + 293136 \#1^6 \&, 6]$           | 0                     | 0                     | R               |
| $\frac{4}{\sqrt{\frac{12229}{1182}}}$ | $\text{Root}[-191 + 19047 \#1^2 - 546840 \#1^4 + 3517632 \#1^6 \&, 6]$     | $\frac{1}{2\sqrt{6}}$ | 0                     | Root            |
| $\frac{2}{\sqrt{\frac{1019}{394}}}$   | $\text{Root}[-155 + 9387 \#1^2 - 150660 \#1^4 + 659556 \#1^6 \&, 6]$       | 0                     | 0                     | Roo             |
| $\frac{2}{\sqrt{\frac{3859}{1182}}}$  | $\text{Root}[-79 + 5655 \#1^2 - 127224 \#1^4 + 879408 \#1^6 \&, 6]$        | $\frac{1}{2\sqrt{3}}$ | 0                     | Ro              |
| $\frac{4}{\sqrt{\frac{12235}{1182}}}$ | $\text{Root}[-2939 + 153459 \#1^2 - 2296728 \#1^4 + 10552896 \#1^6 \&, 6]$ | $\frac{1}{2\sqrt{6}}$ | 0                     | $\text{Root}[-$ |
| $\frac{4}{\sqrt{\frac{2039}{197}}}$   | $\text{Root}[-1525 + 66825 \#1^2 - 766692 \#1^4 + 2638224 \#1^6 \&, 5]$    | 0                     | 0                     | Root            |
| $\frac{2}{\sqrt{\frac{3061}{1182}}}$  | $\text{Root}[-1 + 180 \#1^2 - 10044 \#1^4 + 164889 \#1^6 \&, 4]$           | $\frac{1}{\sqrt{6}}$  | 0                     | R               |
| $\frac{4}{\sqrt{\frac{4081}{394}}}$   | $\text{Root}[-97 + 6825 \#1^2 - 156984 \#1^4 + 1172544 \#1^6 \&, 5]$       | $\frac{1}{2\sqrt{2}}$ | 0                     | Roo             |
| $\frac{4}{\sqrt{\frac{85693}{8274}}}$ | $\text{Root}[-97 + 104121 \#1^2 - 3863592 \#1^4 + 31658688 \#1^6 \&, 6]$   | $\frac{1}{2\sqrt{6}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |
| $\frac{4}{\sqrt{\frac{6121}{591}}}$   | $\text{Root}[-689 + 34893 \#1^2 - 545724 \#1^4 + 2638224 \#1^6 \&, 5]$     | $\frac{1}{2\sqrt{3}}$ | 0                     | Root            |
| $\frac{4}{\sqrt{\frac{14281}{1379}}}$ | $\text{Root}[-1597 + 88929 \#1^2 - 1543428 \#1^4 + 7914672 \#1^6 \&, 6]$   | 0                     | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |
| $\frac{4}{\sqrt{1379}}$               |  |                       |                       |                 |

|                                    |  |                       |                       |                 |
|------------------------------------|--|-----------------------|-----------------------|-----------------|
| $\frac{\sqrt{\frac{1182}{4}}}{4}$  | $\text{Root}[-5905 + 245961 \#1^2 - 2952936 \#1^4 + 10552896 \#1^6 \&, 5]$ | $\frac{1}{2\sqrt{6}}$ | 0                     | $\text{Root}[-$ |
| $\sqrt{\frac{255}{394}}$           | $\text{Root}[-73 + 2643 \#1^2 - 25854 \#1^4 + 73284 \#1^6 \&, 5]$          | 0                     | 0                     | $\text{Ro}$     |
| $\frac{35}{4}\sqrt{\frac{5}{591}}$ | $\text{Root}[-5 + 3153 \#1^2 - 108252 \#1^4 + 879408 \#1^6 \&, 4]$         | $\frac{1}{\sqrt{6}}$  | 0                     | $\text{Ro}$     |
| $\sqrt{\frac{42871}{4137}}$        | $\text{Root}[-331 + 30951 \#1^2 - 880524 \#1^4 + 7914672 \#1^6 \&, 6]$     | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}$   |
| $\frac{\sqrt{4083}}{4}$            | $\text{Root}[-53 + 3501 \#1^2 - 66744 \#1^4 + 340416 \#1^6 \&, 4]$         | $\frac{1}{2\sqrt{2}}$ | 0                     | $\text{Ro}$     |
| $\sqrt{\frac{85735}{8274}}$        | $\text{Root}[-7003 + 353043 \#1^2 - 5832216 \#1^4 + 31658688 \#1^6 \&, 6]$ | $\frac{1}{2\sqrt{6}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |
| $\sqrt{\frac{1531}{591}}$          | $\text{Root}[-1147 + 51867 \#1^2 - 709776 \#1^4 + 2638224 \#1^6 \&, 5]$    | $\frac{1}{2\sqrt{3}}$ | 0                     | $\text{Root}[$  |
| $\sqrt{\frac{893}{1379}}$          | $\text{Root}[-265 + 10422 \#1^2 - 127224 \#1^4 + 494667 \#1^6 \&, 5]$      | 0                     | $\sqrt{\frac{2}{21}}$ | $\text{Root}$   |
| $\sqrt{\frac{28597}{2758}}$        | $\text{Root}[-625 + 92025 \#1^2 - 3180600 \#1^4 + 31658688 \#1^6 \&, 4]$   | $\frac{1}{2\sqrt{2}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |
| $\sqrt{\frac{10723}{4137}}$        | $\text{Root}[-1279 + 74727 \#1^2 - 1372680 \#1^4 + 7914672 \#1^6 \&, 4]$   | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |
| $\sqrt{\frac{1787}{2758}}$         | $\text{Root}[-227 + 15741 \#1^2 - 319734 \#1^4 + 1978668 \#1^6 \&, 6]$     | 0                     | $\frac{2}{\sqrt{21}}$ | $\text{Root}$   |
| $\sqrt{\frac{10729}{4137}}$        | $\text{Root}[-5 + 8757 \#1^2 - 616032 \#1^4 + 7914672 \#1^6 \&, 5]$        | $\frac{1}{2\sqrt{3}}$ | $\frac{2}{\sqrt{21}}$ | $\text{Ro}$     |
| $\sqrt{\frac{1015}{394}}$          | $\text{Root}[-41 + 2703 \#1^2 - 50778 \#1^4 + 219852 \#1^6 \&, 6]$         | 0                     | 0                     | $\text{Ro}$     |
| $\sqrt{\frac{3047}{1182}}$         | $\text{Root}[-43 + 12915 \#1^2 - 388368 \#1^4 + 2638224 \#1^6 \&, 6]$      | $\frac{1}{2\sqrt{3}}$ | 0                     | $\text{Root}$   |
| $\sqrt{\frac{12187}{1182}}$        | $\text{Root}[-985 + 49593 \#1^2 - 774504 \#1^4 + 3517632 \#1^6 \&, 6]$     | $\frac{1}{2\sqrt{6}}$ | 0                     | $\text{Root}$   |
| $\sqrt{\frac{2031}{197}}$          | $\text{Root}[-1811 + 68535 \#1^2 - 773388 \#1^4 + 2638224 \#1^6 \&, 6]$    | 0                     | 0                     | $\text{Root}[$  |
| $\sqrt{\frac{4065}{394}}$          | $\text{Root}[-769 + 60993 \#1^2 - 1439640 \#1^4 + 10552896 \#1^6 \&, 6]$   | $\frac{1}{2\sqrt{2}}$ | 0                     | $\text{Root}[-$ |
| $\sqrt{\frac{6097}{591}}$          | $\text{Root}[-1 + 45 \#1^2 - 660 \#1^4 + 3152 \#1^6 \&, 6]$                | $\frac{1}{2\sqrt{3}}$ | 0                     |                 |
| $5\sqrt{\frac{569}{1379}}$         | $\text{Root}[-535 + 71451 \#1^2 - 1563516 \#1^4 + 7914672 \#1^6 \&, 6]$    | 0                     | $\sqrt{\frac{2}{21}}$ | $\text{Root}[$  |
| $\sqrt{\frac{12193}{1182}}$        | $\text{Root}[-7529 + 268569 \#1^2 - 2979720 \#1^4 + 10552896 \#1^6 \&, 6]$ | $\frac{1}{2\sqrt{6}}$ | 0                     | $\text{Root}[-$ |
| $\sqrt{\frac{127}{197}}$           | $\text{Root}[-211 + 6480 \#1^2 - 58590 \#1^4 + 164889 \#1^6 \&, 5]$        | 0                     | 0                     | $\text{Ro}$     |
| $\sqrt{\frac{6101}{591}}$          | $\text{Root}[-169 + 13293 \#1^2 - 331452 \#1^4 + 2638224 \#1^6 \&, 4]$     | $\frac{1}{\sqrt{6}}$  | 0                     | $\text{Root}$   |
| $7\sqrt{\frac{83}{394}}$           | $\text{Root}[-953 + 45129 \#1^2 - 698616 \#1^4 + 3517632 \#1^6 \&, 4]$     | $\frac{1}{2\sqrt{2}}$ | 0                     | $\text{Root}$   |
| $\sqrt{\frac{85399}{8274}}$        | $\text{Root}[-5347 + 330435 \#1^2 - 5912568 \#1^4 + 31658688 \#1^6 \&, 6]$ | $\frac{1}{2\sqrt{6}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |
| $5\sqrt{\frac{61}{591}}$           | $\text{Root}[-1685 + 61461 \#1^2 - 716472 \#1^4 + 2638224 \#1^6 \&, 5]$    | $\frac{1}{2\sqrt{3}}$ | 0                     | $\text{Root}[$  |
| $\sqrt{\frac{1779}{2758}}$         | $\text{Root}[-1129 + 42435 \#1^2 - 513918 \#1^4 + 1978668 \#1^6 \&, 6]$    | 0                     | $\sqrt{\frac{2}{21}}$ | $\text{Root}[$  |
| $3\sqrt{\frac{3165}{2758}}$        | $\text{Root}[-241 + 82161 \#1^2 - 3260952 \#1^4 + 31658688 \#1^6 \&, 5]$   | $\frac{1}{2\sqrt{2}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |

| $\sqrt{\frac{763}{1182}}$           | $\text{Root}[-25 + 2145 \#1^2 - 41292 \#1^4 + 219852 \#1^6 \&, 4]$         | $\frac{1}{\sqrt{6}}$  | 0                     |                 | Ro   |  |
|-------------------------------------|--|-----------------------|-----------------------|-----------------|------|--|
| $\sqrt{\frac{10681}{4137}} \over 2$ | $\text{Root}[-1549 + 80901 \#1^2 - 1392768 \#1^4 + 7914672 \#1^6 \&, 5]$   | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{2}{21}}$ | $\text{Root}[-$ |      |  |
| $\sqrt{\frac{12139}{1182}} \over 4$ | $\text{Root}[-37 + 3933 \#1^2 - 75816 \#1^4 + 340416 \#1^6 \&, 6]$         | $\frac{1}{2\sqrt{6}}$ | 0                     |                 | Ro   |  |
| $\sqrt{\frac{17}{1182}} \over 4$    | $\text{Root}[-547 + 21567 \#1^2 - 260028 \#1^4 + 879408 \#1^6 \&, 6]$      | 0                     | 0                     |                 | Root |  |
| $\sqrt{\frac{6073}{591}} \over 4$   | $\text{Root}[-625 + 34893 \#1^2 - 559116 \#1^4 + 2638224 \#1^6 \&, 6]$     | $\frac{1}{2\sqrt{3}}$ | 0                     |                 | Root |  |
| $\sqrt{\frac{12145}{1182}} \over 4$ | $\text{Root}[-857 + 29889 \#1^2 - 334056 \#1^4 + 1172544 \#1^6 \&, 6]$     | $\frac{1}{2\sqrt{6}}$ | 0                     |                 | Root |  |
| $\sqrt{\frac{253}{394}}$            | $\text{Root}[-941 + 26667 \#1^2 - 236034 \#1^4 + 659556 \#1^6 \&, 6]$      | 0                     | 0                     |                 | Root |  |
| $\sqrt{\frac{6077}{591}} \over 4$   | $\text{Root}[-59 + 11583 \#1^2 - 338148 \#1^4 + 2638224 \#1^6 \&, 5]$      | $\frac{1}{\sqrt{6}}$  | 0                     |                 | Root |  |
| $\sqrt{\frac{4051}{394}} \over 4$   | $\text{Root}[-3019 + 140067 \#1^2 - 2122632 \#1^4 + 10552896 \#1^6 \&, 6]$ | $\frac{1}{2\sqrt{2}}$ | 0                     |                 | Root |  |
| $\sqrt{\frac{31}{591}} \over 2$     | $\text{Root}[-653 + 21837 \#1^2 - 241056 \#1^4 + 879408 \#1^6 \&, 6]$      | $\frac{1}{2\sqrt{3}}$ | 0                     |                 | Root |  |
| $\sqrt{\frac{886}{1379}}$           | $\text{Root}[-208 + 9756 \#1^2 - 129735 \#1^4 + 494667 \#1^6 \&, 6]$       | 0                     | $\sqrt{\frac{2}{21}}$ |                 | Roo  |  |
| $\sqrt{\frac{12161}{1182}} \over 4$ | $\text{Root}[-317 + 37125 \#1^2 - 1238760 \#1^4 + 10552896 \#1^6 \&, 4]$   | $\frac{\sqrt{5}}{2}$  | 0                     |                 | Root |  |
| $2\sqrt{\frac{95}{591}}$            | $\text{Root}[-151 + 7713 \#1^2 - 125550 \#1^4 + 659556 \#1^6 \&, 4]$       | $\frac{1}{\sqrt{6}}$  | 0                     |                 | Roo  |  |
| $\sqrt{\frac{10639}{4137}} \over 2$ | $\text{Root}[-643 + 70443 \#1^2 - 1412856 \#1^4 + 7914672 \#1^6 \&, 6]$    | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{2}{21}}$ |                 | Root |  |
| $\sqrt{\frac{2015}{197}} \over 4$   | $\text{Root}[-823 + 55323 \#1^2 - 786780 \#1^4 + 2638224 \#1^6 \&, 6]$     | 0                     | 0                     |                 | Root |  |
| $\sqrt{\frac{12097}{1182}} \over 4$ | $\text{Root}[-5689 + 247257 \#1^2 - 3033288 \#1^4 + 10552896 \#1^6 \&, 6]$ | $\frac{1}{2\sqrt{6}}$ | 0                     |                 | Root |  |
| $3\sqrt{\frac{14}{197}}$            | $\text{Root}[-25 + 723 \#1^2 - 6603 \#1^4 + 18321 \#1^6 \&, 6]$            | 0                     | 0                     |                 |      |  |
| $\sqrt{\frac{4035}{394}} \over 4$   | $\text{Root}[-1355 + 122571 \#1^2 - 2149416 \#1^4 + 10552896 \#1^6 \&, 6]$ | $\frac{1}{2\sqrt{2}}$ | 0                     |                 | Root |  |
| $\sqrt{\frac{1513}{591}} \over 2$   | $\text{Root}[-1777 + 64017 \#1^2 - 729864 \#1^4 + 2638224 \#1^6 \&, 6]$    | $\frac{1}{2\sqrt{3}}$ | 0                     |                 | Root |  |
| $\sqrt{\frac{1765}{2758}}$          | $\text{Root}[-25 + 31455 \#1^2 - 523962 \#1^4 + 1978668 \#1^6 \&, 6]$      | 0                     | $\sqrt{\frac{2}{21}}$ |                 | Root |  |
| $\sqrt{\frac{757}{1182}}$           | $\text{Root}[-137 + 7605 \#1^2 - 127224 \#1^4 + 659556 \#1^6 \&, 5]$       | $\frac{1}{\sqrt{6}}$  | 0                     |                 | Roo  |  |
| $\sqrt{\frac{505}{197}} \over 2$    | $\text{Root}[-1 + 369 \#1^2 - 31992 \#1^4 + 293136 \#1^6 \&, 4]$           | $\frac{1}{2}$         | 0                     |                 | R    |  |
| $\sqrt{\frac{12049}{1182}} \over 4$ | $\text{Root}[-689 + 203337 \#1^2 - 3060072 \#1^4 + 10552896 \#1^6 \&, 6]$  | $\frac{1}{2\sqrt{6}}$ | 0                     |                 | Root |  |
| $\sqrt{\frac{251}{394}}$            | $\text{Root}[-673 + 24003 \#1^2 - 239382 \#1^4 + 659556 \#1^6 \&, 6]$      | 0                     | 0                     |                 | Root |  |
| $\sqrt{\frac{1507}{591}} \over 2$   | $\text{Root}[-947 + 56979 \#1^2 - 736560 \#1^4 + 2638224 \#1^6 \&, 6]$     | $\frac{1}{2\sqrt{3}}$ | 0                     |                 | Root |  |
| $5\sqrt{\frac{5}{197}}$             | $\text{Root}[-53 + 5148 \#1^2 - 60264 \#1^4 + 164889 \#1^6 \&, 6]$         | 0                     | 0                     |                 | Ro   |  |

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Dimensions[angle9]
{111, 7}

orderedroots[minipoly[chi9]]
{-5, Root[-852 + 285 #1 - 30 #12 + #13 &, 1], 7, 9,
 Root[-852 + 285 #1 - 30 #12 + #13 &, 2], 11, Root[-852 + 285 #1 - 30 #12 + #13 &, 3]}

chi9
(-11 + x)3 (-9 + x)10 (-7 + x) (5 + x)32 (-852 + 285 x - 30 x2 + x3)

coeff[chi9, (x + 5) (x - 9) (x - 11)] // FullSimplify
{Root[605 184 + 35 232 #1 - 411 #12 + #13 &, 2],
 96, Root[605 184 + 35 232 #1 - 411 #12 + #13 &, 1],
 Root[605 184 + 35 232 #1 - 411 #12 + #13 &, 3]}

combinationangle[{Root[605 184 + 35 232 #1 - 411 #12 + #13 &, 2],
 96, Root[605 184 + 35 232 #1 - 411 #12 + #13 &, 1],
 Root[605 184 + 35 232 #1 - 411 #12 + #13 &, 3]}, {4, 7}, {2, 3, 5, 7}, angle9] // FullSimplify
{Root[25 021 228 761 - 8 746 256 420 #12 + 1 010 412 630 #14 - 45 710 244 #16 + 700 569 #18 &,
 7], Root[
 25 021 228 761 - 8 746 256 420 #12 + 1 010 412 630 #14 - 45 710 244 #16 + 700 569 #18 &, 5],
 Root[25 021 228 761 - 8 746 256 420 #12 + 1 010 412 630 #14 - 45 710 244 #16 + 700 569 #18 &,
 8], Root[
 25 021 228 761 - 8 746 256 420 #12 + 1 010 412 630 #14 - 45 710 244 #16 + 700 569 #18 &, 6],
 Root[25 021 228 761 - 8 746 256 420 #12 + 1 010 412 630 #14 - 45 710 244 #16 + 700 569 #18 &,
 7], Root[
 25 021 228 761 - 8 746 256 420 #12 + 1 010 412 630 #14 - 45 710 244 #16 + 700 569 #18 &, 5],
 Root[25 021 228 761 - 8 746 256 420 #12 + 1 010 412 630 #14 - 45 710 244 #16 + 700 569 #18 &,
 8], Root[
 25 021 228 761 - 8 746 256 420 #12 + 1 010 412 630 #14 - 45 710 244 #16 + 700 569 #18 &, 6]}

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compatible[
{Root[25 021 228 761 - 8 746 256 420 #1^2 + 1 010 412 630 #1^4 - 45 710 244 #1^6 + 700 569 #1^8 &, 7], Root[
25 021 228 761 - 8 746 256 420 #1^2 + 1 010 412 630 #1^4 - 45 710 244 #1^6 + 700 569 #1^8 &, 5], Root[
25 021 228 761 - 8 746 256 420 #1^2 + 1 010 412 630 #1^4 - 45 710 244 #1^6 + 700 569 #1^8 &, 8], Root[25 021 228 761 - 8 746 256 420 #1^2 +
1 010 412 630 #1^4 - 45 710 244 #1^6 + 700 569 #1^8 &, 6], Root[
25 021 228 761 - 8 746 256 420 #1^2 + 1 010 412 630 #1^4 - 45 710 244 #1^6 + 700 569 #1^8 &, 7], Root[
25 021 228 761 - 8 746 256 420 #1^2 + 1 010 412 630 #1^4 - 45 710 244 #1^6 + 700 569 #1^8 &, 5], Root[25 021 228 761 - 8 746 256 420 #1^2 +
1 010 412 630 #1^4 - 45 710 244 #1^6 + 700 569 #1^8 &, 8], Root[
25 021 228 761 - 8 746 256 420 #1^2 + 1 010 412 630 #1^4 - 45 710 244 #1^6 + 700 569 #1^8 &, 6]]}

```

0

$$\text{chi10} = (-13 + x) (-11 + x)^2 (-9 + x)^{11} (5 + x)^{32} (-556 + 213 x - 26 x^2 + x^3) \\ (-13 + x) (-11 + x)^2 (-9 + x)^{11} (5 + x)^{32} (-556 + 213 x - 26 x^2 + x^3)$$

$$\text{list10} = \{ (-13 + x) (-25 869 + 18 293 x - 4970 x^2 + 650 x^3 - 41 x^4 + x^5), \\ (-13 + x) (-9 + x) (2813 - 1704 x + 362 x^2 - 32 x^3 + x^4), \\ (-13 + x) (-25 285 + 18 149 x - 4962 x^2 + 650 x^3 - 41 x^4 + x^5), \\ (-13 + x) (-25 253 + 18 149 x - 4962 x^2 + 650 x^3 - 41 x^4 + x^5), \\ (-13 + x) (-25 397 + 18 165 x - 4962 x^2 + 650 x^3 - 41 x^4 + x^5), \\ (-13 + x) (95 - 20 x + x^2) (-267 + 135 x - 21 x^2 + x^3), \\ 329 809 - 261 510 x + 82 671 x^2 - 13 412 x^3 + 1183 x^4 - 54 x^5 + x^6, \\ (-13 + x) (-11 + x) (2319 - 1442 x + 320 x^2 - 30 x^3 + x^4), \\ (-11 + x) (95 - 20 x + x^2) (-317 + 155 x - 23 x^2 + x^3), \\ (-13 + x) (-9 + x)^2 (-7 + x) (43 - 16 x + x^2), \\ (-13 + x) (-9 + x) (2725 - 1696 x + 362 x^2 - 32 x^3 + x^4), \\ (-13 + x) (-7 + x) (3499 - 2070 x + 412 x^2 - 34 x^3 + x^4), \\ (-13 + x) (-9 + x) (2741 - 1696 x + 362 x^2 - 32 x^3 + x^4), \\ (-13 + x) (-24 637 + 18 005 x - 4954 x^2 + 650 x^3 - 41 x^4 + x^5), \\ (-13 + x) (-7 + x) (95 - 20 x + x^2) (37 - 14 x + x^2), \\ 319 929 - 258 670 x + 82 407 x^2 - 13 404 x^3 + 1183 x^4 - 54 x^5 + x^6, \\ (-13 + x) (-9 + x) (2757 - 1696 x + 362 x^2 - 32 x^3 + x^4), \\ (-13 + x) (-24 781 + 18 021 x - 4954 x^2 + 650 x^3 - 41 x^4 + x^5), \\ 322 217 - 259 054 x + 82 423 x^2 - 13 404 x^3 + 1183 x^4 - 54 x^5 + x^6,$$

$$\begin{aligned}
& (-13 + x) (-24749 + 18021x - 4954x^2 + 650x^3 - 41x^4 + x^5), \\
& 321801 - 259022x + 82423x^2 - 13404x^3 + 1183x^4 - 54x^5 + x^6, \\
& (95 - 20x + x^2) (3383 - 2014x + 408x^2 - 34x^3 + x^4), \\
& (-13 + x) (-24925 + 18037x - 4954x^2 + 650x^3 - 41x^4 + x^5), \\
& 324089 - 259406x + 82439x^2 - 13404x^3 + 1183x^4 - 54x^5 + x^6, \\
& (-13 + x) (-11 + x) (73 - 18x + x^2) (31 - 12x + x^2), \\
& 323673 - 259374x + 82439x^2 - 13404x^3 + 1183x^4 - 54x^5 + x^6, \\
& (-11 + x) (-29387 + 20905x - 5594x^2 + 710x^3 - 43x^4 + x^5), \\
& 323321 - 259342x + 82439x^2 - 13404x^3 + 1183x^4 - 54x^5 + x^6, \\
& (-11 + x) (95 - 20x + x^2) (-309 + 155x - 23x^2 + x^3), \\
& (-11 + x) (47 - 16x + x^2) (-629 + 231x - 27x^2 + x^3), (-13 + x) (-9 + x)^2 \\
& (-293 + 155x - 23x^2 + x^3), (-13 + x) (-9 + x) (-7 + x) (-379 + 187x - 25x^2 + x^3), \\
& 310049 - 255830x + 82143x^2 - 13396x^3 + 1183x^4 - 54x^5 + x^6, \\
& (-13 + x) (-9 + x) (2669 - 1688x + 362x^2 - 32x^3 + x^4), \\
& (-13 + x) (-7 + x) (3427 - 2062x + 412x^2 - 34x^3 + x^4), \\
& 311921 - 256182x + 82159x^2 - 13396x^3 + 1183x^4 - 54x^5 + x^6, \\
& (95 - 20x + x^2) (3279 - 2006x + 408x^2 - 34x^3 + x^4), \\
& (-13 + x) (-9 + x) (2685 - 1688x + 362x^2 - 32x^3 + x^4), \\
& (-13 + x) (-24133 + 17877x - 4946x^2 + 650x^3 - 41x^4 + x^5), \\
& 313793 - 256534x + 82175x^2 - 13396x^3 + 1183x^4 - 54x^5 + x^6, \\
& (-9 + x) (43 - 16x + x^2) (-811 + 271x - 29x^2 + x^3), \\
& (-13 + x) (-11 + x) (-7 + x) (-313 + 159x - 23x^2 + x^3), \\
& 313377 - 256502x + 82175x^2 - 13396x^3 + 1183x^4 - 54x^5 + x^6, \\
& 313441 - 256502x + 82175x^2 - 13396x^3 + 1183x^4 - 54x^5 + x^6, \\
& (95 - 20x + x^2) (3295 - 2006x + 408x^2 - 34x^3 + x^4), \\
& (-13 + x) (-9 + x) (73 - 18x + x^2) (37 - 14x + x^2), \\
& (-13 + x) (-11 + x) (2207 - 1426x + 320x^2 - 30x^3 + x^4), \\
& 315665 - 256886x + 82191x^2 - 13396x^3 + 1183x^4 - 54x^5 + x^6, \\
& (-9 + x) (-35081 + 24645x - 6394x^2 + 778x^3 - 45x^4 + x^5), \\
& (-11 + x) (-28659 + 20745x - 5586x^2 + 710x^3 - 43x^4 + x^5), \\
& 315313 - 256854x + 82191x^2 - 13396x^3 + 1183x^4 - 54x^5 + x^6, \\
& (-11 + x) (-28627 + 20745x - 5586x^2 + 710x^3 - 43x^4 + x^5), \\
& (-13 + x) (-11 + x) (-9 + x) (-247 + 131x - 21x^2 + x^3), \\
& (-11 + x) (-28867 + 20761x - 5586x^2 + 710x^3 - 43x^4 + x^5), \\
& (-9 + x) (-35289 + 24661x - 6394x^2 + 778x^3 - 45x^4 + x^5), \\
& (-11 + x) (73 - 18x + x^2) (-395 + 187x - 25x^2 + x^3), \\
& (-11 + x) (-28803 + 20761x - 5586x^2 + 710x^3 - 43x^4 + x^5), \\
& (-11 + x) (-29011 + 20777x - 5586x^2 + 710x^3 - 43x^4 + x^5), \\
& (-13 + x) (-9 + x) (2581 - 1680x + 362x^2 - 32x^3 + x^4), \\
& (-13 + x) (-9 + x) (-7 + x) (-371 + 187x - 25x^2 + x^3), \\
& (-13 + x) (-23341 + 17717x - 4938x^2 + 650x^3 - 41x^4 + x^5), \\
& 303497 - 253662x + 81911x^2 - 13388x^3 + 1183x^4 - 54x^5 + x^6, \\
& (-9 + x) (-33729 + 24437x - 6386x^2 + 778x^3 - 45x^4 + x^5),
\end{aligned}$$

$$\begin{aligned}
& (-13 + x) (-9 + x) (2613 - 1680 x + 362 x^2 - 32 x^3 + x^4), \\
& (-13 + x) (-11 + x) (-7 + x) (-305 + 159 x - 23 x^2 + x^3), \\
& 305\,369 - 254\,014 x + 81\,927 x^2 - 13\,388 x^3 + 1183 x^4 - 54 x^5 + x^6, \\
& (-9 + x) (-33\,937 + 24\,453 x - 6386 x^2 + 778 x^3 - 45 x^4 + x^5), \\
& (-11 + x) (-27\,723 + 20\,569 x - 5578 x^2 + 710 x^3 - 43 x^4 + x^5), \\
& 305\,017 - 253\,982 x + 81\,927 x^2 - 13\,388 x^3 + 1183 x^4 - 54 x^5 + x^6, \\
& (-13 + x) (-11 + x) (-9 + x) (-239 + 131 x - 21 x^2 + x^3), \\
& (-11 + x) (-27\,931 + 20\,585 x - 5578 x^2 + 710 x^3 - 43 x^4 + x^5), \\
& (-9 + x) (-34\,145 + 24\,469 x - 6386 x^2 + 778 x^3 - 45 x^4 + x^5), \\
& (-11 + x) (-27\,899 + 20\,585 x - 5578 x^2 + 710 x^3 - 43 x^4 + x^5), \\
& 306\,953 - 254\,334 x + 81\,943 x^2 - 13\,388 x^3 + 1183 x^4 - 54 x^5 + x^6, \\
& (-11 + x) (-7 + x) (3981 - 2372 x + 458 x^2 - 36 x^3 + x^4), \\
& (-11 + x) (-9 + x) (3123 - 1942 x + 404 x^2 - 34 x^3 + x^4), \\
& (-11 + x) (-28\,075 + 20\,601 x - 5578 x^2 + 710 x^3 - 43 x^4 + x^5), \\
& (-13 + x) (-9 + x) (2525 - 1672 x + 362 x^2 - 32 x^3 + x^4), \\
& 295\,073 - 251\,142 x + 81\,663 x^2 - 13\,380 x^3 + 1183 x^4 - 54 x^5 + x^6, \\
& (-9 + x) (-32\,793 + 24\,261 x - 6378 x^2 + 778 x^3 - 45 x^4 + x^5), \\
& (-13 + x) (-11 + x)^2 (-9 + x) (-7 + x) (-3 + x), \\
& (-11 + x) (-26\,995 + 20\,409 x - 5570 x^2 + 710 x^3 - 43 x^4 + x^5), \\
& (-9 + x) (-33\,001 + 24\,277 x - 6378 x^2 + 778 x^3 - 45 x^4 + x^5), \\
& (-11 + x) (-26\,963 + 20\,409 x - 5570 x^2 + 710 x^3 - 43 x^4 + x^5), \\
& 296\,657 - 251\,462 x + 81\,679 x^2 - 13\,380 x^3 + 1183 x^4 - 54 x^5 + x^6, \\
& (-11 + x) (-9 + x) (3019 - 1934 x + 404 x^2 - 34 x^3 + x^4), \\
& (-11 + x) (-7 + x) (3877 - 2364 x + 458 x^2 - 36 x^3 + x^4), \\
& (-11 + x) (-27\,107 + 20\,425 x - 5570 x^2 + 710 x^3 - 43 x^4 + x^5), \\
& (-11 + x) (-9 + x) (3035 - 1934 x + 404 x^2 - 34 x^3 + x^4), \\
& (-13 + x) (-11 + x) (-9 + x) (-223 + 131 x - 21 x^2 + x^3), \\
& (-11 + x)^2 (-9 + x) (-265 + 151 x - 23 x^2 + x^3), \\
& (-11 + x) (-26\,203 + 20\,249 x - 5562 x^2 + 710 x^3 - 43 x^4 + x^5), \\
& (-9 + x) (-32\,033 + 24\,101 x - 6370 x^2 + 778 x^3 - 45 x^4 + x^5), \\
& (-11 + x) (-9 + x) (2931 - 1926 x + 404 x^2 - 34 x^3 + x^4) \} ;
\end{aligned}$$

**Length[list10]**

94

**A10 = CoefficientList[list10, x];**

**A10 // MatrixForm**

|         |          |        |         |      |     |   |
|---------|----------|--------|---------|------|-----|---|
| 336 297 | -263 678 | 82 903 | -13 420 | 1183 | -54 | 1 |
| 329 121 | -261 254 | 82 655 | -13 412 | 1183 | -54 | 1 |
| 328 705 | -261 222 | 82 655 | -13 412 | 1183 | -54 | 1 |
| 328 289 | -261 190 | 82 655 | -13 412 | 1183 | -54 | 1 |
| 330 161 | -261 542 | 82 671 | -13 412 | 1183 | -54 | 1 |
| 329 745 | -261 510 | 82 671 | -13 412 | 1183 | -54 | 1 |
| 329 809 | -261 510 | 82 671 | -13 412 | 1183 | -54 | 1 |
| 331 617 | -261 862 | 82 687 | -13 412 | 1183 | -54 | 1 |
| 331 265 | -261 830 | 82 687 | -13 412 | 1183 | -54 | 1 |

|         |          |        |         |      |     |   |
|---------|----------|--------|---------|------|-----|---|
| 316 953 | -258 030 | 82 375 | -13 404 | 1183 | -54 | 1 |
| 318 825 | -258 382 | 82 391 | -13 404 | 1183 | -54 | 1 |
| 318 409 | -258 350 | 82 391 | -13 404 | 1183 | -54 | 1 |
| 320 697 | -258 734 | 82 407 | -13 404 | 1183 | -54 | 1 |
| 320 281 | -258 702 | 82 407 | -13 404 | 1183 | -54 | 1 |
| 319 865 | -258 670 | 82 407 | -13 404 | 1183 | -54 | 1 |
| 319 929 | -258 670 | 82 407 | -13 404 | 1183 | -54 | 1 |
| 322 569 | -259 086 | 82 423 | -13 404 | 1183 | -54 | 1 |
| 322 153 | -259 054 | 82 423 | -13 404 | 1183 | -54 | 1 |
| 322 217 | -259 054 | 82 423 | -13 404 | 1183 | -54 | 1 |
| 321 737 | -259 022 | 82 423 | -13 404 | 1183 | -54 | 1 |
| 321 801 | -259 022 | 82 423 | -13 404 | 1183 | -54 | 1 |
| 321 385 | -258 990 | 82 423 | -13 404 | 1183 | -54 | 1 |
| 324 025 | -259 406 | 82 439 | -13 404 | 1183 | -54 | 1 |
| 324 089 | -259 406 | 82 439 | -13 404 | 1183 | -54 | 1 |
| 323 609 | -259 374 | 82 439 | -13 404 | 1183 | -54 | 1 |
| 323 673 | -259 374 | 82 439 | -13 404 | 1183 | -54 | 1 |
| 323 257 | -259 342 | 82 439 | -13 404 | 1183 | -54 | 1 |
| 323 321 | -259 342 | 82 439 | -13 404 | 1183 | -54 | 1 |
| 322 905 | -259 310 | 82 439 | -13 404 | 1183 | -54 | 1 |
| 325 193 | -259 694 | 82 455 | -13 404 | 1183 | -54 | 1 |
| 308 529 | -255 510 | 82 127 | -13 396 | 1183 | -54 | 1 |
| 310 401 | -255 862 | 82 143 | -13 396 | 1183 | -54 | 1 |
| 310 049 | -255 830 | 82 143 | -13 396 | 1183 | -54 | 1 |
| 312 273 | -256 214 | 82 159 | -13 396 | 1183 | -54 | 1 |
| 311 857 | -256 182 | 82 159 | -13 396 | 1183 | -54 | 1 |
| 311 921 | -256 182 | 82 159 | -13 396 | 1183 | -54 | 1 |
| 311 505 | -256 150 | 82 159 | -13 396 | 1183 | -54 | 1 |
| 314 145 | -256 566 | 82 175 | -13 396 | 1183 | -54 | 1 |
| 313 729 | -256 534 | 82 175 | -13 396 | 1183 | -54 | 1 |
| 313 793 | -256 534 | 82 175 | -13 396 | 1183 | -54 | 1 |
| 313 857 | -256 534 | 82 175 | -13 396 | 1183 | -54 | 1 |
| 313 313 | -256 502 | 82 175 | -13 396 | 1183 | -54 | 1 |
| 313 377 | -256 502 | 82 175 | -13 396 | 1183 | -54 | 1 |
| 313 441 | -256 502 | 82 175 | -13 396 | 1183 | -54 | 1 |
| 313 025 | -256 470 | 82 175 | -13 396 | 1183 | -54 | 1 |
| 316 017 | -256 918 | 82 191 | -13 396 | 1183 | -54 | 1 |
| 315 601 | -256 886 | 82 191 | -13 396 | 1183 | -54 | 1 |
| 315 665 | -256 886 | 82 191 | -13 396 | 1183 | -54 | 1 |
| 315 729 | -256 886 | 82 191 | -13 396 | 1183 | -54 | 1 |
| 315 249 | -256 854 | 82 191 | -13 396 | 1183 | -54 | 1 |
| 315 313 | -256 854 | 82 191 | -13 396 | 1183 | -54 | 1 |
| 314 897 | -256 822 | 82 191 | -13 396 | 1183 | -54 | 1 |
| 317 889 | -257 270 | 82 207 | -13 396 | 1183 | -54 | 1 |
| 317 537 | -257 238 | 82 207 | -13 396 | 1183 | -54 | 1 |
| 317 601 | -257 238 | 82 207 | -13 396 | 1183 | -54 | 1 |
| 317 185 | -257 206 | 82 207 | -13 396 | 1183 | -54 | 1 |
| 316 833 | -257 174 | 82 207 | -13 396 | 1183 | -54 | 1 |
| 319 121 | -257 558 | 82 223 | -13 396 | 1183 | -54 | 1 |
| 301 977 | -253 342 | 81 895 | -13 388 | 1183 | -54 | 1 |
| 303 849 | -253 694 | 81 911 | -13 388 | 1183 | -54 | 1 |
| 303 433 | -253 662 | 81 911 | -13 388 | 1183 | -54 | 1 |
| 303 497 | -253 662 | 81 911 | -13 388 | 1183 | -54 | 1 |
| 303 561 | -253 662 | 81 911 | -13 388 | 1183 | -54 | 1 |
| 305 721 | -254 046 | 81 927 | -13 388 | 1183 | -54 | 1 |

|         |          |        |         |      |     |   |
|---------|----------|--------|---------|------|-----|---|
| 305 305 | -254 014 | 81 927 | -13 388 | 1183 | -54 | 1 |
| 305 369 | -254 014 | 81 927 | -13 388 | 1183 | -54 | 1 |
| 305 433 | -254 014 | 81 927 | -13 388 | 1183 | -54 | 1 |
| 304 953 | -253 982 | 81 927 | -13 388 | 1183 | -54 | 1 |
| 305 017 | -253 982 | 81 927 | -13 388 | 1183 | -54 | 1 |
| 307 593 | -254 398 | 81 943 | -13 388 | 1183 | -54 | 1 |
| 307 241 | -254 366 | 81 943 | -13 388 | 1183 | -54 | 1 |
| 307 305 | -254 366 | 81 943 | -13 388 | 1183 | -54 | 1 |
| 306 889 | -254 334 | 81 943 | -13 388 | 1183 | -54 | 1 |
| 306 953 | -254 334 | 81 943 | -13 388 | 1183 | -54 | 1 |
| 306 537 | -254 302 | 81 943 | -13 388 | 1183 | -54 | 1 |
| 309 177 | -254 718 | 81 959 | -13 388 | 1183 | -54 | 1 |
| 308 825 | -254 686 | 81 959 | -13 388 | 1183 | -54 | 1 |
| 295 425 | -251 174 | 81 663 | -13 380 | 1183 | -54 | 1 |
| 295 073 | -251 142 | 81 663 | -13 380 | 1183 | -54 | 1 |
| 295 137 | -251 142 | 81 663 | -13 380 | 1183 | -54 | 1 |
| 297 297 | -251 526 | 81 679 | -13 380 | 1183 | -54 | 1 |
| 296 945 | -251 494 | 81 679 | -13 380 | 1183 | -54 | 1 |
| 297 009 | -251 494 | 81 679 | -13 380 | 1183 | -54 | 1 |
| 296 593 | -251 462 | 81 679 | -13 380 | 1183 | -54 | 1 |
| 296 657 | -251 462 | 81 679 | -13 380 | 1183 | -54 | 1 |
| 298 881 | -251 846 | 81 695 | -13 380 | 1183 | -54 | 1 |
| 298 529 | -251 814 | 81 695 | -13 380 | 1183 | -54 | 1 |
| 298 177 | -251 782 | 81 695 | -13 380 | 1183 | -54 | 1 |
| 300 465 | -252 166 | 81 711 | -13 380 | 1183 | -54 | 1 |
| 287 001 | -248 654 | 81 415 | -13 372 | 1183 | -54 | 1 |
| 288 585 | -248 974 | 81 431 | -13 372 | 1183 | -54 | 1 |
| 288 233 | -248 942 | 81 431 | -13 372 | 1183 | -54 | 1 |
| 288 297 | -248 942 | 81 431 | -13 372 | 1183 | -54 | 1 |
| 290 169 | -249 294 | 81 447 | -13 372 | 1183 | -54 | 1 |

**Dimensions[A10]**

{94, 7}

**gpart[chi10]**

{16 228 969, -12 834 702, 4 052 791, -657 244, 57 967, -2646, 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 && Array[n, 94].A10 == gpart[chi10], Array[n, 94], Integers]

{{n[1] → 18, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
n[8] → 0, n[9] → 24, 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] → 2, n[29] → 4, 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] → 1, n[91] → 0, n[92] → 0, n[93] → 0, n[94] → 0}}

```

```

Array[n, 94] /. {n[1] → 18, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0,
n[6] → 0, n[7] → 0, n[8] → 0, n[9] → 24, 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] → 2, n[29] → 4, 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] → 1, n[91] → 0, n[92] → 0, n[93] → 0, n[94] → 0}

{18, 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, 4, 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, 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, 9, 28, 29, 90

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 && Array[n, 94].A10 == gpart[chi10], Array[n, 94], 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 && Array[n, 94].A10 == gpart[chi10], Array[n, 94], 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 && Array[n, 94].A10 == gpart[chi10], Array[n, 94], Integers]

{{n[1] → 16, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 4,
n[8] → 0, n[9] → 24, 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] → 4, 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] → 1, n[91] → 0, n[92] → 0, n[93] → 0, n[94] → 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 && Array[n, 94].A10 == gpart[chi10], Array[n, 94], Integers]

{{n[1] → 18, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
n[8] → 0, n[9] → 26, 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] → 1, 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] → 1, n[46] → 0,
n[47] → 0, n[48] → 0, n[49] → 0, n[50] → 0, n[51] → 0, n[52] → 2, 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] → 1, 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}}

```

```

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 && Array[n, 94].A10 == gpart[chi10], Array[n, 94], Integers]

{{n[1] → 18, n[2] → 0, n[3] → 0, n[4] → 0, n[5] → 0, n[6] → 0, n[7] → 0,
n[8] → 0, n[9] → 24, 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] → 4, 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] → 2, 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] → 1, 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} }

list10[[1, 9]] * mu[chi10] // Factor
{(-13 + x) (-11 + x) (-9 + x)^10 (5 + x)^31 (-25 869 + 18 293 x - 4970 x^2 + 650 x^3 - 41 x^4 + x^5),
(-11 + x)^2 (-9 + x)^10 (5 + x)^31 (95 - 20 x + x^2) (-317 + 155 x - 23 x^2 + x^3) }

Array[m, 7].Transpose[A10]
{336 297 m[1] - 263 678 m[2] + 82 903 m[3] - 13 420 m[4] + 1183 m[5] - 54 m[6] + m[7],
329 121 m[1] - 261 254 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7],
328 705 m[1] - 261 222 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7],
328 289 m[1] - 261 190 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7],
330 161 m[1] - 261 542 m[2] + 82 671 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7],
329 745 m[1] - 261 510 m[2] + 82 671 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7],
329 809 m[1] - 261 510 m[2] + 82 671 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7],
331 617 m[1] - 261 862 m[2] + 82 687 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7],
331 265 m[1] - 261 830 m[2] + 82 687 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7],
316 953 m[1] - 258 030 m[2] + 82 375 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7],
318 825 m[1] - 258 382 m[2] + 82 391 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7],

```

$318\ 409\ m[1] - 258\ 350\ m[2] + 82\ 391\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $320\ 697\ m[1] - 258\ 734\ m[2] + 82\ 407\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $320\ 281\ m[1] - 258\ 702\ m[2] + 82\ 407\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $319\ 865\ m[1] - 258\ 670\ m[2] + 82\ 407\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $319\ 929\ m[1] - 258\ 670\ m[2] + 82\ 407\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $322\ 569\ m[1] - 259\ 086\ m[2] + 82\ 423\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $322\ 153\ m[1] - 259\ 054\ m[2] + 82\ 423\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $322\ 217\ m[1] - 259\ 054\ m[2] + 82\ 423\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $321\ 737\ m[1] - 259\ 022\ m[2] + 82\ 423\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $321\ 801\ m[1] - 259\ 022\ m[2] + 82\ 423\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $321\ 385\ m[1] - 258\ 990\ m[2] + 82\ 423\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $324\ 025\ m[1] - 259\ 406\ m[2] + 82\ 439\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $324\ 089\ m[1] - 259\ 406\ m[2] + 82\ 439\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $323\ 609\ m[1] - 259\ 374\ m[2] + 82\ 439\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $323\ 673\ m[1] - 259\ 374\ m[2] + 82\ 439\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $323\ 257\ m[1] - 259\ 342\ m[2] + 82\ 439\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $323\ 321\ m[1] - 259\ 342\ m[2] + 82\ 439\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $322\ 905\ m[1] - 259\ 310\ m[2] + 82\ 439\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $325\ 193\ m[1] - 259\ 694\ m[2] + 82\ 455\ m[3] - 13\ 404\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $308\ 529\ m[1] - 255\ 510\ m[2] + 82\ 127\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $310\ 401\ m[1] - 255\ 862\ m[2] + 82\ 143\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $310\ 049\ m[1] - 255\ 830\ m[2] + 82\ 143\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $312\ 273\ m[1] - 256\ 214\ m[2] + 82\ 159\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $311\ 857\ m[1] - 256\ 182\ m[2] + 82\ 159\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $311\ 921\ m[1] - 256\ 182\ m[2] + 82\ 159\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $311\ 505\ m[1] - 256\ 150\ m[2] + 82\ 159\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $314\ 145\ m[1] - 256\ 566\ m[2] + 82\ 175\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $313\ 729\ m[1] - 256\ 534\ m[2] + 82\ 175\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $313\ 793\ m[1] - 256\ 534\ m[2] + 82\ 175\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $313\ 857\ m[1] - 256\ 534\ m[2] + 82\ 175\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $313\ 313\ m[1] - 256\ 502\ m[2] + 82\ 175\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $313\ 377\ m[1] - 256\ 502\ m[2] + 82\ 175\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $313\ 441\ m[1] - 256\ 502\ m[2] + 82\ 175\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $313\ 025\ m[1] - 256\ 470\ m[2] + 82\ 175\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $316\ 017\ m[1] - 256\ 918\ m[2] + 82\ 191\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $315\ 601\ m[1] - 256\ 886\ m[2] + 82\ 191\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $315\ 665\ m[1] - 256\ 886\ m[2] + 82\ 191\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $315\ 729\ m[1] - 256\ 886\ m[2] + 82\ 191\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $315\ 249\ m[1] - 256\ 854\ m[2] + 82\ 191\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $315\ 313\ m[1] - 256\ 854\ m[2] + 82\ 191\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $314\ 897\ m[1] - 256\ 822\ m[2] + 82\ 191\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $317\ 889\ m[1] - 257\ 270\ m[2] + 82\ 207\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $317\ 537\ m[1] - 257\ 238\ m[2] + 82\ 207\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $317\ 601\ m[1] - 257\ 238\ m[2] + 82\ 207\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $317\ 185\ m[1] - 257\ 206\ m[2] + 82\ 207\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $316\ 833\ m[1] - 257\ 174\ m[2] + 82\ 207\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,  
 $319\ 121\ m[1] - 257\ 558\ m[2] + 82\ 223\ m[3] - 13\ 396\ m[4] + 1183\ m[5] - 54\ m[6] + m[7]$ ,

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301 977 m[1] - 253 342 m[2] + 81 895 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
303 849 m[1] - 253 694 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
303 433 m[1] - 253 662 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
303 497 m[1] - 253 662 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
303 561 m[1] - 253 662 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
305 721 m[1] - 254 046 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
305 305 m[1] - 254 014 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
305 369 m[1] - 254 014 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
305 433 m[1] - 254 014 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
304 953 m[1] - 253 982 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
305 017 m[1] - 253 982 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
307 593 m[1] - 254 398 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
307 241 m[1] - 254 366 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
307 305 m[1] - 254 366 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
306 889 m[1] - 254 334 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
306 953 m[1] - 254 334 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
306 537 m[1] - 254 302 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
309 177 m[1] - 254 718 m[2] + 81 959 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
308 825 m[1] - 254 686 m[2] + 81 959 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
295 425 m[1] - 251 174 m[2] + 81 663 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
295 073 m[1] - 251 142 m[2] + 81 663 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
295 137 m[1] - 251 142 m[2] + 81 663 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
297 297 m[1] - 251 526 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
296 945 m[1] - 251 494 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
297 009 m[1] - 251 494 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
296 593 m[1] - 251 462 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
296 657 m[1] - 251 462 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
298 881 m[1] - 251 846 m[2] + 81 695 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
298 529 m[1] - 251 814 m[2] + 81 695 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
298 177 m[1] - 251 782 m[2] + 81 695 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
300 465 m[1] - 252 166 m[2] + 81 711 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
287 001 m[1] - 248 654 m[2] + 81 415 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
288 585 m[1] - 248 974 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
288 233 m[1] - 248 942 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
288 297 m[1] - 248 942 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ,
290 169 m[1] - 249 294 m[2] + 81 447 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] }

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**Array[m, 7].gpart[chi10]**

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16 228 969 m[1] - 12 834 702 m[2] + 4 052 791 m[3] -
657 244 m[4] + 57 967 m[5] - 2646 m[6] + 49 m[7]

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**FindInstance[16 228 969 m[1] - 12 834 702 m[2] +**

```

4 052 791 m[3] - 657 244 m[4] + 57 967 m[5] - 2646 m[6] + 49 m[7] < 0 &&
336 297 m[1] - 263 678 m[2] + 82 903 m[3] - 13 420 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
329 121 m[1] - 261 254 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
328 705 m[1] - 261 222 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
328 289 m[1] - 261 190 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&

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314 897 m[1] - 256 822 m[2] + 82 191 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
317 889 m[1] - 257 270 m[2] + 82 207 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
317 537 m[1] - 257 238 m[2] + 82 207 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
317 601 m[1] - 257 238 m[2] + 82 207 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
317 185 m[1] - 257 206 m[2] + 82 207 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
316 833 m[1] - 257 174 m[2] + 82 207 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
319 121 m[1] - 257 558 m[2] + 82 223 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
301 977 m[1] - 253 342 m[2] + 81 895 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
303 849 m[1] - 253 694 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
303 433 m[1] - 253 662 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
303 497 m[1] - 253 662 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
303 561 m[1] - 253 662 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
305 721 m[1] - 254 046 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
305 305 m[1] - 254 014 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
305 369 m[1] - 254 014 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
305 433 m[1] - 254 014 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
304 953 m[1] - 253 982 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
305 017 m[1] - 253 982 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
307 593 m[1] - 254 398 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
307 241 m[1] - 254 366 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
307 305 m[1] - 254 366 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
306 889 m[1] - 254 334 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
306 953 m[1] - 254 334 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
306 537 m[1] - 254 302 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
309 177 m[1] - 254 718 m[2] + 81 959 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
308 825 m[1] - 254 686 m[2] + 81 959 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
295 425 m[1] - 251 174 m[2] + 81 663 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
295 073 m[1] - 251 142 m[2] + 81 663 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
295 137 m[1] - 251 142 m[2] + 81 663 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
297 297 m[1] - 251 526 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
296 945 m[1] - 251 494 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
297 009 m[1] - 251 494 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
296 593 m[1] - 251 462 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
296 657 m[1] - 251 462 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
298 881 m[1] - 251 846 m[2] + 81 695 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
298 529 m[1] - 251 814 m[2] + 81 695 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
298 177 m[1] - 251 782 m[2] + 81 695 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
300 465 m[1] - 252 166 m[2] + 81 711 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
287 001 m[1] - 248 654 m[2] + 81 415 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
288 585 m[1] - 248 974 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
288 233 m[1] - 248 942 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
288 297 m[1] - 248 942 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
290 169 m[1] - 249 294 m[2] + 81 447 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{ }

```

```

FindInstance[16 228 969 m[1] - 12 834 702 m[2] +
 4 052 791 m[3] - 657 244 m[4] + 57 967 m[5] - 2646 m[6] + 49 m[7] < 0 &&
336 297 m[1] - 263 678 m[2] + 82 903 m[3] - 13 420 m[4] + 1183 m[5] - 54 m[6] + m[7] < 0 &&
329 121 m[1] - 261 254 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
328 705 m[1] - 261 222 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
328 289 m[1] - 261 190 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
330 161 m[1] - 261 542 m[2] + 82 671 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
329 745 m[1] - 261 510 m[2] + 82 671 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
329 809 m[1] - 261 510 m[2] + 82 671 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
331 617 m[1] - 261 862 m[2] + 82 687 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
331 265 m[1] - 261 830 m[2] + 82 687 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
316 953 m[1] - 258 030 m[2] + 82 375 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
318 825 m[1] - 258 382 m[2] + 82 391 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
318 409 m[1] - 258 350 m[2] + 82 391 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
320 697 m[1] - 258 734 m[2] + 82 407 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
320 281 m[1] - 258 702 m[2] + 82 407 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
319 865 m[1] - 258 670 m[2] + 82 407 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
319 929 m[1] - 258 670 m[2] + 82 407 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
322 569 m[1] - 259 086 m[2] + 82 423 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
322 153 m[1] - 259 054 m[2] + 82 423 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
322 217 m[1] - 259 054 m[2] + 82 423 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
321 737 m[1] - 259 022 m[2] + 82 423 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
321 801 m[1] - 259 022 m[2] + 82 423 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
321 385 m[1] - 258 990 m[2] + 82 423 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
324 025 m[1] - 259 406 m[2] + 82 439 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
324 089 m[1] - 259 406 m[2] + 82 439 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
323 609 m[1] - 259 374 m[2] + 82 439 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
323 673 m[1] - 259 374 m[2] + 82 439 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
323 257 m[1] - 259 342 m[2] + 82 439 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
323 321 m[1] - 259 342 m[2] + 82 439 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
322 905 m[1] - 259 310 m[2] + 82 439 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
325 193 m[1] - 259 694 m[2] + 82 455 m[3] - 13 404 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
308 529 m[1] - 255 510 m[2] + 82 127 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
310 401 m[1] - 255 862 m[2] + 82 143 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
310 049 m[1] - 255 830 m[2] + 82 143 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
312 273 m[1] - 256 214 m[2] + 82 159 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
311 857 m[1] - 256 182 m[2] + 82 159 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
311 921 m[1] - 256 182 m[2] + 82 159 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
311 505 m[1] - 256 150 m[2] + 82 159 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
314 145 m[1] - 256 566 m[2] + 82 175 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
313 729 m[1] - 256 534 m[2] + 82 175 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
313 793 m[1] - 256 534 m[2] + 82 175 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
313 857 m[1] - 256 534 m[2] + 82 175 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
313 313 m[1] - 256 502 m[2] + 82 175 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&

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287 001 m[1] - 248 654 m[2] + 81 415 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
288 585 m[1] - 248 974 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
288 233 m[1] - 248 942 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
288 297 m[1] - 248 942 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
290 169 m[1] - 249 294 m[2] + 81 447 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{{m[1] → 2194, m[2] → 11 854, m[3] → 28 753, m[4] → 0, m[5] → 0, m[6] → 0, m[7] → 0}}
Array[m, 7] /.
{m[1] → 2194, m[2] → 11 854, m[3] → 28 753, m[4] → 0, m[5] → 0, m[6] → 0, m[7] → 0}
{2194, 11 854, 28 753, 0, 0, 0, 0}
GCD[2194, 11 854, 28 753, 0, 0, 0, 0]
1
Reverse[{2194, 11 854, 28 753, 0, 0, 0, 0}]
{0, 0, 0, 0, 28 753, 11 854, 2194}
{2194, 11 854, 28 753, 0, 0, 0, 0}.gpart[chi10]
-6 299 899
{2194, 11 854, 28 753, 0, 0, 0, 0}.Transpose[A10]
{-4 093 435, 1 765 773, 1 232 397, 699 021, 1 093 629, 560 253, 700 669, 954 861,
 561 901, 5 235 637, 5 630 245, 5 096 869, 6 024 853, 5 491 477, 4 958 101, 5 098 517,
 6 419 461, 5 886 085, 6 026 501, 5 352 709, 5 493 125, 4 959 749, 6 280 693, 6 421 109,
 5 747 317, 5 887 733, 5 354 357, 5 494 773, 4 961 397, 5 889 381, 9 494 717,
 9 889 325, 9 496 365, 10 283 933, 9 750 557, 9 890 973, 9 357 597, 10 678 541,
 10 145 165, 10 285 581, 10 425 997, 9 611 789, 9 752 205, 9 892 621, 9 359 245,
 11 073 149, 10 539 773, 10 680 189, 10 820 605, 10 146 813, 10 287 229, 9 753 853,
 11 467 757, 11 074 797, 11 215 213, 10 681 837, 10 288 877, 11 216 861, 14 148 405,
 14 543 013, 14 009 637, 14 150 053, 14 290 469, 14 937 621, 14 404 245, 14 544 661,
 14 685 077, 14 011 285, 14 151 701, 15 332 229, 14 939 269, 15 079 685, 14 546 309,
 14 686 725, 14 153 349, 15 474 293, 15 081 333, 18 802 093, 18 409 133, 18 549 549,
 19 196 701, 18 803 741, 18 944 157, 18 410 781, 18 551 197, 19 338 765, 18 945 805,
 18 552 845, 19 480 829, 23 061 173, 23 203 237, 22 810 277, 22 950 693, 23 345 301}

FindInstance[16 228 969 m[1] - 12 834 702 m[2] +
 4 052 791 m[3] - 657 244 m[4] + 57 967 m[5] - 2646 m[6] + 49 m[7] < 0 &&
336 297 m[1] - 263 678 m[2] + 82 903 m[3] - 13 420 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
329 121 m[1] - 261 254 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
328 705 m[1] - 261 222 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
328 289 m[1] - 261 190 m[2] + 82 655 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
330 161 m[1] - 261 542 m[2] + 82 671 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
329 745 m[1] - 261 510 m[2] + 82 671 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
329 809 m[1] - 261 510 m[2] + 82 671 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
331 617 m[1] - 261 862 m[2] + 82 687 m[3] - 13 412 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&

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317 185 m[1] - 257 206 m[2] + 82 207 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
316 833 m[1] - 257 174 m[2] + 82 207 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
319 121 m[1] - 257 558 m[2] + 82 223 m[3] - 13 396 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
301 977 m[1] - 253 342 m[2] + 81 895 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
303 849 m[1] - 253 694 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
303 433 m[1] - 253 662 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
303 497 m[1] - 253 662 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
303 561 m[1] - 253 662 m[2] + 81 911 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
305 721 m[1] - 254 046 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
305 305 m[1] - 254 014 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
305 369 m[1] - 254 014 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
305 433 m[1] - 254 014 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
304 953 m[1] - 253 982 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
305 017 m[1] - 253 982 m[2] + 81 927 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
307 593 m[1] - 254 398 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
307 241 m[1] - 254 366 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
307 305 m[1] - 254 366 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
306 889 m[1] - 254 334 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
306 953 m[1] - 254 334 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
306 537 m[1] - 254 302 m[2] + 81 943 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
309 177 m[1] - 254 718 m[2] + 81 959 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
308 825 m[1] - 254 686 m[2] + 81 959 m[3] - 13 388 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
295 425 m[1] - 251 174 m[2] + 81 663 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
295 073 m[1] - 251 142 m[2] + 81 663 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
295 137 m[1] - 251 142 m[2] + 81 663 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
297 297 m[1] - 251 526 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
296 945 m[1] - 251 494 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
297 009 m[1] - 251 494 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
296 593 m[1] - 251 462 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
296 657 m[1] - 251 462 m[2] + 81 679 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
298 881 m[1] - 251 846 m[2] + 81 695 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
298 529 m[1] - 251 814 m[2] + 81 695 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
298 177 m[1] - 251 782 m[2] + 81 695 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
300 465 m[1] - 252 166 m[2] + 81 711 m[3] - 13 380 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
287 001 m[1] - 248 654 m[2] + 81 415 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
288 585 m[1] - 248 974 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
288 233 m[1] - 248 942 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
288 297 m[1] - 248 942 m[2] + 81 431 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0 &&
290 169 m[1] - 249 294 m[2] + 81 447 m[3] - 13 372 m[4] + 1183 m[5] - 54 m[6] + m[7] ≥ 0,
Array[m, 7], Integers]
{ {m[1] → 22 882, m[2] → 173 878,
  m[3] → 1 116 206, m[4] → 4 052 423, m[5] → 0, m[6] → 0, m[7] → 0} }

Array[m, 7] /. {m[1] → 22 882, m[2] → 173 878,
  m[3] → 1 116 206, m[4] → 4 052 423, m[5] → 0, m[6] → 0, m[7] → 0}
{22 882, 173 878, 1 116 206, 4 052 423, 0, 0, 0}

```

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GCD[22 882, 173 878, 1 116 206, 4 052 423, 0, 0, 0]
1

Reverse[{22 882, 173 878, 1 116 206, 4 052 423, 0, 0, 0}]
{0, 0, 0, 4 052 423, 1 116 206, 173 878, 22 882}

{22 882, 173 878, 1 116 206, 4 052 423, 0, 0, 0}.gpart[chi10]
-2 116 964

{22 882, 173 878, 1 116 206, 4 052 423, 0, 0, 0].Transpose[A10]
{654 028, 13 533 364, 9 578 548, 5 623 732, 5 113 076, 1 158 260, 2 622 708, 647 604,
 -1 842 764, 15 569 564, 15 058 908, 11 104 092, 14 548 252, 10 593 436, 6 638 620,
 8 103 068, 14 037 596, 10 082 780, 11 547 228, 6 127 964, 7 592 412, 3 637 596, 9 572 124,
 11 036 572, 5 617 308, 7 081 756, 3 126 940, 4 591 388, 6 365 72, 4 080 732, 16 584 452,
 16 073 796, 13 583 428, 15 563 140, 11 608 324, 13 072 772, 9 117 956, 15 052 484,
 11 097 668, 12 562 116, 14 026 564, 7 142 852, 8 607 300, 10 071 748, 6 116 932,
 14 541 828, 10 587 012, 12 051 460, 13 515 908, 8 096 644, 9 561 092, 5 606 276,
 14 031 172, 11 540 804, 13 005 252, 9 050 436, 6 560 068, 10 004 228, 17 088 684,
 16 578 028, 12 623 212, 14 087 660, 15 552 108, 16 067 372, 12 112 556, 13 577 004,
 15 041 452, 9 622 188, 11 086 636, 15 556 716, 13 066 348, 14 530 796, 10 575 980,
 12 040 428, 8 085 612, 14 020 140, 11 529 772, 17 592 916, 15 102 548, 16 566 996,
 17 082 260, 14 591 892, 16 056 340, 12 101 524, 13 565 972, 15 545 684, 13 055 316,
 10 564 948, 14 009 108, 18 607 804, 17 071 228, 14 580 860, 16 045 308, 15 534 652}

```

```

anglesq10 = anglesquaredmat[chi10, list10] // FullSimplify;
Dimensions[anglesq10]
{94, 7}

angle10 = Sqrt[anglesq10] // FullSimplify;
angle10 // MatrixForm

```

|  |  |  |
|--|--|--|
| $\sqrt{\frac{10987}{4193}} \over 2$          | $\text{Root}\left[-1 + 607 \#1^2 - 90226 \#1^4 + 3840788 \#1^6 \&, 6\right]$       | $\text{Root}\left[-1 + 607 \#1^2 - 90226 \#1^4 + 3840788 \#1^6 \&, 6\right]$       |
| $\sqrt{\frac{1563}{599}} \over 2$            | $\text{Root}\left[-4 + 1600 \#1^2 - 162361 \#1^4 + 960197 \#1^6 \&, 5\right]$      | $\text{Root}\left[-4 + 1600 \#1^2 - 162361 \#1^4 + 960197 \#1^6 \&, 5\right]$      |
| $\sqrt{\frac{2735}{4193}}$                   | $\text{Root}\left[-109 + 14215 \#1^2 - 512502 \#1^4 + 3840788 \#1^6 \&, 5\right]$  | $\text{Root}\left[-109 + 14215 \#1^2 - 512502 \#1^4 + 3840788 \#1^6 \&, 5\right]$  |
| $\sqrt{\frac{10939}{4193}} \over 2$          | $\text{Root}\left[-31 + 2996 \#1^2 - 93890 \#1^4 + 960197 \#1^6 \&, 5\right]$      | $\text{Root}\left[-31 + 2996 \#1^2 - 93890 \#1^4 + 960197 \#1^6 \&, 5\right]$      |
| $\sqrt{\frac{5473}{8386}}$                   | $\text{Root}\left[-37 + 4510 \#1^2 - 127782 \#1^4 + 960197 \#1^6 \&, 4\right]$     | $\text{Root}\left[-37 + 4510 \#1^2 - 127782 \#1^4 + 960197 \#1^6 \&, 4\right]$     |
| $\sqrt{\frac{10945}{4193}} \over 2$          | $\text{Root}\left[-107 + 11257 \#1^2 - 374186 \#1^4 + 3840788 \#1^6 \&, 5\right]$  | $\text{Root}\left[-107 + 11257 \#1^2 - 374186 \#1^4 + 3840788 \#1^6 \&, 5\right]$  |
| $\sqrt{\frac{49253}{8386}} \over 3$          | $\text{Root}\left[-59 + 18899 \#1^2 - 1069888 \#1^4 + 15363152 \#1^6 \&, 5\right]$ | $\text{Root}\left[-59 + 18899 \#1^2 - 1069888 \#1^4 + 15363152 \#1^6 \&, 5\right]$ |
| $37 \sqrt{\frac{2}{4193}} \approx \sqrt{55}$ | $\text{Root}\left[-7 + 2521 \#1^2 - 72822 \#1^4 + 548684 \#1^6 \&, 4\right]$       | $\text{Root}\left[-7 + 2521 \#1^2 - 72822 \#1^4 + 548684 \#1^6 \&, 4\right]$       |

|                                 |  |                            |
|---------------------------------|--|----------------------------|
| $\frac{\sqrt[3]{599}}{3}$       | $\text{Root}[-23 + 3351 \#1^2 - 152\ 056 \#1^4 + 2\ 194\ 736 \#1^6 \&, 4]$           | $\text{Root}[-23 + 335$    |
| $\sqrt{\frac{777}{1198}}$       | $\text{Root}[-4 + 4106 \#1^2 - 131\ 675 \#1^4 + 960\ 197 \#1^6 \&, 6]$               | $\text{Root}[-4 + 410$     |
| $\frac{\sqrt[3]{1555}}{2}$      | $\text{Root}[-101 + 8287 \#1^2 - 165\ 567 \#1^4 + 960\ 197 \#1^6 \&, 5]$             | $\text{Root}[-101 + 82$    |
| $\sqrt{\frac{2721}{4193}}$      | $\text{Root}[-239 + 20\ 233 \#1^2 - 525\ 326 \#1^4 + 3\ 840\ 788 \#1^6 \&, 6]$       | $\text{Root}[-239 + 202$   |
| $\sqrt{\frac{389}{599}}$        | $\text{Root}[-188 + 11\ 178 \#1^2 - 199\ 459 \#1^4 + 960\ 197 \#1^6 \&, 5]$          | $\text{Root}[-188 + 11$    |
| $\frac{\sqrt[3]{10891}}{2}$     | $\text{Root}[-689 + 37\ 291 \#1^2 - 660\ 894 \#1^4 + 3\ 840\ 788 \#1^6 \&, 5]$       | $\text{Root}[-689 + 372$   |
| $33 \sqrt{\frac{5}{8386}}$      | $\text{Root}[-37 + 4956 \#1^2 - 130\ 988 \#1^4 + 960\ 197 \#1^6 \&, 6]$              | $\text{Root}[-37 + 49$     |
| $\frac{\sqrt[3]{98011}}{6}$     | $\text{Root}[-269 + 46\ 085 \#1^2 - 1\ 668\ 952 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$   | $\text{Root}[-269 + 4608$  |
| $3 \sqrt[3]{\frac{173}{599}}$   | $\text{Root}[-169 + 12\ 779 \#1^2 - 233\ 351 \#1^4 + 960\ 197 \#1^6 \&, 4]$          | $\text{Root}[-169 + 12$    |
| $\sqrt{\frac{5449}{8386}}$      | $\text{Root}[-907 + 49\ 189 \#1^2 - 796\ 462 \#1^4 + 3\ 840\ 788 \#1^6 \&, 4]$       | $\text{Root}[-907 + 491$   |
| $\frac{\sqrt[3]{98083}}{6}$     | $\text{Root}[-967 + 101\ 511 \#1^2 - 2\ 758\ 992 \#1^4 + 15\ 363\ 152 \#1^6 \&, 5]$  | $\text{Root}[-967 + 1015$  |
| $\frac{\sqrt[3]{10897}}{2}$     | $\text{Root}[-173 + 9304 \#1^2 - 164\ 880 \#1^4 + 960\ 197 \#1^6 \&, 4]$             | $\text{Root}[-173 + 93$    |
| $\frac{\sqrt[3]{49037}}{3}$     | $\text{Root}[-1277 + 96\ 805 \#1^2 - 2\ 211\ 224 \#1^4 + 15\ 363\ 152 \#1^6 \&, 5]$  | $\text{Root}[-1277 + 968$  |
| $\frac{\sqrt[3]{98065}}{6}$     | $\text{Root}[-443 + 51\ 915 \#1^2 - 1\ 663\ 456 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$   | $\text{Root}[-443 + 5191$  |
| $\frac{\sqrt[3]{10905}}{2}$     | $\text{Root}[-509 + 55\ 927 \#1^2 - 932\ 030 \#1^4 + 3\ 840\ 788 \#1^6 \&, 4]$       | $\text{Root}[-509 + 559$   |
| $\frac{\sqrt[3]{49073}}{3}$     | $\text{Root}[-607 + 109\ 615 \#1^2 - 3\ 301\ 264 \#1^4 + 15\ 363\ 152 \#1^6 \&, 4]$  | $\text{Root}[-607 + 1096$  |
| $\sqrt{\frac{2726}{4193}}$      | $\text{Root}[-29 + 1766 \#1^2 - 28\ 396 \#1^4 + 137\ 171 \#1^6 \&, 4]$               | $\text{Root}[-29 + 17$     |
| $\frac{\sqrt[3]{98137}}{6}$     | $\text{Root}[-1613 + 126\ 885 \#1^2 - 2\ 753\ 496 \#1^4 + 15\ 363\ 152 \#1^6 \&, 4]$ | $\text{Root}[-1613 + 1268$ |
| $2 \sqrt[3]{\frac{6133}{4193}}$ | $\text{Root}[-229 + 14\ 853 \#1^2 - 315\ 104 \#1^4 + 2\ 194\ 736 \#1^6 \&, 4]$       | $\text{Root}[-229 + 148$   |
| $\frac{\sqrt[3]{98129}}{6}$     | $\text{Root}[-53 + 11\ 999 \#1^2 - 444\ 718 \#1^4 + 3\ 840\ 788 \#1^6 \&, 5]$        | $\text{Root}[-53 + 119$    |
| $\frac{\sqrt[3]{24530}}{3}$     | $\text{Root}[-7 + 1003 \#1^2 - 43\ 968 \#1^4 + 548\ 684 \#1^6 \&, 6]$                | $\text{Root}[-7 + 10$      |
| $38 \sqrt[3]{\frac{17}{4193}}$  | $\text{Root}[-13 + 2163 \#1^2 - 82\ 898 \#1^4 + 548\ 684 \#1^6 \&, 4]$               | $\text{Root}[-13 + 21$     |
| $\frac{\sqrt[3]{1547}}{2}$      | $\text{Root}[-64 + 6392 \#1^2 - 168\ 773 \#1^4 + 960\ 197 \#1^6 \&, 6]$              | $\text{Root}[-64 + 63$     |
| $3 \sqrt[3]{\frac{43}{599}}$    | $\text{Root}[-283 + 13\ 407 \#1^2 - 202\ 665 \#1^4 + 960\ 197 \#1^6 \&, 6]$          | $\text{Root}[-283 + 13$    |
| $\frac{\sqrt[3]{24379}}{3}$     | $\text{Root}[-439 + 61\ 615 \#1^2 - 2\ 268\ 016 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$   | $\text{Root}[-439 + 6161$  |
| $\frac{\sqrt[3]{1549}}{2}$      | $\text{Root}[-508 + 19\ 132 \#1^2 - 236\ 557 \#1^4 + 960\ 197 \#1^6 \&, 5]$          | $\text{Root}[-508 + 19$    |
| $\sqrt{\frac{5421}{8386}}$      | $\text{Root}[-1109 + 53\ 871 \#1^2 - 809\ 286 \#1^4 + 3\ 840\ 788 \#1^6 \&, 6]$      | $\text{Root}[-1109 + 53$   |
| $\sqrt[3]{\frac{97579}{97579}}$ |  |                            |

|   |  |  |
|---|--|--|
| $\frac{\sqrt[6]{4193}}{6}$              | $\text{Root}[-2543 + 156\ 343 \#1^2 - 2\ 810\ 288 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$ | $\text{Root}[-2543 + 156\ 343 \#1^2 - 2\ 810\ 288 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$ |
| $\frac{\sqrt[3]{48785}}{3}$             | $\text{Root}[-173 + 68\ 717 \#1^2 - 2\ 262\ 520 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$   | $\text{Root}[-173 + 68\ 717 \#1^2 - 2\ 262\ 520 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$   |
| $5\sqrt[3]{\frac{31}{1198}}$            | $\text{Root}[-643 + 23\ 567 \#1^2 - 270\ 449 \#1^4 + 960\ 197 \#1^6 \&, 4]$          | $\text{Root}[-643 + 23\ 567 \#1^2 - 270\ 449 \#1^4 + 960\ 197 \#1^6 \&, 4]$          |
| $\frac{\sqrt[2]{1849}}{\sqrt[4]{4193}}$ | $\text{Root}[-2087 + 77\ 105 \#1^2 - 944\ 854 \#1^4 + 3\ 840\ 788 \#1^6 \&, 4]$      | $\text{Root}[-2087 + 77\ 105 \#1^2 - 944\ 854 \#1^4 + 3\ 840\ 788 \#1^6 \&, 4]$      |
| $\frac{\sqrt[3]{4821}}{3}$              | $\text{Root}[-4999 + 230\ 431 \#1^2 - 3\ 352\ 560 \#1^4 + 15\ 363\ 152 \#1^6 \&, 5]$ | $\text{Root}[-4999 + 230\ 431 \#1^2 - 3\ 352\ 560 \#1^4 + 15\ 363\ 152 \#1^6 \&, 5]$ |
| $\frac{\sqrt[6]{13949}}{6}$             | $\text{Root}[-1 + 31\ 047 \#1^2 - 731\ 426 \#1^4 + 3\ 840\ 788 \#1^6 \&, 5]$         | $\text{Root}[-1 + 31\ 047 \#1^2 - 731\ 426 \#1^4 + 3\ 840\ 788 \#1^6 \&, 5]$         |
| $2\sqrt[5]{\frac{678}{4193}}$           | $\text{Root}[-27 + 1782 \#1^2 - 28\ 854 \#1^4 + 137\ 171 \#1^6 \&, 5]$               | $\text{Root}[-27 + 1782 \#1^2 - 28\ 854 \#1^4 + 137\ 171 \#1^6 \&, 5]$               |
| $\frac{\sqrt[6]{97633}}{6}$             | $\text{Root}[-3133 + 164\ 781 \#1^2 - 2\ 804\ 792 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$ | $\text{Root}[-3133 + 164\ 781 \#1^2 - 2\ 804\ 792 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$ |
| $\frac{\sqrt[3]{48817}}{3}$             | $\text{Root}[-191 + 25\ 431 \#1^2 - 594\ 484 \#1^4 + 3\ 840\ 788 \#1^6 \&, 6]$       | $\text{Root}[-191 + 25\ 431 \#1^2 - 594\ 484 \#1^4 + 3\ 840\ 788 \#1^6 \&, 6]$       |
| $5\sqrt[6]{\frac{3905}{4193}}$          | $\text{Root}[-47 + 9769 \#1^2 - 457\ 542 \#1^4 + 3\ 840\ 788 \#1^6 \&, 6]$           | $\text{Root}[-47 + 9769 \#1^2 - 457\ 542 \#1^4 + 3\ 840\ 788 \#1^6 \&, 6]$           |
| $\frac{\sqrt[2]{1551}}{2}$              | $\text{Root}[-592 + 26\ 712 \#1^2 - 304\ 341 \#1^4 + 960\ 197 \#1^6 \&, 4]$          | $\text{Root}[-592 + 26\ 712 \#1^2 - 304\ 341 \#1^4 + 960\ 197 \#1^6 \&, 4]$          |
| $\sqrt[3]{\frac{2714}{4193}}$           | $\text{Root}[-359 + 13\ 597 \#1^2 - 154\ 346 \#1^4 + 548\ 684 \#1^6 \&, 4]$          | $\text{Root}[-359 + 13\ 597 \#1^2 - 154\ 346 \#1^4 + 548\ 684 \#1^6 \&, 4]$          |
| $\frac{\sqrt[6]{97705}}{6}$             | $\text{Root}[-6271 + 283\ 879 \#1^2 - 3\ 894\ 832 \#1^4 + 15\ 363\ 152 \#1^6 \&, 4]$ | $\text{Root}[-6271 + 283\ 879 \#1^2 - 3\ 894\ 832 \#1^4 + 15\ 363\ 152 \#1^6 \&, 4]$ |
| $\frac{\sqrt[3]{6979}}{3}$              | $\text{Root}[-443 + 39\ 697 \#1^2 - 866\ 994 \#1^4 + 3\ 840\ 788 \#1^6 \&, 5]$       | $\text{Root}[-443 + 39\ 697 \#1^2 - 866\ 994 \#1^4 + 3\ 840\ 788 \#1^6 \&, 5]$       |
| $2\sqrt[3]{\frac{6106}{4193}}$          | $\text{Root}[-811 + 34\ 315 \#1^2 - 478\ 152 \#1^4 + 2\ 194\ 736 \#1^6 \&, 4]$       | $\text{Root}[-811 + 34\ 315 \#1^2 - 478\ 152 \#1^4 + 2\ 194\ 736 \#1^6 \&, 4]$       |
| $\frac{\sqrt[6]{97697}}{6}$             | $\text{Root}[-607 + 39\ 575 \#1^2 - 730\ 052 \#1^4 + 3\ 840\ 788 \#1^6 \&, 5]$       | $\text{Root}[-607 + 39\ 575 \#1^2 - 730\ 052 \#1^4 + 3\ 840\ 788 \#1^6 \&, 5]$       |
| $\frac{\sqrt[3]{24422}}{3}$             | $\text{Root}[-67 + 4201 \#1^2 - 84\ 730 \#1^4 + 548\ 684 \#1^6 \&, 6]$               | $\text{Root}[-67 + 4201 \#1^2 - 84\ 730 \#1^4 + 548\ 684 \#1^6 \&, 6]$               |
| $2\sqrt[2]{\frac{97}{599}}$             | $\text{Root}[-37 + 4081 \#1^2 - 48\ 319 \#1^4 + 137\ 171 \#1^6 \&, 4]$               | $\text{Root}[-37 + 4081 \#1^2 - 48\ 319 \#1^4 + 137\ 171 \#1^6 \&, 4]$               |
| $11\sqrt[3]{\frac{202}{4193}}$          | $\text{Root}[-689 + 45\ 241 \#1^2 - 633\ 872 \#1^4 + 2\ 194\ 736 \#1^6 \&, 4]$       | $\text{Root}[-689 + 45\ 241 \#1^2 - 633\ 872 \#1^4 + 2\ 194\ 736 \#1^6 \&, 4]$       |
| $\frac{\sqrt[6]{13967}}{6}$             | $\text{Root}[-461 + 43\ 187 \#1^2 - 1\ 002\ 562 \#1^4 + 3\ 840\ 788 \#1^6 \&, 4]$    | $\text{Root}[-461 + 43\ 187 \#1^2 - 1\ 002\ 562 \#1^4 + 3\ 840\ 788 \#1^6 \&, 4]$    |
| $2\sqrt[3]{\frac{6118}{4193}}$          | $\text{Root}[-113 + 6937 \#1^2 - 123\ 660 \#1^4 + 548\ 684 \#1^6 \&, 4]$             | $\text{Root}[-113 + 6937 \#1^2 - 123\ 660 \#1^4 + 548\ 684 \#1^6 \&, 4]$             |
| $\sqrt[4]{\frac{8146}{12579}}$          | $\text{Root}[-73 + 12\ 817 \#1^2 - 355\ 408 \#1^4 + 2\ 194\ 736 \#1^6 \&, 5]$        | $\text{Root}[-73 + 12\ 817 \#1^2 - 355\ 408 \#1^4 + 2\ 194\ 736 \#1^6 \&, 5]$        |
| $2\sqrt[2]{\frac{2038}{12579}}$         | $\text{Root}[-27 + 8811 \#1^2 - 511\ 128 \#1^4 + 2\ 194\ 736 \#1^6 \&, 4]$           | $\text{Root}[-27 + 8811 \#1^2 - 511\ 128 \#1^4 + 2\ 194\ 736 \#1^6 \&, 4]$           |
| $\frac{\sqrt[2]{1541}}{2}$              | $\text{Root}[-313 + 16\ 903 \#1^2 - 239\ 763 \#1^4 + 960\ 197 \#1^6 \&, 6]$          | $\text{Root}[-313 + 16\ 903 \#1^2 - 239\ 763 \#1^4 + 960\ 197 \#1^6 \&, 6]$          |
| $\sqrt[3]{\frac{771}{1198}}$            | $\text{Root}[-772 + 25\ 462 \#1^2 - 273\ 655 \#1^4 + 960\ 197 \#1^6 \&, 6]$          | $\text{Root}[-772 + 25\ 462 \#1^2 - 273\ 655 \#1^4 + 960\ 197 \#1^6 \&, 6]$          |
| $\frac{\sqrt[6]{18793}}{2}$             | $\text{Root}[-601 + 63\ 955 \#1^2 - 957\ 678 \#1^4 + 3\ 840\ 788 \#1^6 \&, 6]$       | $\text{Root}[-601 + 63\ 955 \#1^2 - 957\ 678 \#1^4 + 3\ 840\ 788 \#1^6 \&, 6]$       |
| $\sqrt[3]{\frac{48569}{8386}}$          | $\text{Root}[-3919 + 213\ 935 \#1^2 - 3\ 403\ 856 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$ | $\text{Root}[-3919 + 213\ 935 \#1^2 - 3\ 403\ 856 \#1^4 + 15\ 363\ 152 \#1^6 \&, 6]$ |

|                               |  |  |
|-------------------------------|--|--|
| $\frac{\sqrt{13877}}{6}$      | $\text{Root}[-359 + 35949 \#1^2 - 744250 \#1^4 + 3840788 \#1^6 \&, 6]$     | $\text{Root}[-359 + 35949 \#1^2 - 744250 \#1^4 + 3840788 \#1^6 \&, 6]$     |
| $\frac{\sqrt{1543}}{2}$       | $\text{Root}[-1157 + 32731 \#1^2 - 307547 \#1^4 + 960197 \#1^6 \&, 4]$     | $\text{Root}[-1157 + 32731 \#1^2 - 307547 \#1^4 + 960197 \#1^6 \&, 4]$     |
| $30 \sqrt{\frac{3}{4193}}$    | $\text{Root}[-389 + 14075 \#1^2 - 156178 \#1^4 + 548684 \#1^6 \&, 5]$      | $\text{Root}[-389 + 14075 \#1^2 - 156178 \#1^4 + 548684 \#1^6 \&, 5]$      |
| $\frac{\sqrt{97201}}{6}$      | $\text{Root}[-9287 + 333367 \#1^2 - 3946128 \#1^4 + 15363152 \#1^6 \&, 6]$ | $\text{Root}[-9287 + 333367 \#1^2 - 3946128 \#1^4 + 15363152 \#1^6 \&, 6]$ |
| $\frac{\sqrt{6943}}{3}$       | $\text{Root}[-1153 + 61095 \#1^2 - 879818 \#1^4 + 3840788 \#1^6 \&, 6]$    | $\text{Root}[-1153 + 61095 \#1^2 - 879818 \#1^4 + 3840788 \#1^6 \&, 6]$    |
| $\frac{\sqrt{24298}}{3}$      | $\text{Root}[-347 + 29539 \#1^2 - 485480 \#1^4 + 2194736 \#1^6 \&, 6]$     | $\text{Root}[-347 + 29539 \#1^2 - 485480 \#1^4 + 2194736 \#1^6 \&, 6]$     |
| $\frac{\sqrt{97193}}{6}$      | $\text{Root}[-667 + 40243 \#1^2 - 742876 \#1^4 + 3840788 \#1^6 \&, 6]$     | $\text{Root}[-667 + 40243 \#1^2 - 742876 \#1^4 + 3840788 \#1^6 \&, 6]$     |
| $\sqrt{\frac{386}{599}}$      | $\text{Root}[-196 + 5530 \#1^2 - 48777 \#1^4 + 137171 \#1^6 \&, 4]$        | $\text{Root}[-196 + 5530 \#1^2 - 48777 \#1^4 + 137171 \#1^6 \&, 4]$        |
| $2 \sqrt{\frac{6079}{4193}}$  | $\text{Root}[-1961 + 61737 \#1^2 - 641200 \#1^4 + 2194736 \#1^6 \&, 4]$    | $\text{Root}[-1961 + 61737 \#1^2 - 641200 \#1^4 + 2194736 \#1^6 \&, 4]$    |
| $\sqrt{\frac{13895}{6}}$      | $\text{Root}[-1971 + 81081 \#1^2 - 1015386 \#1^4 + 3840788 \#1^6 \&, 5]$   | $\text{Root}[-1971 + 81081 \#1^2 - 1015386 \#1^4 + 3840788 \#1^6 \&, 5]$   |
| $\sqrt{\frac{24314}{4193}}$   | $\text{Root}[-1 + 41 \#1^2 - 548 \#1^4 + 2396 \#1^6 \&, 6]$                | $\text{Root}[-1 + 41 \#1^2 - 548 \#1^4 + 2396 \#1^6 \&, 6]$                |
| $\sqrt{\frac{32419}{12579}}$  | $\text{Root}[-1517 + 169989 \#1^2 - 3086920 \#1^4 + 15363152 \#1^6 \&, 5]$ | $\text{Root}[-1517 + 169989 \#1^2 - 3086920 \#1^4 + 15363152 \#1^6 \&, 5]$ |
| $2 \sqrt{\frac{2026}{12579}}$ | $\text{Root}[-193 + 15937 \#1^2 - 362736 \#1^4 + 2194736 \#1^6 \&, 6]$     | $\text{Root}[-193 + 15937 \#1^2 - 362736 \#1^4 + 2194736 \#1^6 \&, 6]$     |
| $2 \sqrt{\frac{869}{599}}$    | $\text{Root}[-347 + 13701 \#1^2 - 164422 \#1^4 + 548684 \#1^6 \&, 4]$      | $\text{Root}[-347 + 13701 \#1^2 - 164422 \#1^4 + 548684 \#1^6 \&, 4]$      |
| $\sqrt{\frac{8110}{12579}}$   | $\text{Root}[-571 + 33203 \#1^2 - 518456 \#1^4 + 2194736 \#1^6 \&, 5]$     | $\text{Root}[-571 + 33203 \#1^2 - 518456 \#1^4 + 2194736 \#1^6 \&, 5]$     |
| $\sqrt{\frac{1535}{599}}$     | $\text{Root}[-788 + 30168 \#1^2 - 310753 \#1^4 + 960197 \#1^6 \&, 6]$      | $\text{Root}[-788 + 30168 \#1^2 - 310753 \#1^4 + 960197 \#1^6 \&, 6]$      |
| $\sqrt{\frac{96697}{4193}}$   | $\text{Root}[-943 + 245543 \#1^2 - 3997424 \#1^4 + 15363152 \#1^6 \&, 6]$  | $\text{Root}[-943 + 245543 \#1^2 - 3997424 \#1^4 + 15363152 \#1^6 \&, 6]$  |
| $\sqrt{\frac{6907}{1198}}$    | $\text{Root}[-719 + 48165 \#1^2 - 892642 \#1^4 + 3840788 \#1^6 \&, 6]$     | $\text{Root}[-719 + 48165 \#1^2 - 892642 \#1^4 + 3840788 \#1^6 \&, 6]$     |
| $8 \sqrt{\frac{6}{599}}$      | $\text{Root}[-217 + 5753 \#1^2 - 49235 \#1^4 + 137171 \#1^6 \&, 5]$        | $\text{Root}[-217 + 5753 \#1^2 - 49235 \#1^4 + 137171 \#1^6 \&, 5]$        |
| $\sqrt{\frac{24190}{4193}}$   | $\text{Root}[-1537 + 58617 \#1^2 - 648528 \#1^4 + 2194736 \#1^6 \&, 6]$    | $\text{Root}[-1537 + 58617 \#1^2 - 648528 \#1^4 + 2194736 \#1^6 \&, 6]$    |
| $\sqrt{\frac{13823}{599}}$    | $\text{Root}[-2209 + 84647 \#1^2 - 1028210 \#1^4 + 3840788 \#1^6 \&, 6]$   | $\text{Root}[-2209 + 84647 \#1^2 - 1028210 \#1^4 + 3840788 \#1^6 \&, 6]$   |
| $2 \sqrt{\frac{6047}{4193}}$  | $\text{Root}[-49 + 6937 \#1^2 - 127324 \#1^4 + 548684 \#1^6 \&, 6]$        | $\text{Root}[-49 + 6937 \#1^2 - 127324 \#1^4 + 548684 \#1^6 \&, 6]$        |
| $\sqrt{\frac{32251}{12579}}$  | $\text{Root}[-1709 + 137437 \#1^2 - 3138216 \#1^4 + 15363152 \#1^6 \&, 6]$ | $\text{Root}[-1709 + 137437 \#1^2 - 3138216 \#1^4 + 15363152 \#1^6 \&, 6]$ |
| $\sqrt{\frac{3458}{599}}$     | $\text{Root}[-541 + 16567 \#1^2 - 166254 \#1^4 + 548684 \#1^6 \&, 6]$      | $\text{Root}[-541 + 16567 \#1^2 - 166254 \#1^4 + 548684 \#1^6 \&, 6]$      |
| $2 \sqrt{\frac{2017}{12579}}$ | $\text{Root}[-827 + 37979 \#1^2 - 525784 \#1^4 + 2194736 \#1^6 \&, 6]$     | $\text{Root}[-827 + 37979 \#1^2 - 525784 \#1^4 + 2194736 \#1^6 \&, 6]$     |
| $\sqrt{\frac{24262}{4193}}$   | $\text{Root}[-13 + 3063 \#1^2 - 96638 \#1^4 + 548684 \#1^6 \&, 6]$         | $\text{Root}[-13 + 3063 \#1^2 - 96638 \#1^4 + 548684 \#1^6 \&, 6]$         |
| $2 \sqrt{\frac{865}{599}}$    | $\text{Root}[-23 + 2240 \#1^2 - 22892 \#1^4 + 137171 \#1^6 \&, 5]$         | $\text{Root}[-23 + 2240 \#1^2 - 22892 \#1^4 + 137171 \#1^6 \&, 5]$         |

|                                      |   |   |
|--------------------------------------|---|---|
| $\sqrt[3]{\frac{382}{599}}$          | $\text{Root}[-52 + 4750 \#1^2 - 49693 \#1^4 + 137171 \#1^6 \&, 6]$    | $\text{Root}[-52 + 4750 \#1^2 - 49693 \#1^4 + 137171 \#1^6 \&, 6]$    |
| $\frac{4 \sqrt{\frac{215}{599}}}{3}$ | $\text{Root}[-343 + 14529 \#1^2 - 168086 \#1^4 + 548684 \#1^6 \&, 6]$ | $\text{Root}[-343 + 14529 \#1^2 - 168086 \#1^4 + 548684 \#1^6 \&, 6]$ |
| $\sqrt{\frac{8026}{12579}}$          | $\text{Root}[-27 + 23139 \#1^2 - 533112 \#1^4 + 2194736 \#1^6 \&, 6]$ | $\text{Root}[-27 + 23139 \#1^2 - 533112 \#1^4 + 2194736 \#1^6 \&, 6]$ |
| $\frac{\sqrt{\frac{13759}{599}}}{6}$ | $\text{Root}[-37 + 5886 \#1^2 - 206558 \#1^4 + 960197 \#1^6 \&, 6]$   | $\text{Root}[-37 + 5886 \#1^2 - 206558 \#1^4 + 960197 \#1^6 \&, 6]$   |
| $\frac{\sqrt{\frac{3442}{599}}}{3}$  | $\text{Root}[-37 + 2224 \#1^2 - 34350 \#1^4 + 137171 \#1^6 \&, 6]$    | $\text{Root}[-37 + 2224 \#1^2 - 34350 \#1^4 + 137171 \#1^6 \&, 6]$    |

**Dimensions[angle10]**

{94, 7}

**orderedroots[minipoly[chi10]]**

$$\{-5, \text{Root}[-556 + 213 \#1 - 26 \#1^2 + \#1^3 \&, 1], \text{Root}[-556 + 213 \#1 - 26 \#1^2 + \#1^3 \&, 2],$$

$$9, 11, \text{Root}[-556 + 213 \#1 - 26 \#1^2 + \#1^3 \&, 3], 13\}$$
**chi10**

$$(-13 + x) (-11 + x)^2 (-9 + x)^{11} (5 + x)^{32} (-556 + 213 x - 26 x^2 + x^3)$$

**coeff[chi10, (x+5) (x-9) (x-11)] // FullSimplify**

$$\{\text{Root}[-1073408 + 34640 \#1 - 339 \#1^2 + \#1^3 \&, 3],$$

$$\text{Root}[-1073408 + 34640 \#1 - 339 \#1^2 + \#1^3 \&, 1],$$

$$\text{Root}[-1073408 + 34640 \#1 - 339 \#1^2 + \#1^3 \&, 2], 144\}$$
**combinationangle[{Root[-1073408 + 34640 #1 - 339 #1^2 + #1^3 &, 3],****Root[-1073408 + 34640 #1 - 339 #1^2 + #1^3 &, 1],****Root[-1073408 + 34640 #1 - 339 #1^2 + #1^3 &, 2], 144},****{1, 9}, {2, 3, 6, 7}, angle10] // FullSimplify**

$$\{\text{Root}[9665881 - 30511076 \#1^2 + 11728022 \#1^4 - 1470180 \#1^6 + 52441 \#1^8 \&, 8],$$

$$\text{Root}[9665881 - 30511076 \#1^2 + 11728022 \#1^4 - 1470180 \#1^6 + 52441 \#1^8 \&, 8],$$

$$\text{Root}[9665881 - 30511076 \#1^2 + 11728022 \#1^4 - 1470180 \#1^6 + 52441 \#1^8 \&, 7],$$

$$\text{Root}[9665881 - 30511076 \#1^2 + 11728022 \#1^4 - 1470180 \#1^6 + 52441 \#1^8 \&, 7],$$

$$\text{Root}[9665881 - 30511076 \#1^2 + 11728022 \#1^4 - 1470180 \#1^6 + 52441 \#1^8 \&, 6],$$

$$\text{Root}[9665881 - 30511076 \#1^2 + 11728022 \#1^4 - 1470180 \#1^6 + 52441 \#1^8 \&, 6],$$

$$\text{Root}[9665881 - 30511076 \#1^2 + 11728022 \#1^4 - 1470180 \#1^6 + 52441 \#1^8 \&, 5],$$

$$\text{Root}[9665881 - 30511076 \#1^2 + 11728022 \#1^4 - 1470180 \#1^6 + 52441 \#1^8 \&, 5]\}$$

```

compatible[
{Root[9 665 881 - 30 511 076 #1^2 + 11 728 022 #1^4 - 1 470 180 #1^6 + 52 441 #1^8 &, 8], 
 Root[9 665 881 - 30 511 076 #1^2 + 11 728 022 #1^4 - 1 470 180 #1^6 + 52 441 #1^8 &, 8], 
 Root[9 665 881 - 30 511 076 #1^2 + 11 728 022 #1^4 - 1 470 180 #1^6 + 52 441 #1^8 &, 7], 
 Root[9 665 881 - 30 511 076 #1^2 + 11 728 022 #1^4 - 1 470 180 #1^6 + 52 441 #1^8 &, 7], 
 Root[9 665 881 - 30 511 076 #1^2 + 11 728 022 #1^4 - 1 470 180 #1^6 + 52 441 #1^8 &, 6], 
 Root[9 665 881 - 30 511 076 #1^2 + 11 728 022 #1^4 - 1 470 180 #1^6 + 52 441 #1^8 &, 6], 
 Root[9 665 881 - 30 511 076 #1^2 + 11 728 022 #1^4 - 1 470 180 #1^6 + 52 441 #1^8 &, 5], 
 Root[9 665 881 - 30 511 076 #1^2 + 11 728 022 #1^4 - 1 470 180 #1^6 + 52 441 #1^8 &, 5]}]
0

```

$$\begin{aligned}
\text{chi11} = & (-13 + x) (-12 + x) (-11 + x)^2 (-9 + x)^{12} (-5 + x) (5 + x)^{32} \\
& (-13 + x) (-12 + x) (-11 + x)^2 (-9 + x)^{12} (-5 + x) (5 + x)^{32}
\end{aligned}$$

```

list11 = { (-13 + x) (2789 - 1696 x + 362 x2 - 32 x3 + x4) ,
(-13 + x) (-11 + x) (-5 + x) (51 - 16 x + x2) , (-13 + x) (73 - 18 x + x2) (37 - 14 x + x2) ,
(-13 + x) (-11 + x) (-247 + 131 x - 21 x2 + x3) ,
(-11 + x) (3227 - 1950 x + 404 x2 - 34 x3 + x4) , (-13 + x) (-7 + x)
(-371 + 187 x - 25 x2 + x3) , (-13 + x) (2613 - 1680 x + 362 x2 - 32 x3 + x4) ,
(-13 + x) (-11 + x) (-239 + 131 x - 21 x2 + x3) , -34 145 + 24 469 x - 6386 x2 +
778 x3 - 45 x4 + x5 , (-11 + x) (3123 - 1942 x + 404 x2 - 34 x3 + x4) ,
(-11 + x) (73 - 18 x + x2) (43 - 16 x + x2) , (-13 + x) (2509 - 1672 x + 362 x2 - 32 x3 + x4) ,
(-13 + x) (2525 - 1672 x + 362 x2 - 32 x3 + x4) , (-13 + x) (-11 + x)2 (-7 + x) (-3 + x) ,
-33 001 + 24 277 x - 6378 x2 + 778 x3 - 45 x4 + x5 ,
(-11 + x) (3019 - 1934 x + 404 x2 - 34 x3 + x4) ,
(-11 + x) (3035 - 1934 x + 404 x2 - 34 x3 + x4) , (-13 + x) (-9 + x)
(-269 + 155 x - 23 x2 + x3) , (-13 + x) (2437 - 1664 x + 362 x2 - 32 x3 + x4) ,
-31 649 + 24 069 x - 6370 x2 + 778 x3 - 45 x4 + x5 , (-13 + x) (-11 + x)
(-223 + 131 x - 21 x2 + x3) , -31 857 + 24 085 x - 6370 x2 + 778 x3 - 45 x4 + x5 ,
(-11 + x)2 (-265 + 151 x - 23 x2 + x3) , -32 033 + 24 101 x - 6370 x2 + 778 x3 - 45 x4 + x5 ,
(-11 + x) (2931 - 1926 x + 404 x2 - 34 x3 + x4) ,
(-11 + x) (-7 + x) (-421 + 215 x - 27 x2 + x3) , (-13 + x) (-9 + x)2 (29 - 14 x + x2) ,
(-13 + x) (-11 + x) (-215 + 131 x - 21 x2 + x3) , -30 713 + 23 893 x -
6362 x2 + 778 x3 - 45 x4 + x5 , (-11 + x) (2811 - 1918 x + 404 x2 - 34 x3 + x4) ,
-30 889 + 23 909 x - 6362 x2 + 778 x3 - 45 x4 + x5 , (-11 + x)2 (-257 + 151 x - 23 x2 + x3) ,
(-11 + x) (2843 - 1918 x + 404 x2 - 34 x3 + x4) , (-13 + x) (-11 + x) (-9 + x)
(23 - 12 x + x2) , (-11 + x) (2707 - 1910 x + 404 x2 - 34 x3 + x4) , (-9 + x)
(3305 - 2268 x + 454 x2 - 36 x3 + x4) , (-11 + x) (2723 - 1910 x + 404 x2 - 34 x3 + x4) ,
-29 921 + 23 733 x - 6354 x2 + 778 x3 - 45 x4 + x5 , (-11 + x)2 (-249 + 151 x - 23 x2 + x3) ,
(-11 + x) (95 - 20 x + x2) (29 - 14 x + x2) , (-11 + x) (-9 + x) (-291 + 179 x - 25 x2 + x3) ,
(-11 + x) (2635 - 1902 x + 404 x2 - 34 x3 + x4) , (-11 + x)2 (-241 + 151 x - 23 x2 + x3) ,
(-11 + x) (-9 + x) (-283 + 179 x - 25 x2 + x3) , (-11 + x)2 (-233 + 151 x - 23 x2 + x3) };

```

Length[list11]

45

A11 = CoefficientList[list11, x];

```
A11 // MatrixForm
```

$$\left( \begin{array}{cccccc} -36257 & 24837 & -6402 & 778 & -45 & 1 \\ -36465 & 24853 & -6402 & 778 & -45 & 1 \\ -35113 & 24645 & -6394 & 778 & -45 & 1 \\ -35321 & 24661 & -6394 & 778 & -45 & 1 \\ -35497 & 24677 & -6394 & 778 & -45 & 1 \\ -33761 & 24437 & -6386 & 778 & -45 & 1 \\ -33969 & 24453 & -6386 & 778 & -45 & 1 \\ -34177 & 24469 & -6386 & 778 & -45 & 1 \\ -34145 & 24469 & -6386 & 778 & -45 & 1 \\ -34353 & 24485 & -6386 & 778 & -45 & 1 \\ -34529 & 24501 & -6386 & 778 & -45 & 1 \\ -32617 & 24245 & -6378 & 778 & -45 & 1 \\ -32825 & 24261 & -6378 & 778 & -45 & 1 \\ -33033 & 24277 & -6378 & 778 & -45 & 1 \\ -33001 & 24277 & -6378 & 778 & -45 & 1 \\ -33209 & 24293 & -6378 & 778 & -45 & 1 \\ -33385 & 24309 & -6378 & 778 & -45 & 1 \\ -31473 & 24053 & -6370 & 778 & -45 & 1 \\ -31681 & 24069 & -6370 & 778 & -45 & 1 \\ -31649 & 24069 & -6370 & 778 & -45 & 1 \\ -31889 & 24085 & -6370 & 778 & -45 & 1 \\ -31857 & 24085 & -6370 & 778 & -45 & 1 \\ -32065 & 24101 & -6370 & 778 & -45 & 1 \\ -32033 & 24101 & -6370 & 778 & -45 & 1 \\ -32241 & 24117 & -6370 & 778 & -45 & 1 \\ -32417 & 24133 & -6370 & 778 & -45 & 1 \\ -30537 & 23877 & -6362 & 778 & -45 & 1 \\ -30745 & 23893 & -6362 & 778 & -45 & 1 \\ -30713 & 23893 & -6362 & 778 & -45 & 1 \\ -30921 & 23909 & -6362 & 778 & -45 & 1 \\ -30889 & 23909 & -6362 & 778 & -45 & 1 \\ -31097 & 23925 & -6362 & 778 & -45 & 1 \\ -31273 & 23941 & -6362 & 778 & -45 & 1 \\ -29601 & 23701 & -6354 & 778 & -45 & 1 \\ -29777 & 23717 & -6354 & 778 & -45 & 1 \\ -29745 & 23717 & -6354 & 778 & -45 & 1 \\ -29953 & 23733 & -6354 & 778 & -45 & 1 \\ -29921 & 23733 & -6354 & 778 & -45 & 1 \\ -30129 & 23749 & -6354 & 778 & -45 & 1 \\ -30305 & 23765 & -6354 & 778 & -45 & 1 \\ -28809 & 23541 & -6346 & 778 & -45 & 1 \\ -28985 & 23557 & -6346 & 778 & -45 & 1 \\ -29161 & 23573 & -6346 & 778 & -45 & 1 \\ -28017 & 23381 & -6338 & 778 & -45 & 1 \\ -28193 & 23397 & -6338 & 778 & -45 & 1 \end{array} \right)$$

```
Dimensions[A11]
```

```
{45, 6}
```

```
gpart[chi11]
```

```
{-1746945, 1211077, -313410, 38122, -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 && Array[n, 45].A11 == gpart[chi11], Array[n, 45], Integers]

{{n[1] → 24, n[2] → 7, 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] → 18, 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} }

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 && Array[n, 45].A11 == gpart[chi11], Array[n, 45], Integers]

{ }

list11[[1, 11]] * mu[chi11] // Factor
{ (-13 + x) (-11 + x) (-9 + x)^11 (5 + x)^31 (2789 - 1696 x + 362 x^2 - 32 x^3 + x^4),
(-11 + x)^2 (-9 + x)^11 (5 + x)^31 (73 - 18 x + x^2) (43 - 16 x + x^2) }

```

```
Array[m, 6].Transpose[A11]
```

```
{-36 257 m[1] + 24 837 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6],  
-36 465 m[1] + 24 853 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6],  
-35 113 m[1] + 24 645 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6],  
-35 321 m[1] + 24 661 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6],  
-35 497 m[1] + 24 677 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6],  
-33 761 m[1] + 24 437 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6],  
-33 969 m[1] + 24 453 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6],  
-34 177 m[1] + 24 469 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6],  
-34 145 m[1] + 24 469 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6],  
-34 353 m[1] + 24 485 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6],  
-34 529 m[1] + 24 501 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6],  
-32 617 m[1] + 24 245 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6],  
-32 825 m[1] + 24 261 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6],  
-33 033 m[1] + 24 277 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6],  
-33 001 m[1] + 24 277 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6],  
-33 209 m[1] + 24 293 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6],  
-33 385 m[1] + 24 309 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6],  
-31 473 m[1] + 24 053 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6],  
-31 681 m[1] + 24 069 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6],  
-31 649 m[1] + 24 069 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6],  
-31 889 m[1] + 24 085 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6],  
-31 857 m[1] + 24 085 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6],  
-32 065 m[1] + 24 101 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6],  
-32 033 m[1] + 24 101 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6],  
-32 241 m[1] + 24 117 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6],  
-32 417 m[1] + 24 133 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6],  
-30 537 m[1] + 23 877 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6],  
-30 745 m[1] + 23 893 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6],  
-30 713 m[1] + 23 893 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6],  
-30 921 m[1] + 23 909 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6],  
-30 889 m[1] + 23 909 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6],  
-31 097 m[1] + 23 925 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6],  
-31 273 m[1] + 23 941 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],  
-29 777 m[1] + 23 717 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6],  
-29 745 m[1] + 23 717 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6],  
-29 953 m[1] + 23 733 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6],  
-29 921 m[1] + 23 733 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6],  
-30 129 m[1] + 23 749 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6],  
-30 305 m[1] + 23 765 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6],  
-28 809 m[1] + 23 541 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6],  
-28 985 m[1] + 23 557 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6],  
-29 161 m[1] + 23 573 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6],  
-28 017 m[1] + 23 381 m[2] - 6338 m[3] + 778 m[4] - 45 m[5] + m[6],  
-28 193 m[1] + 23 397 m[2] - 6338 m[3] + 778 m[4] - 45 m[5] + m[6]}
```

```

Array[m, 6].gpart[chi11]
- 1 746 945 m[1] + 1 211 077 m[2] - 313 410 m[3] + 38 122 m[4] - 2205 m[5] + 49 m[6]

FindInstance[
- 1 746 945 m[1] + 1 211 077 m[2] - 313 410 m[3] + 38 122 m[4] - 2205 m[5] + 49 m[6] < 0 &&
- 36 257 m[1] + 24 837 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 465 m[1] + 24 853 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 113 m[1] + 24 645 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 321 m[1] + 24 661 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 497 m[1] + 24 677 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 761 m[1] + 24 437 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 969 m[1] + 24 453 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 177 m[1] + 24 469 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 145 m[1] + 24 469 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 353 m[1] + 24 485 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 529 m[1] + 24 501 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 617 m[1] + 24 245 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 825 m[1] + 24 261 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 033 m[1] + 24 277 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 001 m[1] + 24 277 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 209 m[1] + 24 293 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 385 m[1] + 24 309 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 473 m[1] + 24 053 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 681 m[1] + 24 069 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 649 m[1] + 24 069 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 889 m[1] + 24 085 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 857 m[1] + 24 085 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 065 m[1] + 24 101 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 033 m[1] + 24 101 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 241 m[1] + 24 117 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 417 m[1] + 24 133 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 537 m[1] + 23 877 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 745 m[1] + 23 893 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 713 m[1] + 23 893 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 921 m[1] + 23 909 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 889 m[1] + 23 909 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 097 m[1] + 23 925 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 273 m[1] + 23 941 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 &&
- 29 777 m[1] + 23 717 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 29 745 m[1] + 23 717 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 29 953 m[1] + 23 733 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 29 921 m[1] + 23 733 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 129 m[1] + 23 749 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 305 m[1] + 23 765 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 809 m[1] + 23 541 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 985 m[1] + 23 557 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&

```

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- 29 161 m[1] + 23 573 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 017 m[1] + 23 381 m[2] - 6338 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 193 m[1] + 23 397 m[2] - 6338 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0,
Array[m, 6], Integers]
{ }

FindInstance[
- 1 746 945 m[1] + 1 211 077 m[2] - 313 410 m[3] + 38 122 m[4] - 2205 m[5] + 49 m[6] < 0 &&
- 36 257 m[1] + 24 837 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] < 0 &&
- 36 465 m[1] + 24 853 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 113 m[1] + 24 645 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 321 m[1] + 24 661 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 497 m[1] + 24 677 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 761 m[1] + 24 437 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 969 m[1] + 24 453 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 177 m[1] + 24 469 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 145 m[1] + 24 469 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 353 m[1] + 24 485 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 529 m[1] + 24 501 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 617 m[1] + 24 245 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 825 m[1] + 24 261 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 033 m[1] + 24 277 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 001 m[1] + 24 277 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 209 m[1] + 24 293 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 385 m[1] + 24 309 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 473 m[1] + 24 053 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 681 m[1] + 24 069 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 649 m[1] + 24 069 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 889 m[1] + 24 085 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 857 m[1] + 24 085 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 065 m[1] + 24 101 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 033 m[1] + 24 101 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 241 m[1] + 24 117 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 417 m[1] + 24 133 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 537 m[1] + 23 877 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 745 m[1] + 23 893 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 713 m[1] + 23 893 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 921 m[1] + 23 909 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 889 m[1] + 23 909 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 097 m[1] + 23 925 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 273 m[1] + 23 941 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 &&
- 29 777 m[1] + 23 717 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 29 745 m[1] + 23 717 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 29 953 m[1] + 23 733 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&

```

```

- 29 921 m[1] + 23 733 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 129 m[1] + 23 749 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 305 m[1] + 23 765 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 809 m[1] + 23 541 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 985 m[1] + 23 557 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 29 161 m[1] + 23 573 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 017 m[1] + 23 381 m[2] - 6338 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 193 m[1] + 23 397 m[2] - 6338 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0,
Array[m, 6], Integers]
{ {m[1] → -8625, m[2] → -103 494,
  m[3] → -1 233 304, m[4] → 0, m[5] → 0, m[6] → -5 637 966 054} }

Array[m, 6] /. {m[1] → -8625, m[2] → -103 494,
  m[3] → -1 233 304, m[4] → 0, m[5] → 0, m[6] → -5 637 966 054}
{-8625, -103 494, -1 233 304, 0, 0, -5 637 966 054}

GCD[-8625, -103 494, -1 233 304, 0, 0, -5 637 966 054]
1

Reverse[{-8625, -103 494, -1 233 304, 0, 0, -5 637 966 054}]
{-5 637 966 054, 0, 0, -1 233 304, -103 494, -8625}

{-8625, -103 494, -1 233 304, 0, 0, -5 637 966 054}.gpart[chill]
-2 332 419

{-8625, -103 494, -1 233 304, 0, 0, -5 637 966 054}.Transpose[A11]
{-117 699, 20 397, 19 717, 157 813, 19 909, 19 037, 157 133, 295 229, 19 229,
  157 325, 19 421, 156 453, 294 549, 432 645, 156 645, 294 741, 156 837, 293 869,
  431 965, 155 965, 570 061, 294 061, 432 157, 156 157, 294 253, 156 349, 569 381,
  707 477, 431 477, 569 573, 293 573, 431 669, 293 765, 844 893, 706 989, 430 989,
  569 085, 293 085, 431 181, 293 277, 706 501, 568 597, 430 693, 568 109, 430 205}

```

```

FindInstance[
- 1746 945 m[1] + 1 211 077 m[2] - 313 410 m[3] + 38 122 m[4] - 2205 m[5] + 49 m[6] < 0 &&
- 36 257 m[1] + 24 837 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 36 465 m[1] + 24 853 m[2] - 6402 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 113 m[1] + 24 645 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 321 m[1] + 24 661 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 35 497 m[1] + 24 677 m[2] - 6394 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 761 m[1] + 24 437 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 969 m[1] + 24 453 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 177 m[1] + 24 469 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 145 m[1] + 24 469 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 353 m[1] + 24 485 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 34 529 m[1] + 24 501 m[2] - 6386 m[3] + 778 m[4] - 45 m[5] + m[6] < 0 &&
```

```

- 32 617 m[1] + 24 245 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 825 m[1] + 24 261 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 033 m[1] + 24 277 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 001 m[1] + 24 277 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 209 m[1] + 24 293 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 33 385 m[1] + 24 309 m[2] - 6378 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 473 m[1] + 24 053 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 681 m[1] + 24 069 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 649 m[1] + 24 069 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 889 m[1] + 24 085 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 857 m[1] + 24 085 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 065 m[1] + 24 101 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 033 m[1] + 24 101 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 241 m[1] + 24 117 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 32 417 m[1] + 24 133 m[2] - 6370 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 537 m[1] + 23 877 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 745 m[1] + 23 893 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 713 m[1] + 23 893 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 921 m[1] + 23 909 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 889 m[1] + 23 909 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 097 m[1] + 23 925 m[2] - 6362 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 31 273 m[1] + 23 941 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 &&
- 29 777 m[1] + 23 717 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 29 745 m[1] + 23 717 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 29 953 m[1] + 23 733 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 29 921 m[1] + 23 733 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 129 m[1] + 23 749 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 30 305 m[1] + 23 765 m[2] - 6354 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 809 m[1] + 23 541 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 985 m[1] + 23 557 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 29 161 m[1] + 23 573 m[2] - 6346 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 017 m[1] + 23 381 m[2] - 6338 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0 &&
- 28 193 m[1] + 23 397 m[2] - 6338 m[3] + 778 m[4] - 45 m[5] + m[6] ≥ 0,
Array[m, 6], Integers]
{{m[1] → -37 635, m[2] → -470 427,
  m[3] → -5 833 300, m[4] → 0, m[5] → 0, m[6] → -27 025 283 304} }

Array[m, 6] /. {m[1] → -37 635, m[2] → -470 427,
  m[3] → -5 833 300, m[4] → 0, m[5] → 0, m[6] → -27 025 283 304}
{-37 635, -470 427, -5 833 300, 0, 0, -27 025 283 304}

GCD[-37 635, -470 427, -5 833 300, 0, 0, -27 025 283 304]
1

Reverse[{-37 635, -470 427, -5 833 300, 0, 0, -27 025 283 304}]
{-27 025 283 304, 0, 0, -5 833 300, -470 427, -37 635}

```

```

{-37635, -470427, -5833300, 0, 0, -27025283304}.gpart[chi11]
-1373700

{-37635, -470427, -5833300, 0, 0, -27025283304}.Transpose[A11]
{40092, 341340, 641236, 942484, 39412, 941132, 1242380, 1543628,
339308, 640556, -262516, 1542276, 1843524, 2144772, 940452,
1241700, 338628, 2143420, 2444668, 1240348, 2745916, 1541596,
1842844, 638524, 939772, 36700, 3045812, 3347060, 2142740, 2443988,
1239668, 1540916, 637844, 3948204, 3045132, 1840812, 2142060,
937740, 1238988, 335916, 2743204, 1840132, 937060, 1538204, 635132}

```

```
anglesq11 = anglesquaredmat[chi11, list11] // FullSimplify;
```

```
Dimensions[anglesq11]
```

```
{45, 6}
```

```
angle11 = Sqrt[anglesq11] // FullSimplify;
```

```
angle11 // MatrixForm
```

$$\left( \begin{array}{cccccc} \frac{\sqrt{\frac{1559}{595}}}{2} & \frac{1}{\sqrt{105}} & \sqrt{\frac{5}{21}} & \frac{1}{2\sqrt{3}} & \sqrt{\frac{5}{357}} & 0 \\ \sqrt{\frac{78}{119}} & 0 & \sqrt{\frac{2}{7}} & 0 & \frac{1}{\sqrt{17}} & 0 \\ \frac{\sqrt{\frac{1551}{595}}}{2} & \frac{2}{\sqrt{105}} & \frac{2}{\sqrt{21}} & \frac{1}{2\sqrt{3}} & \sqrt{\frac{13}{357}} & 0 \\ 2\sqrt{\frac{97}{595}} & \frac{1}{\sqrt{35}} & \sqrt{\frac{5}{21}} & 0 & \sqrt{\frac{29}{357}} & 0 \\ \frac{\sqrt{\frac{3494}{595}}}{3} & \frac{\sqrt{\frac{3}{35}}}{2} & \sqrt{\frac{11}{42}} & 0 & \sqrt{\frac{13}{357}} & \frac{1}{6} \\ \sqrt{\frac{771}{1190}} & 2\sqrt{\frac{2}{105}} & \sqrt{\frac{2}{21}} & \frac{1}{\sqrt{6}} & \sqrt{\frac{5}{357}} & 0 \\ \frac{\sqrt{\frac{1543}{595}}}{2} & \frac{1}{\sqrt{15}} & \frac{1}{\sqrt{7}} & \frac{1}{2\sqrt{3}} & \frac{1}{\sqrt{17}} & 0 \\ \sqrt{\frac{386}{595}} & \sqrt{\frac{2}{35}} & \frac{2}{\sqrt{21}} & 0 & \sqrt{\frac{37}{357}} & 0 \\ \frac{\sqrt{\frac{397}{17}}}{6} & \frac{\sqrt{\frac{5}{21}}}{2} & \frac{1}{\sqrt{6}} & \frac{1}{2\sqrt{3}} & \sqrt{\frac{5}{357}} & \frac{1}{6} \\ 2\sqrt{\frac{869}{595}} & \frac{1}{2\sqrt{5}} & \sqrt{\frac{3}{14}} & 0 & \frac{1}{\sqrt{17}} & \frac{1}{6} \\ \frac{\sqrt{\frac{3478}{595}}}{3} & \sqrt{\frac{3}{70}} & \sqrt{\frac{5}{21}} & 0 & \sqrt{\frac{5}{357}} & \frac{1}{3\sqrt{2}} \\ \sqrt{\frac{767}{1190}} & \sqrt{\frac{11}{105}} & \frac{1}{\sqrt{21}} & \frac{1}{\sqrt{6}} & \sqrt{\frac{13}{357}} & 0 \\ \frac{\sqrt{\frac{307}{119}}}{2} & \sqrt{\frac{2}{21}} & \sqrt{\frac{2}{21}} & \frac{1}{2\sqrt{3}} & \sqrt{\frac{29}{357}} & 0 \\ 8\sqrt{\frac{6}{595}} & \sqrt{\frac{3}{35}} & \frac{1}{\sqrt{7}} & 0 & \sqrt{\frac{15}{119}} & 0 \\ \frac{\sqrt{\frac{13823}{595}}}{6} & \frac{\sqrt{\frac{37}{105}}}{2} & \sqrt{\frac{5}{42}} & \frac{1}{2\sqrt{3}} & \sqrt{\frac{13}{357}} & \frac{1}{6} \\ \sqrt{\frac{494}{595}} & \sqrt{\frac{11}{70}} & 1 & \sqrt{\frac{11}{20}} & 1 & 1 \end{array} \right)$$

|                            |                         |                       |                       |                         |                       |
|----------------------------|-------------------------|-----------------------|-----------------------|-------------------------|-----------------------|
| $\frac{\sqrt{3}}{3}$       | $\frac{\sqrt{2}}{2}$    | $\frac{1}{\sqrt{6}}$  | 0                     | $\sqrt{\frac{13}{357}}$ | $\frac{1}{6}$         |
| $2 \sqrt{\frac{173}{119}}$ | $\frac{1}{\sqrt{14}}$   | $\frac{2}{\sqrt{21}}$ | 0                     | $\sqrt{\frac{13}{357}}$ | $\frac{1}{3\sqrt{2}}$ |
| $\sqrt{\frac{109}{176}}$   | $\sqrt{\frac{2}{15}}$   | 0                     | $\frac{1}{\sqrt{6}}$  | $\frac{1}{\sqrt{17}}$   | 0                     |
| $\sqrt{\frac{1527}{595}}$  | $\sqrt{\frac{13}{105}}$ | $\frac{1}{\sqrt{21}}$ | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{37}{357}}$ | 0                     |
| $\sqrt{\frac{6871}{1190}}$ | $\sqrt{\frac{53}{105}}$ | $\frac{1}{\sqrt{42}}$ | $\frac{1}{\sqrt{6}}$  | $\sqrt{\frac{5}{357}}$  | $\frac{1}{6}$         |
| $\sqrt{\frac{382}{595}}$   | $\frac{2}{\sqrt{35}}$   | $\sqrt{\frac{2}{21}}$ | 0                     | $\sqrt{\frac{53}{357}}$ | 0                     |
| $\sqrt{\frac{13751}{595}}$ | $\sqrt{\frac{7}{15}}$   | $\frac{1}{\sqrt{14}}$ | $\frac{1}{2\sqrt{3}}$ | $\frac{1}{\sqrt{17}}$   | $\frac{1}{6}$         |
| $4 \sqrt{\frac{43}{119}}$  | $\sqrt{\frac{3}{7}}$    | $\sqrt{\frac{5}{42}}$ | 0                     | $\sqrt{\frac{37}{357}}$ | $\frac{1}{6}$         |
| $\sqrt{\frac{13759}{595}}$ | $\sqrt{\frac{23}{210}}$ | $\sqrt{\frac{2}{21}}$ | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{5}{357}}$  | $\frac{1}{3\sqrt{2}}$ |
| $\sqrt{\frac{3442}{595}}$  | $\frac{1}{\sqrt{10}}$   | $\frac{1}{\sqrt{7}}$  | 0                     | $\frac{1}{\sqrt{17}}$   | $\frac{1}{3\sqrt{2}}$ |
| $2 \sqrt{\frac{41}{255}}$  | $\sqrt{\frac{13}{35}}$  | $\frac{1}{\sqrt{6}}$  | 0                     | $\sqrt{\frac{5}{357}}$  | $\frac{1}{2\sqrt{3}}$ |
| $\sqrt{\frac{217}{85}}$    | $\frac{4}{\sqrt{105}}$  | 0                     | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{15}{119}}$ | 0                     |
| $2 \sqrt{\frac{19}{119}}$  | $\frac{1}{\sqrt{7}}$    | $\frac{1}{\sqrt{21}}$ | 0                     | $\sqrt{\frac{61}{357}}$ | 0                     |
| $\sqrt{\frac{13679}{595}}$ | $\sqrt{\frac{61}{105}}$ | $\frac{1}{\sqrt{42}}$ | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{29}{357}}$ | $\frac{1}{6}$         |
| $\sqrt{\frac{3422}{595}}$  | $\sqrt{\frac{19}{35}}$  | $\frac{1}{\sqrt{14}}$ | 0                     | $\sqrt{\frac{15}{119}}$ | $\frac{1}{6}$         |
| $\sqrt{\frac{13687}{595}}$ | $\sqrt{\frac{29}{210}}$ | $\frac{1}{\sqrt{21}}$ | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{13}{357}}$ | $\frac{1}{3\sqrt{2}}$ |
| $4 \sqrt{\frac{214}{595}}$ | $\frac{3}{\sqrt{70}}$   | $\sqrt{\frac{2}{21}}$ | 0                     | $\sqrt{\frac{29}{357}}$ | $\frac{1}{3\sqrt{2}}$ |
| $\sqrt{\frac{1142}{1785}}$ | $\sqrt{\frac{17}{35}}$  | $\sqrt{\frac{5}{42}}$ | 0                     | $\sqrt{\frac{13}{357}}$ | $\frac{1}{2\sqrt{3}}$ |
| $3 \sqrt{\frac{6}{85}}$    | $\sqrt{\frac{6}{35}}$   | 0                     | 0                     | $\sqrt{\frac{23}{119}}$ | 0                     |
| $2 \sqrt{\frac{851}{595}}$ | $\sqrt{\frac{23}{35}}$  | $\frac{1}{\sqrt{42}}$ | 0                     | $\sqrt{\frac{53}{357}}$ | $\frac{1}{6}$         |
| $\sqrt{\frac{389}{17}}$    | $\frac{1}{\sqrt{6}}$    | 0                     | $\frac{1}{2\sqrt{3}}$ | $\frac{1}{\sqrt{17}}$   | $\frac{1}{3\sqrt{2}}$ |
| $\sqrt{\frac{3406}{595}}$  | $\sqrt{\frac{11}{70}}$  | $\frac{1}{\sqrt{21}}$ | 0                     | $\sqrt{\frac{37}{357}}$ | $\frac{1}{3\sqrt{2}}$ |
| $\sqrt{\frac{4541}{1785}}$ | $\sqrt{\frac{67}{105}}$ | $\frac{1}{\sqrt{42}}$ | $\frac{1}{2\sqrt{3}}$ | $\sqrt{\frac{5}{357}}$  | $\frac{1}{2\sqrt{3}}$ |
| $4 \sqrt{\frac{71}{1785}}$ | $\sqrt{\frac{3}{5}}$    | $\frac{1}{\sqrt{14}}$ | 0                     | $\frac{1}{\sqrt{17}}$   | $\frac{1}{2\sqrt{3}}$ |
| $\sqrt{\frac{682}{119}}$   | $\frac{1}{\sqrt{7}}$    | $\sqrt{\frac{2}{21}}$ | 0                     | $\sqrt{\frac{5}{357}}$  | $\frac{1}{3}$         |
| $\frac{22}{3\sqrt{85}}$    | $\sqrt{\frac{13}{70}}$  | 0                     | 0                     | $\sqrt{\frac{15}{119}}$ | $\frac{1}{3\sqrt{2}}$ |
| $\sqrt{\frac{226}{357}}$   | $\sqrt{\frac{5}{7}}$    | $\frac{1}{\sqrt{42}}$ | 0                     | $\sqrt{\frac{29}{357}}$ | $\frac{1}{2\sqrt{3}}$ |

$$\left( \begin{array}{cccccc} \frac{8 \sqrt{\frac{53}{595}}}{3} & \sqrt{\frac{6}{35}} & \frac{1}{\sqrt{21}} & 0 & \sqrt{\frac{13}{357}} & \frac{1}{3} \\ \frac{\sqrt{\frac{462}{85}}}{3} & \frac{1}{\sqrt{5}} & 0 & 0 & \frac{1}{\sqrt{17}} & \frac{1}{3} \\ \frac{4 \sqrt{\frac{211}{595}}}{3} & \frac{3 \sqrt{\frac{3}{35}}}{2} & \frac{1}{\sqrt{42}} & 0 & \sqrt{\frac{5}{357}} & \frac{\sqrt{5}}{6} \end{array} \right)$$

**Dimensions[angle11]**

{45, 6}

**orderedroots[minipoly[chill1]]**

{-5, 5, 9, 11, 12, 13}

**chill1**

$(-13 + x) (-12 + x) (-11 + x)^2 (-9 + x)^{12} (-5 + x) (5 + x)^{32}$

**coeff[chill1, (x+5) (x-9) (x-11)] // FullSimplify**

{240, 51, 144}

**combinationangle[{240, 51, 144}, {1, 11}, {2, 5, 6}, angle11] // FullSimplify**

$\left\{ \frac{1}{7} (5 + 24 \sqrt{2}), \frac{1}{7} (5 + 24 \sqrt{2}), \frac{1}{7} (-5 + 24 \sqrt{2}), \frac{1}{7} (-5 + 24 \sqrt{2}) \right\}$

**compatible[{\frac{1}{7} (5 + 24 \sqrt{2}), \frac{1}{7} (5 + 24 \sqrt{2}), \frac{1}{7} (-5 + 24 \sqrt{2}), \frac{1}{7} (-5 + 24 \sqrt{2})}]**

0